SARAANSH

Monthly Current Affairs

March 2026

- Polity and Governance
- Nation & States
- Economic Scenario
- International Relations
- Environment & Ecology
- Science & Technology
- History, Art & Culture
- Social Issues
- Facts for Prelims

C-171/2, Block-A, Sector-15, Noida

641, Mukherjee Nagar, Opp. Signature View Apartment, New Delhi

21, Pusa Road, Karol Bagh New Delhi

Tashkent Marg, Civil Lines, Prayagraj, Uttar Pradesh

Tonk Road, Vasundhra Colony, Jaipur, Rajasthan

Burlington Arcade Mall, Burlington Chauraha, Vidhan Sabha Marg, Lucknow

12, Main AB Road, Bhawar Kuan, Indore, Madhya Pradesh

Crystal Heights, Circular Road, Lalpur Chowk, Ranchi, Jharkhand

Shahi Lane, SP Verma Rd, South Gandhi Maidan, Patna, Bihar

E-mail : care@groupdrishti.in

Phone: +91-87501-87501

CURRENT AFFAIRS

(Coverage from 25th February 2026 to 24th March 2026)

INDEX

Polity & Governance 1-17

- Pradhan Mantri Jan Arogya Yojana 1
- Anti-Dumping Probe into Ethyl Chloroformate 1
- Model Code of Conduct 2
- National Vaccination Day and Universal Immunisation Programme 4
- Statehood and 6th Schedule Demand in Ladakh 5
- Kisan Credit Card Scheme 5
- SC Allows 1st Passive Euthanasia in Harish Rana Case 6
- Grid Bottlenecks in India's Renewable Energy Expansion 7
- Removal of the Chief Election Commissioner 8
- Governor and Lieutenant Governor Appointment in India 9
- Centre Pauses Rice Fortification 10
- India's Digital Transformation and Growth Story 10
- Bulldozer Justice 11
- Industrial Corridors And NICDP 12
- Reforming Tribunals in India 12
- India's AI Revolution in Rural Development 13
- Rail Tech Policy and e-RCT Digitization 15
- Independence of the Election Commission of India 15

Nation & States 18-21

- India's Defence Forces Vision 2047 18
- Securing India in the Age of AI Warfare 19
- National Counter-Terrorism Policy and Strategy: PRAHAAR 20

Economic Scenario 22-37

- India's Infrastructure Financing 22
- IPOs for Profitable RRBs 23
- Washington Consensus 24
- Fiscal Health Index 2026 26
- Farm Loan Waivers in India 27
- AI Impact Study on the Labour Market 29
- India's Income Mobility 30
- India's Export Surge 30
- India's New GDP Series With Base Year 2022-23 32
- 16th Finance Commission on Centre-State Fiscal Relations 34
- PSB Reforms under EASE 9.0 35
- Sustainable Tourism Push in Budget 2026–27 36

International Relations 38-53

- BRICS STI Cooperation 38
- Geoeconomic Fallout of the US-Israel-Iran Conflict on India 38
- Xiaokang Villages and India's Border Security 40
- Weapons in the US–Israel–Iran Conflict 41
- India Opts Out of IEA-led Oil Release from SPRs 42
- India-Finland Relations 42
- Raisina Dialogue 2026 43
- Conflict Zones in the US-Israel-Iran War 44
- US Torpedo Sinks Iranian Warship in Indian Ocean 46
- India–Canada Strategic Reset 46
- Self-Defence, IHL and UNCLOS in US–Israel–Iran onflict 47
- Durand Line Dispute 48
- US-Israel Attack on Iran 48
- Missile Defence in the US-Israel–Iran Conflict 49
- India-Israel Relations 50
- Agreements on Reciprocal Trade 52

Environment & Ecology 54-60

- World Water Day 2026 54
- Nor'westers and Local Winds of India 55
- Hybrid Electric Vehicles 56
- State of the World's Migratory Species 56
- Air Pollution in India 57
- India Submits 7th National Report to the CBD 58
- Carbon Capture and Utilisation (CCU) Technologies 59
- State of India's Environment (SOE) 2026 60

Science & Technology 61-65

- NavIC Navigation System 61
- Discovery of the Xi-cc-plus Baryon at CERN 62
- Alternative Heating Technologies Amid Global Gas Supply Risks 63
- India's HPV Vaccination Drive 64
- LIGO-India's 1st Gravitational Wave Observatory 64
- Training of Large Language Models 65

History, Art & Culture 66-68

- Shaheed Diwas 66
- Mahad Satyagraha 66
- India's Tribal Paintings 67
- Dandi March 68

Social Issues 69-79

- World Tuberculosis Day 2026 69
- UN IGME 2025 Report on Child Mortality 69
- Women in Indian Politics 70
- Transgender Persons Amendment Bill 2026 72
- Menstrual Leave in India 73
- Prison Health Crisis in India 74
- Denial of Public Spaces to Scheduled Castes 75
- No-Fault Compensation Policy for Covid-19 Vaccine Adverse Effects 75
- International Women's Day 2026 76
- Adolescent Mental Health Crisis 78
- From Population Explosion to Population Stabilisation 79

Facts for Prelims 80-108

- Reports & Indices 80
- Awards & Honours 82
- Important Days 83
- Defence & Security 86
- Summits & Conferences 87
- Places in News 88
- Portals & Apps 95
- Species in News 95
- Miscellaneous 96

Polity & Governance

Pradhan Mantri Jan Arogya Yojana

An evaluation study commissioned by **NITI Aayog** has revealed that patients availing treatment in **private hospitals** under **PMJAY** incur significant **out-of-pocket expenditure (OOPE)**. The study, submitted to the **Development Monitoring and Evaluation Office (DEMO)**, highlights the continued financial burden on beneficiaries despite insurance coverage.

Key Findings of the Study

- **High OOPE (Private Hospitals):** Avg ~**Rs 53,965** per hospitalisation.
- **Public vs Private:** Govt hospitals **Rs 21,827**; private **>2× higher**.
- **Prevalence of Financial Burden: 65%** paid from pocket; only **35%** fully cashless.
- **Primary Cost Drivers: Medicines, diagnostics, transport** (transport not covered).
- **Limited Relief:** Avg OOPE **Rs 34,790** vs uninsured **Rs 38,084** (**only Rs 3,294 less**).

Key Facts About AB-PMJAY

- **About:**
  - **Launch: Sept. 2018** under **Ayushman Bharat**; world's largest govt-funded health assurance scheme.
  - **Objective:** Achieve **UHC**; reduce catastrophic health expenditure.
  - **Implementation: National Health Authority (NHA)** (national level); **SHAs** (state level).
- **Coverage & Features**
  - **Insurance Cover: Rs 5 lakh/family/year**
  - **Scope: Secondary & tertiary hospitalization** (not primary outpatient care).
  - **Pre/Post Hospitalisation: 3 days pre + 15 days post** expenses covered.
  - **Pre-existing Diseases:** Covered from **Day 1**.
- **Funding Pattern:**
  - **60:40** (Centre: State) – normal States & UTs with legislature
  - **90:10** – North-Eastern & Himalayan States
  - **100% Centre** – UTs without legislature
- **Eligibility and Beneficiary Identification:** Targets **bottom 40%** (**~12 crore families / 55 crore people**)
  - Based on **SECC 2011** (deprivation & occupational criteria), **No cap** on family size, age, gender
  - **Sept 2024:** All **70+ citizens** covered (Ayushman Vay Vandana Card) – **~6 crore elderly**
  - Coverage extended to **ASHA, AWWs, Anganwadi Helpers (AWHs)**
- **Key Operational Features:**
  - **Cashless & Paperless:** Services at empanelled hospitals; **Ayushman App** for verification & card creation
  - **National Portability:** Treatment available across India
  - **Public & Private Access:** Govt + empanelled private hospitals
  - **Health Benefit Packages (HBP):** Predefined packages covering treatment, medicines, diagnostics, fees, room, food
- **Achievements: 42 crore+ cards** issued; **~11 crore hospital admissions** (by Dec 2025). **Women ~50%** of cards & hospitalisations

Anti-Dumping Probe into Ethyl Chloroformate

Directorate General of Trade Remedies (DGTR) (Ministry of Commerce & Industry) launched **anti-dumping investigations** into imports of **ethyl chloroformate (from China)** and **hexamine (from China, Russia, UAE)** to protect the **domestic chemical industry**.

Ethyl Chloroformate

- **About:** Highly reactive **organic compound**; used as reagent in **pharma & agrochemical synthesis**
- **Reacts with water (hydrolysis) –** forms **ethanol, CO_2, hydrochloric acid**
- **Key Applications**
  - **Pharmaceuticals:** Intermediate for drugs (e. g., modified penicillins)
  - **Industrial: PVC stabilizer**; used in **herbicides & insecticides**
  - **Chemical Use:** Activates **carboxylic acids → mixed anhydrides (for esters/amides)**
- **Hazards:**
  - **Toxicity:** Highly toxic (inhalation/ingestion); causes **pulmonary edema** (fluid in the lungs)
  - **Corrosivity:** Strong **lachrymator** (causes severe eye watering); causes **acid burns** (skin, eyes, mucous)
  - **Flammability: Highly flammable**; forms **explosive mixtures with air**

- **Hexamine:** White crystalline, **highly soluble heterocyclic organic compound** (produced from formaldehyde + ammonia)
  - **Uses:** Resins, plastics, pharmaceuticals, rubber additives; fuel tablets; organic chemistry
  - **Hazard:** Toxic & irritating

Anti-Dumping Duty

- **About:** Tariff on foreign imports priced below **fair market value (dumping)**; ensures **level playing field** (with **countervailing duties** for subsidies)
- **Legal & Institutional Framework**
  - **WTO Basis: Anti-Dumping Agreement**
    - **De minimis margin (minimum level): 2% of export price** → no duty if below this level
    - Limit is the **same** for exports from **developing** & **developed countries**
  - **India: DGTR (Commerce Ministry)** investigates; **Finance Ministry** imposes duty

Feature	Anti-Dumping Duty (ADD)	Countervailing Duty (CVD)
Target	Unfair pricing by private companies.	Unfair subsidies provided by foreign governments.
Objective	To offset the price differential and prevent "**predatory pricing**" that hurts local industry.	To neutralize the **unfair advantage** gained through government financial assistance.
WTO Agreement	Governed by the **Anti-Dumping Agreement**.	Governed by the **Agreement on Subsidies and Countervailing Measures** (**SCM**).
Duty Calculation	Equal to the **margin of dumping** (difference b/w normal value and export price, adjusted for comparability). The duty is capped at this margin.	Equal to the **amount of the subsidy** attributable to the exported product (subsidy margin). The duty is capped at this amount.
Investigation Requirements	Requires demonstration of: dumping, material injury (or threat thereof) to the domestic industry, and causal link b/w the two.	Requires demonstration of: existence of a specific subsidy, material injury (or threat thereof), and causal link.

Model Code of Conduct

ECI has enforced the **MCC** following the announcement of the **2026 General Elections to the Legislative Assemblies** of Assam, Kerala, Tamil Nadu, West Bengal, and the Union Territory of Puducherry, alongside bye-elections in multiple states.

- With this announcement, the MCC has come into immediate effect to ensure a level playing field and prevent the misuse of official machinery by the party in power.

Model Code of Conduct

- **About:** The Model Code of Conduct is a comprehensive set of guidelines issued by the ECI to regulate the behavior of political parties, candidates, and the government during the election period.
- **Objective:** To maintain the purity of the electoral process, ensure peace and order during campaigning, and prevent the ruling party from gaining an unfair advantage through state resources.
- **Statutory Backing and Enforceability:**
  - **No Direct Statutory Backing:** The MCC itself is **not a legally enforceable** statute. It is a moral code built on political consensus.
  - **Constitutional Authority:** The ECI enforces the MCC under **Article 324** of the Constitution, which mandates the superintendence, direction, and control of elections.
  - **Indirect Legal Enforcement:** While the MCC is not a law, many of its provisions are enforceable through corresponding sections in existing statutes. For example, bribery, intimidation, and impersonation are punishable under the **Indian Penal Code (IPC), 1860 (now Bharatiya Nyaya Sanhita, 2023)**, and the **Representation of the People Act (RPA), 1951** (e. g., Section 123 deals with "corrupt practices").
- **Duration:** The MCC comes into operation the moment the ECI announces the election schedule and remains active until the election results are declared.
- **Evolution:** The concept first originated during the **1960 Kerala Assembly elections** as a voluntary consensus among political parties.
  - It was first widely circulated during the **1962 simultaneous elections**, where parties largely followed it. In **1979**, the EC introduced a **comprehensive MCC**, later refined through consultations with political parties **to curb money and muscle power.**
  - In 1991, the MCC was strictly enforced and institutionalized under the leadership of then-**Chief Election Commissioner T. N. Seshan,** transforming it into a powerful tool for electoral purity.
- **Key Provisions of the MCC:**
  - **General Conduct:** Prohibits activities that aggregate existing differences, cause tension among communities, or appeal to caste and communal feelings for securing votes.
    - Places of worship cannot be used as forums for election propaganda.
  - **Meetings and Processions:** Political parties must inform local police authorities in advance about the venue and time of meetings to ensure adequate security and traffic arrangements.
    - Processions by rival parties must not clash or disrupt each other.

- **Polling Day:** Restricts the entry of unauthorized persons into polling booths. No campaigning is allowed within **100 meters** of the polling station, and the serving of liquor or eatables near booths is strictly banned.
- **Observers:** ECI appoints General, Expenditure, and Police Observers to whom candidates can report breaches.
- **Party in Power:** Ministers are prohibited from combining official visits with electioneering. Government transport, machinery, and personnel cannot be used for campaign purposes.
  - ❖ Furthermore, the ruling party cannot announce new financial grants, lay foundation stones, or make ad-hoc appointments that could influence voters.
- **Election Manifestos:** Added in 2013 following the Supreme Court judgment in the ***S. Subramaniam Balaji vs Govt. of Tamil Nadu*** **case**. It mandates that manifestos must not contain promises that vitiate the purity of elections and should reflect the **rationale for promises and ways to meet the financial requirements.**

- **Technological Initiatives by ECI:**
  - **c-VIGIL App:** Empowers citizens to report MCC violations (like illicit money or liquor distribution) in real-time, with a mandate for flying squads to resolve complaints within **100 minutes**.
  - **SUVIDHA Module:** A single-window system for political parties to apply for the use of public spaces, maidans, and helipads on a strict "first come, first serve" basis, preventing the ruling party from monopolizing resources.
  - **Voluntary Code of Ethics (2019):** To address digital challenges, the ECI and social media platforms (like Meta, Google, X) agreed to a **"Voluntary Code of Ethics"** to process legal requests from the ECI within 3 hours during the 48-hour silence period.

Contemporary Challenges in Enforcing the MCC

- **The "Freebies" Conundrum:** Distinguishing between **genuine welfare measures (Directive Principles of State Policy)** and populist **electoral "freebies"** (Revdi culture) remains a gray area, often announced just before the MCC kicks in.
- **Lack of Statutory Backing:** The MCC is a **voluntary, consensus-based document, not a legally binding statute.**
  - The ECI relies heavily on moral persuasion, warnings, or temporary campaign bans. It lacks the explicit, direct authority to deregister political parties or permanently disqualify candidates solely for MCC violations. Critics often **refer to MCC as a "tiger without teeth. "**
- **Ineffective Post-Election Redressal:** If an MCC violation is booked under the RPA or IPC, the judicial process takes years.
  - By the time a verdict is reached, the election cycle is long over, defeating the deterrent value of the law.
- **Technological and Digital Disruptions:** The rapid proliferation of **Artificial Intelligence, deepfakes,** and micro-targeted advertising makes it incredibly difficult for the ECI to monitor hate speech and misinformation in real-time.
  - Political parties frequently **bypass expenditure limits and MCC guidelines by using proxy meme pages,** influencers, and unverified social media handles to run smear campaigns (**Surrogate Advertising)**.
  - The spread of communal or inflammatory propaganda via encrypted messaging platforms (like WhatsApp) largely escapes the ECI's surveillance, rendering the traditional **"48-hour silence period" nearly obsolete in the digital realm.**
- **Enforcement and Credibility Deficits:** Clauses mandating that criticism should be confined to "policies and programs" or maintaining the "purity of the election" are highly subjective.
  - This leaves room for varying interpretations and inconsistent enforcement.
- **Allegations of Bias and Delayed Action:** The ECI frequently faces criticism from civil society and opposition parties for delayed or diluted responses to provocative speeches made by **high-profile "star campaigners" and senior leaders**, which can erode public trust in the institution's impartiality.

Measures to Strengthen MCC

- **Power to Deregister Parties:** Currently, the ECI can register a party but cannot deregister it.
  - The RPA must be amended to empower the ECI to deregister or suspend parties for severe and repeated MCC violations.
  - In **2013, the Standing Committee on Personnel, Public Grievances, Law, and Justice** proposed legally binding the MCC and integrating it into the RPA 1951.
  - **Dinesh Goswami Committee on Electoral Reforms (1990)** suggested that the weakness of the MCC could be overcome by giving it statutory backing and making it enforceable through law
- **Curbing "Paid News" and Surrogate Ads:** As recommended by the **255th Law Commission Report (2015)**, "Paid News" and surrogate digital advertising should be explicitly classified as a **"Corrupt Practice"** under RPA, making it an electoral offense.
- **Expanding the "Silence Period":** Based on the **Umesh Sinha Committee (2019)** recommendations, Section 126 of RPA (which bans campaigning 48 hours before polling)

must be amended to explicitly include the **internet, social media, and OTT platforms.**

- **Fast-Track Election Tribunals:** Establish special tribunals to dispose of election **petitions and severe MCC violations** within a strict 6-month timeframe, preventing the weaponization of judicial delays.
- **Complete Autonomy:** The ECI must be granted an **independent secretariat** and its budget should be "charged" upon the **Consolidated Fund of India** (similar to the CAG and UPSC) to insulate it completely from executive pressure.
- **Statutory Rules for Big Tech:** The 2019 "Voluntary Code of Ethics" for social media platforms is insufficient.
  - It must be replaced with mandatory statutory obligations under the **IT Rules, 2021**, forcing platforms (Meta, Google, X) to take down MCC-violating content (hate speech, deepfakes) within **3 hours** of an ECI directive.
- **Mandatory AI Watermarking:** To combat deepfakes, the ECI should mandate that all political parties use cryptographic watermarks for digital campaign materials, ensuring traceability of fake news back to specific IT cells.
  - Integrating the c-VIGIL app with real-time data analytics and AI to auto-flag communal speeches or illicit cash distributions before human complaints are even filed.
- **Capping Party Expenditure:** While individual candidate expenditure is capped, party expenditure is limitless.
  - A statutory cap on total party expenditure is urgently needed to prevent money power from destroying the level playing field.

The Model Code of Conduct is often described as a "tiger without teeth. " Critically examine.

Drishti Mains Question

National Vaccination Day and Universal Immunisation Programme

India celebrated National Vaccination Day (16th March). UIP achieved **98.4% full immunisation (Jan 2026).**

- Launched **nationwide HPV vaccination** & **indigenous Td vaccine (2026).**

National Vaccination Day

- Celebrated on **16th March**; marks **first Oral Polio Vaccine dose** (**1995, Pulse Polio Programme**).
- Led to **polio elimination**; last case **2011** (**Howrah, West Bengal**).

Universal Immunisation Programme (UIP)

- **About: MoHFW flagship programme** for **free vaccination** of **children & pregnant women**.
  - Started as **Expanded Programme on Immunization (EPI) (1978)** → renamed **UIP (1985)**.
- **Objectives:** Increase **coverage & quality;** Ensure **cold-chain system; Monitor performance;** Achieve **vaccine self-sufficiency**
- **Integration:**
  - **1992**: Child Survival & Safe Motherhood Programme
  - **1997**: Reproductive & Child Health Programme
  - **2005**: Part of **National Rural Health Mission (NRHM)**
- **Coverage & Scale:** Covers 2.9 crore pregnant women & 2.54 crore newborns annually (free).
- **Diseases Covered:** Vaccination against **12 vaccine-preventable diseases.**
  - **Japanese Encephalitis (JE) vaccine:** Only in endemic districts.
- **Vaccines Introduced Under UIP:**
  - **Inactivated Polio Vaccine (IPV) – 2015:** Introduced as part of the Global Polio Endgame Strategy.
  - **Rotavirus Vaccine (RVV) – 2016:** Introduced to reduce mortality from severe diarrhoea in children.
  - **Measles-Rubella (MR) Vaccine – 2017:** Introduced through a nationwide campaign targeting ~41 crore children aged 9 months to 15 years.
  - **Pneumococcal Conjugate Vaccine (PCV) – 2017:** Introduced to reduce infant mortality caused by pneumonia.
  - **Tetanus and Adult Diphtheria (Td) Vaccine:** Replaced the TT vaccine to address waning immunity against diphtheria in adolescents and adults.
- **Mission Indradhanush: Launched in 2014**; Target **>90% immunisation**; focus on unvaccinated/partially vaccinated children and pregnant women in hard-to-reach areas.
  - **Intensified Mission Indradhanush (2017)**: Cover children <2 years & pregnant women left out; focus on urban & low-coverage areas.
  - **Coverage rise**: 62% (2015) → 98.4% (Jan 2026).
- **Infrastructure Supporting UIP Implementation:**
  - **Vaccination Delivery Network:** Vaccines via **PHCs, CHCs, govt hospitals, sub-centres, Anganwadi & outreach**.
    - ❖ Supported by **ASHA, AWWs, link workers**.
    - ❖ **Model Immunisation Centres** in **UP, Bihar, Chandigarh, Ladakh**.
  - **Cold Chain Infrastructure: 1.06 lakh+ ice-lined refrigerators & deep freezers**.
    - ❖ Supports **1.3 crore+ sessions/year**.
  - **Digital Monitoring Systems: e-Vaccine Intelligence Network**: tracks **stock & temperature**.
    - ❖ **U-WIN (2024)**: centre location, booking, records.
    - ❖ **CoWIN (2021)**: **220+ crore doses administered**.

Milestones in India's Vaccination Journey

- **Disease eradication**: Smallpox, polio (last case 2011), yaws, maternal & neonatal tetanus.
- **Zero-dose children**: 0.11% (2023) → 0.06% (2024).
- **Global recognition**: Acknowledged by **UN Inter-Agency Group for Child Mortality Estimation (2024)** for reducing child mortality & infectious diseases.
- **India's Global Leadership in Vaccines and Pharmaceuticals**: **3rd globally (volume)**; exports to **~200 countries** (USA, Belgium, South Africa, UK, Brazil).
  - **Vaccines**: Produces **~60% of global supply** (largest vaccine manufacturer).
  - **Generics**: ~**20% of global supply (volume)**.
  - **Covid-19**: **298 million doses** supplied to **~100 countries (Vaccine Maitri initiative)**.
  - **PLI schemes**: **Bulk Drugs (2020); Medical Devices (2020); Pharmaceuticals (2021)**→ boost **self-reliance & competitiveness**.

Statehood and 6th Schedule Demand in Ladakh

Protests organised in Leh & Kargil demanding **statehood for Ladakh, 6th Schedule status, Public Services Commission (PSC), 2 Parliamentary seats**.

- Organised by **Leh Apex Body (LAB)** and **Kargil Democratic Alliance (KDA)** to protect **land & cultural rights**.

Rationale Behind Ladakh's Demand for Statehood and 6th Schedule Status

- **Representation of Democratic Representation**: Ladakh became **UT without legislature (2019, J&K Reorganisation Act, 2019)**
  - Earlier had **4 MLAs**; now decisions by **bureaucrats**
  - **Ladakh Autonomous Hill Development Councils (LAHDCs)** lack **legislative powers**
- **Safeguards for Tribal Identity and Resource Sovereignty: 97%+ tribal population**
  - Loss of **special protections post-Article 370 abrogation**
  - Lack of **legislative safeguards** → risk from **mega-projects, industrialisation, ecological damage (glaciers, water resources)**
- **Economic autonomy**: No **PSC** → lack of **local recruitment mechanism**
  - **Graduate unemployment: 26.5%** (double the national average)
  - Demand for **domicile-based reservations**
- **Strategic security:** In context of China–Pakistan axis, 6th Schedule ensures local empowerment + partnership model for border security.

Sixth Schedule

Under Article 244(2): Provides autonomous administrative framework for tribal areas in Assam, Meghalaya, Tripura, Mizoram. Aims to protect social, cultural, customary practices.

Concerns Associated with Ladakh's Demand for Statehood and 6th Schedule Status

- **Strategic risks & Security Risks: Buffer zone** (LAC & LoC)
  - **UT status** ensures **clear command & coordination**
  - Statehood may cause **political friction** in border situations
- **Constitutional & Legal hurdles**: **6th Schedule** meant for **Northeast**. Requires **Constitutional Amendment**
  - May trigger **similar demands** (e.g., Gorkhaland, Bodoland)
- **Administrative issues**: **Small population (~3 lakh)**
  - Full state setup → **economically unviable & inefficient**
- **Intra-regional diversity**: **Leh (Buddhist-majority)** vs **Kargil (Muslim-majority)**
  - Risk of **identity politics & governance deadlocks**
- **Existing protections**:
  - **Ladakh Reservation (Amendment) Regulation, 2025**:
    - ❖ **85% reservation** for locals
    - ❖ **Domicile**: **15-year residency**
  - **Official languages**: English, Hindi, Urdu, Bhoti, Purgi
  - **1/3rd reservation for women** in **LAHDC (rotational)**

Measures Needed to Address Ladakh's Governance Needs

- **Strengthen LAHDCs**: Expand **legislative, executive, judicial powers** over **land, water, culture**.
- **Custom framework**: Create **Article 371-like provisions** if **6th Schedule not feasible**.
- **Land & environmental safeguards**: **Restrict land ownership** to **domiciles**
  - Set **tourism carrying capacity limits**
- **Dialogue mechanisms**: Institutionalise **consultation forum Leh Apex Body (LAB)**, **Kargil Democratic Alliance (KDA)**, and central agencies.
- **Phased approach**: Use **pilot projects** for gradual governance reforms.

Discuss the implications of granting statehood to Ladakh in the context of national security and federal governance.

Drishti Mains Question

Kisan Credit Card Scheme

KCC scheme, supported by the **Modified Interest Subvention Scheme (MISS)**, provides **timely, affordable, collateral-free institutional credit** to **farmers & allied sectors** to improve agricultural productivity and financial security.

- **Evolution: Launched in 1998,** provides **short-term institutional credit** for crop cultivation, post-harvest needs, and allied activities.
  - **Modified Interest Subvention Scheme (MISS) (2006–07):** Offers **concessional interest rates** & **support during natural calamities**.
  - **Revised KCC (2020): Single-window credit via RuPay-enabled card** with digital payments and flexible withdrawals through commercial, RRBs, and cooperative banks.
- **Eligible Beneficiaries:** Owner-cultivator farmers, joint borrowers, tenant farmers, oral lessees, sharecroppers. **SHGs** & **Joint Liability Groups (JLGs)**.
- **Credit under KCC & MISS (2025–26):**
  - **Crop loan limit:** Raised from **₹3 lakh to ₹5 lakh**.
  - **Fisheries & allied activities:** Credit limit **₹5 lakh**.
  - **Collateral-free loan:** Increased to **₹2 lakh per borrower**.
- **Interest Support:** Short-term crop loans **up to ₹3 lakh at 7% interest**.
  - **3% subvention under MISS → effective rate 4%**.
- **Credit Features: Revolving credit up to 5 years** with flexible withdrawals.
  - **Interest relief during natural calamities: No interest up to 1 year**, extendable to **5 years in severe disasters**.
- **Farmer Onboarding & Digital Reforms:** Simplified KCC application using **PM-KISAN data**. **Kisan Rin Portal (2023)** for faster loan processing and transparency.
- **Scale & Impact of KCC: 7.72 crore+ active KCCs** with **₹10.2 lakh crore outstanding credit**, supported by **457 banks**, expanding credit access to **agriculture, animal husbandry, and fisheries**.
- **Government Initiatives:** Awareness campaigns and **KCC Saturation Drive under Atmanirbhar Bharat Abhiyan**.
  - **RuPay-enabled KCC cards** to promote digital transactions, financial inclusion, and wider access to institutional credit.

SC Allows 1st Passive Euthanasia in Harish Rana Case

SC in **Harish Rana vs Union of India (2026)**, allowed **passive euthanasia by permitting withdrawal of life support**, marking the **first application of the 2018 Common Cause judgment recognising the right to die with dignity**.

About the Case

- **Harish Rana**, a **19-year-old student from Chandigarh**, fell from a **fourth-floor building (Aug 2013)** causing **catastrophic brain injuries**.
- Remained in **Permanent Vegetative State (PVS)** with **100% quadriplegia**.
- For **~13 years**, survived only on **Clinically Assisted Nutrition and Hydration (CANH)** through **PEG tubes**, with **no improvement**.
- **Delhi HC (2024)** dismissed the father's plea; the family approached the **SC**, which **permitted passive euthanasia**.

Procedural Directives of SC for Future Cases

- **Streamlining Process: HCs** to direct **Judicial Magistrates** to receive and process **hospital intimations on medical board decisions** regarding passive euthanasia.
  - **Union Government** to ensure **Chief Medical Officers (CMOs)** maintain panels of **Registered Medical Practitioners** for **Secondary Medical Boards**.
- **Need for Comprehensive Legislation:** SC urged the **Union Government** to enact a **comprehensive law on end-of-life care**.
  - Warned that absence of legislation may allow **financial distress, lack of insurance, or socio-economic vulnerability** to influence decisions.

Living Will

- Defined by **SC in Common Cause v. Union of India** (2018) as a **written document allowing a person to give advance instructions on medical treatment when terminally ill or unable to give informed consent.**
- It may **authorise family members to withdraw life support** if a **medical board declares the patient beyond medical help.**
- The ruling **expanded patient autonomy**, allowing individuals to **control end-of-life medical decisions even when unable to communicate.**

- **Judgments Shaping Euthanasia in India:**
  - **Maruti Shripati Dubal v. State of Maharashtra (1987): Bombay HC** held **right to die is inherent in Article 21**, allowing **terminally ill or severely suffering patients** to end their lives.
  - **Gian Kaur v. State of Punjab (1996): SC** reversed the above view; held **right to life does not include the right to die** and emphasized **preservation of life**.
  - **Aruna Shanbaug v. Union of India (2011): SC permitted passive euthanasia** under strict legal and medical safeguards, even for patients unable to consent.
  - **Common Cause v. Union of India (2018):** SC recognized the right to die with dignity, distinguished **active euthanasia (not permitted)** and **passive euthanasia (permitted)**, and legally validated living wills (advance medical directives).

Arguments in Favor of Legalizing Euthanasia	Arguments Against Legalization
❍ **Right to Self-Determination:** Individuals have **control over their body and timing/manner of death**; denying it infringes **personal liberty and dignity**. ❍ **Merciful End in Terminal Illness: Prevents prolonged agony and allows a dignified death.** ❍ **Avoidance of Cruel Prolongation:** Continuing life **without meaningful quality** can be cruel; euthanasia enables a **peaceful, controlled exit.** ❍ **Possibility of Regulation:** With **strict safeguards** (terminal illness, competent consent, multiple medical opinions), euthanasia can be **regulated** (e.g., **India, Netherlands, Belgium, Canada**). ❍ **Reducing Burden on Family:** Helps patients avoid **emotional & financial strain on loved ones** from prolonged care. ❍ **Medical Ethics:** Seen as aligning with **physicians' duty to relieve suffering** in **hopeless cases**.	❍ **No Right to Be Killed: Right to life** does not include a **right to demand intentional termination by others.** ❍ **Palliative Care Alternative: Modern palliative care and pain management** can alleviate suffering, making euthanasia **unnecessary with proper end-of-life care**. ❍ **Intrinsic Value of Life:** Legalizing euthanasia may **devalue lives of the disabled, elderly, or chronically ill**, implying some lives are **"not worth living. "** ❍ **Slippery Slope Risk:** In permissive jurisdictions, eligibility expanded **beyond terminal illness to non-terminal conditions and mental illness**, raising risks of **involuntary or non-voluntary cases**. ❍ **Pressure on Vulnerable Individuals:** Patients may choose death due to feeling like a **burden** (e.g., cases cited in **Oregon, USA**). ❍ **Medical Ethics Concern:** Conflicts with **Hippocratic Oath** (**"do no harm"**) and the **physician's role as healer**, potentially eroding **patient trust and professional integrity**.

Building a Better Support System for Terminally Ill Patients in India

- **National Palliative Care Mission:** Launch a **National Palliative Care Mission** (modelled on **NHM 2013**) to train healthcare workers and establish pain relief clinics; ensure availability of oral morphine in every district.
- **Integrated Public Health Systems:** Integrate palliative care across PHCs to district hospitals and link with **Ayushman Bharat**, **National Programme for Non-Communicable Diseases (2010)**, and National Programme for Health Care of the Elderly (2010).
- **Legal Literacy & Living Wills:** Conduct **awareness campaigns on Advance Directives (Living Wills)**; hospitals should appoint **trained patient advocates** to discuss end-of-life wishes.
- **Family & Community Support:** Establish **caregiver support systems** (respite care, home care training, counselling); promote **community-based care** like **Kerala's Neighbourhood Network in Palliative Care**.
- **Financial Protection:** Include outpatient, home-based, and hospice palliative care under PM-JAY and **Ayushman Vay Vandana Scheme**, covering medicines, symptom management, and caregiver support.
- **Technology Use:** Expand **tele-palliative care in rural areas** via **Ayushman Arogya Mandirs**; monitor opioid availability and patient outcomes using data from PM Ayushman Bharat Health Infrastructure Mission.

Examine the legal and ethical dimensions of euthanasia. What are the arguments for and against its legalization?

Drishti Mains Question

Grid Bottlenecks in India's Renewable Energy Expansion

At the **Bharat Climate Forum 2026**, policymakers highlighted **transmission congestion and overly cautious grid operations** as the **main barriers to scaling renewable energy in India**, rather than **generation shortages**.

Concerns in India's Renewable Energy Build-Out

- **Grid congestion:** Generation capacity exceeds transmission capacity.
  - Example: **Rajasthan** has **23 GW RE capacity** but can evacuate only **18.9 GW**; **>4, 000 MW** cannot evacuate power during peak hours.
- **T-GNA shutdowns:** Instead of an **~15% peak-hour loss across projects**, the grid imposes **100% shutdowns on projects with Temporary General Network Access (T-GNA)**.
  - **Permanent GNA projects operate uninterrupted**, penalising **new developers**.
- **Under-utilisation of transmission assets: 765 kV double-circuit corridors** designed for **~6, 000 MW** operate at **600–1, 000 MW (<20% utilisation)**.
  - This leaves **several newly commissioned RE projects connected but unable to inject power**.
- **Structural Disconnect**: **CTU** allocates **GNA based on full projected capacity** (e.g., **6, 000 MW**), but Grid India permits only a fraction of power flow (e.g., 1, 000 MW), creating a credibility gap for developers investing based on connectivity approvals.
- **Operational Conservatism**: Grid operators restrict flows citing **voltage oscillations & grid instability**.
  - **STATCOMs, static VAR generators, harmonic filters, and special protection schemes** exist but are **not utilised to support the grid**.

- Dynamic security assessments, real-time contingency management, probabilistic risk evaluation, and adaptive line ratings are not employed.

- **Lack of Institutional Accountability:** Government institutions face no penalties for grid under-performance. **Renewable developers face stranded assets**, while **consumers pay for under-utilised infrastructure through electricity tariffs**.
- **Lack of storage:** India needs **411 GWh energy storage capacity by 2032** for grid stability; **BESS** and **Pumped Hydro Storage (PHS)** deployment remains **inadequate**.
- **Supply chain vulnerabilities:** Heavy import dependence for **critical minerals (lithium, cobalt, rare earths)** and **solar cell and battery raw materials**, exposing the sector to **global supply shocks**.

India's Renewable Energy Sector

- **Current state:** India achieved **>50% cumulative installed power capacity from non-fossil sources**, meeting its **COP-26 NDC target 5 years before 2030**.
- **Capacity:** 262.74 GW non-fossil capacity (Nov 2025), accounting for **51.5% of total installed electricity capacity**.
- **Solar power: 132.85 GW (Nov 2025)** with **41% year-on-year growth**.
- **Wind power:** 53.99 GW capacity (Nov 2025).
- **Global standing** (IRENA RE Statistics 2025): **3rd** in **solar power capacity; 4th** in **wind power capacity; 4th** in **total renewable energy capacity**.

Measures to Resolve India's Renewable Grid Issues

- **Redefine Grid India's mandate:** Focus on **maximising asset utilisation within safe limits**, with performance metrics balancing reliability and efficiency.
- **Equitable curtailment:** Power shutdowns during congestion should be **distributed proportionately across all generators**, replacing the current system that burdens T-GNA projects.
- **Dynamic capacity reallocation: Unused or under-utilised GNA capacity** should be reallocated in real time through transparent protocols.
- **Automatic accountability reviews:** Persistent under-performance of transmission assets should trigger **formal reviews** to identify technical, operational, or delay-related bottlenecks, with **public disclosure of findings**.
- **Adopt Advanced grid management:** Deploy **dynamic security assessments, real-time contingency management,** probabilistic risk evaluation, and adaptive line ratings.
- **Align planning & operations:** Improve coordination between **Central Transmission Utility of India (CTU)** and **Grid India** to ensure planned transmission capacity translates into actual power evacuation.

Bharat Climate Forum (BCF)

- **Policy & stakeholder platform** bringing together **government, industry, financial institutions, and research organisations** to discuss **India's climate action and clean energy transition**.
  - Supports **Net Zero by 2070** & **500 GW non-fossil capacity by 2030**, aligned with **Atmanirbhar Bharat** & **Viksit Bharat**.
- **Bharat Cleantech Manufacturing Platform** (launched at BCF 2025):
  - Unites policymakers, industry, finance, and research institutions to accelerate domestic cleantech manufacturing.
  - Aims to **reduce import dependence, strengthen supply chains**, and position India as a global cleantech hub.
  - **Projected market size: USD 120–150 billion annually by 2030**, with export and job creation potential.

India has rapidly expanded its renewable energy capacity but faces structural bottlenecks in grid infrastructure. Examine the causes and suggest measures to address them.

Drishti Mains Question

Removal of the Chief Election Commissioner

Opposition parties are considering an **impeachment motion against CEC** over **allegations of biased conduct**.

Removal of CEC from Office

- **Constitutional Safeguard & Provisions:** Ensures **security of tenure** for the **CEC** to maintain **ECI independence**.
  - **Article 324(5): Service conditions and tenure** of **Election Commissioners and Regional Commissioners** determined by the **President (subject to parliamentary law)**.
    - CEC can be removed only like a SC judge and service conditions cannot be altered to their disadvantage after appointment.
    - Other Election Commissioners/Regional Commissioners can be removed only on the recommendation of the CEC.
  - **CEC and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023,** provides the resignation and removal process, retaining the same constitutional procedure.
- **Grounds for removal:** Limited to **"proved misbehaviour or incapacity"** (same as **SC judges**).
- **Terminology:** The term **"impeachment"** is constitutionally used **only for the President (Article 61)**; for **Judges and the CEC**, the correct term is **removal**.

Removal Procedure

- **Quasi-judicial process** similar to **SC judge removal**, under the **Judges Inquiry Act, 1968**.
- **Initiation:** Removal motion in **either House of Parliament**.

- Must be signed by **100 Lok Sabha MPs** or **50 Rajya Sabha MPs**.
- Submitted to **Speaker (Lok Sabha)** or **Chairman (Rajya Sabha)**.

- **Admission & investigation:**
  - **Speaker/Chairman** may **admit or reject** the motion.
  - If admitted, a **3-member committee** (**SC judge, HC Chief Justice, distinguished jurist**) investigates.
- **Report:** CEC has the right to defend.
  - If **charges not proved → motion dropped**.
  - If **misbehaviour/incapacity proved → report submitted to the House where motion originated**.
- **Parliamentary voting:** Motion must pass in both Houses in the same session with a Special Majority — **majority of total membership + two-thirds of members present and voting**.
- **Presidential order:** After passage in **both Houses**, an **address is sent to the President**, who issues the order for removal of the CEC.

Governor and Lieutenant Governor Appointment in India

President announced a **reshuffle of Governors & LGs**.

- **R. N. Ravi** appointed **Governor of West Bengal**. **Rajendra Vishwanath Arlekar (Kerala Governor)** given **additional charge of Tamil Nadu**. **Taranjit Singh Sandhu** appointed **LG of Delhi**.

Appointment Process of the Governor

- **Article 153:** Mandates **Governor for every state**; **7th Constitutional Amendment Act, 1956** allows **one Governor for multiple states**.
- **Article 154:** Executive power of the state vested in the Governor.
- **Article 155:** Governor **appointed by the President of India**, through a **warrant under the President's hand and seal**, making the Governor a nominee of the Union Government.
- **Article 156 (Term):** Governor holds office **during the pleasure of the President**; can be **removed or transferred anytime** (Constitution does not specify any grounds for the removal).
  - **Tenure: 5 years**, but continues **until successor assumes office**.
  - **Resignation:** Can **resign anytime** by writing to the **President**.
- **Article 157 (Qualifications):** Must be a **citizen of India** and **at least 35 years old**.
- **Article 158 (Conditions of Office): Governor cannot be a member** of **Parliament or State Legislature**; if appointed, the seat is deemed vacated on assuming office.
  - Cannot hold any office of profit.
  - Entitled to **official residence (rent-free)** and **emoluments, allowances, and privileges determined by Parliament**.
    - If **Governor of multiple states**, emoluments shared among states as determined by the President.
    - **Emoluments and allowances cannot be reduced during the term**.
- **Article 159 (Oath or Affirmation):** Governor takes oath to faithfully execute office, preserve, protect and defend the Constitution, and serve the people.
  - **Administered by:** Chief Justice of HC or senior-most judge of the court.
- **Established Conventions:**
  - **Outsider Rule:** Governor usually appointed **from outside the state** to ensure **neutrality**.
  - **Consultation with CM:** President expected to consult the CM, though often not followed.

Appointment Process of the LG

- **Article 239: UTs** administered by the **President through an Administrator** appointed by him **(Part VIII (Articles 239 to 241))**.
- **Designation:** Specified by the **President**.
  - **LGs:** Delhi (NCT), Puducherry, J&K, Ladakh, Andaman & Nicobar Islands.
  - **Administrators:** Chandigarh, Lakshadweep, Dadra & Nagar Haveli and Daman & Diu.
- **Article 239AA:** The **Administrator of NCT of Delhi** is designated as the **LG**.
- **Appointment: Appointed by the President** through a **warrant under hand and seal**.
  - As per **Article 74**, the **President acts on the aid and advice of the Union Council of Ministers**, so the **Central Government effectively recommends the LG**.
- **Term & Removal:** Holds office **during the pleasure of the President**; **no constitutional grounds specified for removal**.
  - Central Government can advise the President to transfer, remove, or seek resignation at any time.

Why Governors are Appointed Rather Than Elected in India

- **Prevent Conflict:** Constituent Assembly chose the **Canadian model (appointed Governor)** over the **American model (elected Governor)** to avoid clashes with the CM and prevent parallel power centres.
- **Nominal Head:** In the **parliamentary system**, CM **is the real executive**; a **statewide election for a nominal head** was considered unnecessary.

- **National Unity:** The **appointed Governor** acts as a **link b/w the Centre and the State**, supporting national stability and integration.
- **Neutrality of Office:** An **elected Governor** would depend on **party support**, compromising their **neutral role**, especially during **hung assemblies or President's Rule**.

Centre Pauses Rice Fortification

Govt. has **temporarily discontinued rice fortification** under **PMGKAY** and allied schemes following a comprehensive review based on an **IIT Kharagpur study**.

Rice Fortification

- **Definition:** Addition of essential vitamins & minerals to rice during post-harvest processing to improve nutritional quality; addresses **hidden hunger** (micronutrient deficiencies) without altering taste, appearance or cooking properties.
- **Rationale:** Polished white rice loses **75–90%** of natural vitamins (thiamine, niacin, B6, vitamin E) during milling; fortification restores and adds nutrients.
- **Common Micronutrients:** Iron, Folic Acid (B9), Vitamin B12, Zinc, Vitamin A, B1, B3, B6.
- **India's Policy Rollout:** Announced on **75th Independence Day** to address malnutrition.
  - **Phase I (Oct 2021):** Supplied fortified rice via **ICDS** & **PM Poshan**.
- **Regulatory Standards:** Produced by blending rice with **Fortified Rice Kernels (FRK)**.
  - **FSSAI** mandates fortification with **Iron, Folic Acid, Vitamin B12**.

Recent Developments Regarding Rice Fortification

- **Nutrient Degradation:** IIT Kharagpur study found moisture, storage period, temperature, humidity, packaging affect stability of **FRK & Fortified Rice (FR)**, causing micronutrient decline over time.
- **Storage Cycle Issue:** Central pool rice stored **2–3 years**; with **37.2 MT annual allocation (PMGKAY)** and **67.4 MT projected availability**, extended storage increases nutrient loss risk.
- **Impact on Welfare Continuity:** Discontinuation will not affect entitlements under **PDS, ICDS, PM Poshan**.
- **Industry Distress:** Milling sector reports losses on folic acid, broken rice, premixes; sought alignment with **2026–27 crop season**.

India's Digital Transformation and Growth Story

India's **digital transformation under the Digital India programme (2015)** has evolved from a **connectivity mission to a broader empowerment initiative**, using **Digital Public Infrastructure (DPI), large-scale connectivity expansion, and targeted skilling programmes** to **bridge the digital divide and integrate citizens into the digital economy**.

Key Achievements of India Under the Digital India Programme

- **Universal Digital Connectivity:**
  - **BharatNet:** 2.15 lakh+ Gram Panchayats connected.
  - **Optical fibre:** 19.35 lakh route km (2019) → 42.36 lakh route km (2025).
  - **5G:** 99.9% districts covered with 5.18 lakh BTS (Dec 2025).
  - **Data cost:** ₹269/GB (2014) → ₹8–10/GB (2025–26).
  - **Broadband:** 100 crore subscriptions (Nov 2025) vs 13.15 crore a decade earlier.
- **Digital Public Infrastructure (DPI):**
  - **Aadhaar: 143+ crore digital IDs** enabling **DBT**.
  - **UPI:** ₹28.33 lakh crore monthly value, 21.7 billion transactions/month.
  - **DigiLocker:** 62+ crore users for paperless document storage.
- **High-Performance Computing:**
  - **National Supercomputing Mission:** 38 supercomputers, 44 Petaflops capacity for AI, climate modelling, biotechnology, advanced manufacturing.
  - **MeghRaj (Govt cloud):** 2, 170+ ministries/departments hosting applications.
- **Digital Literacy:**
  - **PMGDISHA: 6.39 crore rural households trained (Mar 2024)** against 6 crore target, providing digital skills to one person per rural household.
- **Digital Learning Platform:**
  - **DIKSHA:** 19, 698+ courses; 18.23 crore enrolments and 14.57 crore completions.
  - **SWAYAM:** 18, 500+ higher education courses; 53.7 lakh certifications awarded.
  - **INSPIRE-MANAK:** ₹10, 000 prototype grants; 11.47 lakh ideas mobilised (2025–26) with 52% from girls and 84% from rural schools.
- **Rights-Based Digital Inclusion:**
  - **Unique Disability ID scheme: 1.34 lakh+ digital disability cards** issued.
  - **Indian Sign Language Research and Training Centre:** 3, 189 e-content videos, creating the largest ISL digital repository.
- **Last-mile digital access: 6.5 lakh+ VLEs** operate **Common Service Centres (CSCs)** providing digital services to citizens lacking **devices, connectivity, or digital literacy**.

- **PM-WANI:** 4, 09, 111 public Wi-Fi hotspots enabling decentralised, licence-free public Wi-Fi and local entrepreneurship.

- **Digital Skilling & Innovation: Atal Innovation Mission: 10, 000+ Atal Tinkering Labs** in 722 districts, engaging 1.1 crore students in robotics, AI, IoT.
  - **FutureSkills Prime: 3rd globally (EU Pact for Skills Report 2024)** for training in AI, cloud, cybersecurity, data analytics.
  - **IndiaAI Kosh:** 9, 500+ datasets and 273 AI models across 20 sectors.
- **Startup & Entrepreneurship:**
  - **Startup India:**
    - **400 startups (2016) → 2 lakh+ (2025)** creating **21 lakh jobs**; **50% in Tier-II/III cities**.
  - **72 Atal Incubation Centres:**
    - 3, 500+ startups supported, including 1, 000+ women-led ventures.

Key Challenges in India's Digital Growth Story	Suggestions
❍ **Persistent digital divide: 24% rural households** vs **66% urban households** have internet access (**NSSO**). ● Only **33% women have used the internet** (**NFHS 2019–21**); 31.2% participation in online AI courses (2025). ● Tribal and backward communities remain disadvantaged, creating a digital underclass. ❍ **Cybersecurity challenges:** 13.91 lakh cyber incidents (2022); India is the **2nd most targeted country for cyberattacks**. ● **Workforce gap:** Shortage of ~**7.9 lakh cybersecurity professionals** ❍ **Infrastructure & connectivity bottlenecks:** India ranks **25th globally in mobile internet speeds** (**Nov 2024**). Low broadband speeds, patchy 5G rollout, and limited fibre networks affect remote areas. ● **BharatNet** faces deadline delays (**2014–15 → beyond 2025**), **cost escalation** (**₹20, 000 crore → ₹1.39 lakh crore+**), and frequent fibre cuts. ❍ **Inefficiencies in public digital systems:** Issues of scalability, data accuracy, and technical glitches; **Aadhaar identity fraud cases** and **CoWIN usability gaps for non-urban users**. ❍ **Digital literacy & skill gaps:** Computer literacy **only 24.7%** (**NSS 78th Round, 2020–21**); **29 million skilled worker deficit** in sectors like **IT and BFSI** (**NSDC**). ❍ **Environmental impact: E-waste increased from 1.01 million MT** (**2019–20**) **to 1.751 million MT** (**2023–24**); high energy use by data centres raises sustainability concerns.	❍ **Enhance cybersecurity infrastructure:** Promote indigenous cybersecurity R&D and encryption standards; create a **Cyber Security Service cadre** for national-level threats. ❍ **Strengthen DPI:** Conduct **regular independent security audits** of **Aadhaar, UPI, DigiLocker, GSTN**; establish geographically distributed backup and disaster recovery centres. ❍ **Digital literacy & cyber awareness:** Launch **PMGDISHA 2.0** focusing on cybersecurity awareness and safe online practices; create **"Cyber Jagrukta Champions"** at gram panchayat level and integrate cyber hygiene modules in school curriculum under NEP 2020. ❍ **Strengthen legal framework:** Revise **IT Act, 2000** to address **deepfakes, AI misinformation, and crypto crimes**; create regulatory sandboxes for AI, blockchain, and IoT. ❍ **Strengthen rural digital ecosystem:** Improve **bandwidth and security of PM-WANI hotspots** and establish block-level cybersecurity cells linked to district units.

Bulldozer Justice

Allahabad HC raised constitutional concerns over "bulldozer justice" in **UP**, where properties of accused persons are demolished soon after an **FIR** is filed.

Concerns Regarding "Bulldozer Justice"

- **Violation of Rule of Law & Due Process:** Punitive demolitions bypass the legal sequence (allegation–investigation–adjudication–punishment).
  - **Denial of Fair Trial:** Property destruction post-FIR removes necessity of trial; violates right to fair hearing and presumption of innocence.
  - **Executive Overreach:** Executive acting as judge, jury, executioner; upsets separation of powers.
  - **Colourable Exercise of Power:** Use of lawful authority for impermissible objectives, bypassing due process.
- **Infringement of Fundamental Constitutional Rights:**
  - **Article 21 (Right to Shelter):** Right to life includes dignified shelter; sudden demolitions destroy livelihood and socioeconomic security.
  - **Article 300A (Right to Property):** Deprivation only by authority of law; requires fair and reasonable procedure.
  - **Article 14 (Right to Equality):** Selective targeting of specific communities/dissenters violates equal protection of law.
- **Collective Punishment Concern:** Demolition of shared homes punishes innocent family members; violates principle of **individual liability**.
  - Collective punishment is alien to Indian criminal law; violates **Geneva Convention, 1949** (prohibits collective punishments).
  - **ICCPR:** Protects right to own property; prohibits arbitrary deprivation.

Bulldozer Justice

- **Definition:** Extrajudicial demolition of homes/shops of accused persons by state/municipal authorities, bypassing legal procedures.
- **SC Guidelines (Nov 2024, Art 142):**

- Declared punitive demolitions unconstitutional; mandated strict due process.
- **15-day prior written notice** via registered post.
- **Right to personal hearing**; reasoned written order required.
- **Video recording** of demolition proceedings.
- Violating officials liable for **contempt of court** and personal restitution from salary.

- **Exception:** Not applicable to unauthorised structures on public land (roads, railways, rivers, etc.) or demolitions ordered by a court of law.

Judicial Pronouncements Related to Property Demolitions

- **Maneka Gandhi Case (1978):** "Procedure established by law" must be **just, fair, reasonable**; demolitions on suspicion violate due process.
- **Olga Tellis Case (1985): Article 21** includes right to **livelihood and shelter**; demolition without due process violates rights.
- **KT Plantation (P) Ltd Case (2011):** Legislation for deprivation of property under **Article 300A** must be **just, fair, and reasonable**.

Measures to Curb the Practice of Bulldozer Justice

- **Adopt UN Basic Principles and Guidelines on Development-Based Evictions and Displacement (2007):** Prohibit forced evictions as punishment; mandate rehabilitation before demolition.
- **Codify Proportionality Doctrine:** Amend municipal laws; demolition as last resort only if structure poses immediate public hazard and cannot be regularized/compounded.
- **Independent Property Tribunals:** Establish municipal tribunals; mandatory vetting of final demolition orders.
- **Suo Motu Judicial Intervention:** HCs/district courts to issue pre-emptive stays in cases of targeted demolitions.
- **Amend RPA, 1951:** Classify public endorsement/ordering of extrajudicial demolitions as a **"corrupt practice. "**

"Bulldozer justice undermines the rule of law and due process. " Discuss.

Drishti Mains Question

Industrial Corridors And NICDP

Union Budget 2026–27 prioritised the **NICDP**, announcing an **Integrated East Coast Industrial Corridor** with a key node at **Durgapur (WB)** under the ***Purvodaya initiative***.

- It allocated **₹3, 000 crore** to **NICDIT** in **the 2026-27 Budget Estimates** to develop smart industrial cities, reduce logistics costs, and integrate India into global value chains.

Industrial Corridors

- **About:** Strategic linear development zones connecting major economic centres through integrated multimodal infrastructure (roads, railways, ports, airports).
  - Enable seamless freight & passenger movement.
  - Promote industrial growth, logistics efficiency, and investment-friendly ecosystems.
  - Support industrial clustering, regional development, stronger supply chains, and integration into global value chains.
- **Significance for Indian Economy:**
  - **Plug-and-Play Ecosystems:** Ready-to-use land and assured utilities reduce setup time and red tape.
  - **Sustainability:** Low-Carbon City model with renewable energy, water recycling, green spaces.
  - **Walk-to-Work Culture:** Reduced commute, improved productivity and quality of life.
  - **Job Creation:** Phase-I NICDP cities attracted **₹2.02 lakh crore** (Economic Survey 2025–26); jobs in **EVs, semiconductors**.
  - **Investment & Promote Exports:** SEZs provide tax & regulatory incentives, boosting FDI and global value chain integration.

National Industrial Corridor Development Programme (NICDP)

- **NICDP:** Flagship initiative to develop integrated industrial corridors and greenfield smart industrial cities to boost manufacturing, logistics, and global competitiveness.
  - Guided by **PM GatiShakti National Master Plan**; focuses on multimodal connectivity, plug-and-play infrastructure, and sustainable urban planning.
  - Implemented by **NICDC** (autonomous body under **DPIIT, Ministry of Commerce & Industry**).
- **Major Industrial Corridors:** Covers **11 major corridors** (e.g., **Delhi–Mumbai, Chennai–Bengaluru, Amritsar–Kolkata**), supported by dedicated freight corridors, highways, ports, and rail networks.
  - Developed under **Low-Carbon Cities framework** with green spaces, public transit, renewable energy, water and waste recycling.
  - **2024:** Approval of **12 additional greenfield smart industrial city projects** to boost manufacturing & investment.

Reforming Tribunals in India

SC flagged serious concerns over the functioning & accountability of tribunals, calling them a **"liability" and a "mess"** due to systemic flaws in appointments and operations.

Systemic Issues Plague the Functioning of Tribunals

- **Lack of Accountability:** Functioning as a "no-man's land" with no effective oversight.
- **Grave Judicial Malpractice:** Technical members outsourcing judgments; instances of blackmail; poorly written orders burdening the SC.
- **Lack of Subject Expertise:** Technical members lacking expertise in environmental, company, insolvency laws.
- **Vacancies & Backlogs:** Persistent vacancies; ~**38, 000 cases** pending in **11 Armed Forces Tribunal benches**.
  - Commercial tribunals: **3.56 lakh cases** pending; worth ₹**24.7 lakh crore** (**7.5% of GDP, 2024–25**).
- **Executive Dominance:** Executive controls appointments, tenure, salaries, service conditions, and removal; compromises judicial independence. Government as major litigant raises impartiality concerns.
- **Overlapping Jurisdiction & Tribunalization:** Jurisdictional overlaps (**e.g., NCLAT & other appellate bodies**); excessive tribunalization weakens regular courts; frequent appeals to HCs & SC undermine finality of decisions.

Key SC Judgments on Tribunals

- **S. P. Sampath Kumar Case (1986):** Tribunals valid substitutes for HCs if equally effective; appointments by Centre in consultation with **CJI** or by committee headed by SC/HC judge.
- **L. Chandra Kumar Case (1997):** Exclusion of HC (Art 226/227) and SC (Art 32) jurisdiction unconstitutional; tribunals substituting HCs must have judicial members.
- **R. Gandhi (2010) Case:** Technical members cannot outnumber judicial members; if only for expeditious disposal, technical member may not be needed; must be Secretary-level with specialized knowledge.
- **Rojer Mathew Case (2019):** Struck down executive-led removal provisions; called for uniform retirement age; short tenures increase executive control and weaken independence.
- **Madras Bar Association Case (2020):** Recommended **National Tribunals Commission (NTC)**; favoured **5-year term** and retirement age of **67 years** (4-year term struck down in 2025).
- **Madras Bar Association Case (2025):** Struck down parts of **Tribunals Reforms Act, 2021**; invalidated fixed **4-year tenure** and minimum age **50 years** (violative of Art 14); directed **Search-cum-Selection Committee** to recommend only one name per post.

Tribunals

- **About: Quasi-judicial bodies** established by statute to adjudicate specific disputes as an alternative mechanism to courts.
  - Aim for **speedy, cost-effective, expert resolution** in areas like service matters, taxation, environment, labour, corporate and regulatory issues.
- **Constitutional Basis:** Derive their constitutional recognition from the **42nd Constitutional Amendment Act, 1976**; inserted **Part XIV-A**, **Article 323A** and **Article 323B**.
  - **Article 323A:** Parliament can establish **Administrative Tribunals** for service matters.
  - **Article 323B:** Parliament & State Legislatures can establish tribunals for taxation, land reforms, elections, etc.
- **Distinction from Regular Courts:**
  - **Regular Courts:** Part of integrated judiciary (Art 214–231); inherent judicial power; rigid procedures; wide civil, criminal, constitutional jurisdiction.
  - **Tribunals**: Statutory bodies; specialized & limited jurisdiction; flexible procedures; combine judicial and expert adjudication.

Steps Needed to Reform Tribunals

- **NTC:** Independent centralized body for appointments, administration, evaluation, infrastructure, funding (as per ***Madras Bar Association v. Union of India, 2025***); ensures transparency & insulation from executive control.
- **Judicial Independence in Composition:** Appoint members with judicial experience/legal expertise; removal through due process with judicial oversight.
- **Implementation of Binding Judicial Directions:** Govt. must comply with prior SC rulings; avoid reintroducing struck-down provisions; till NTC is formed, follow parent laws & SC directions.
- **Address Vacancies, Pendency & Infrastructure:** Fill vacancies promptly; allocate adequate funds (charged on **Consolidated Fund of India**); ensure digitization, e-case management, modern infrastructure, regional benches.

"Tribunals in India were established to provide speedy and specialized justice, but they have become a 'liability' due to executive overreach." Examine the statement in light of recent Supreme Court observations.

Drishti Mains Question

India's AI Revolution in Rural Development

The **India–AI Impact Summit 2026** highlighted AI's role in improving rural livelihoods, social inclusion, and service delivery in agriculture, healthcare, education, and governance.

- Backed by the **IndiaAI Mission** & **Digital India**, it marked a shift from pilot projects to system-wide implementation for equitable and sustainable rural development.

Role of AI in Rural Development

- **AI Tools for Gram Panchayat and Local Governance:**

- **SabhaSaar:** AI tool generating structured minutes of Gram Sabha/Panchayat meetings from audio/video; integrated with **BHASHINI**; supports **14 Indian languages**.
- **eGramSwaraj:** Under **e-Panchayat Mission Mode Project**; integrates planning, budgeting, accounting, monitoring, asset management, payments. **FY 2024–25:** Onboarded **2.53 lakh+ gram panchayats**, **6, 409 block panchayats**, **650 Zila panchayats**.
- **Gram Manchitra:** Asset mapping & project monitoring; integrates spatial data into **Gram Panchayat Development Plans** for evidence-based planning. **FY 2024–25: 2.44 lakh GPDPs** prepared & uploaded.
- **BhuPRAHARI:** AI + geospatial tech for monitoring assets under **MGNREGA**; extended to **VB-G RAM G**.

■ **AI Infrastructure in Agriculture:**

- **Kisan e-Mitra:** Virtual assistant providing information on govt. schemes, including income support programmes.
- **National Pest Surveillance System & Crop Health Monitoring:** Use satellite imagery, meteorological & soil data for real-time advisories.

■ **AIKosh:**

- National repository of AI datasets and models for public-sector innovation; integrates government and non-government data.
- **7, 500+ datasets**, **273 AI models**, across **20 industries**; enables ready-to-deploy governance solutions.

■ **AI Infrastructure for Education & Skilling:**

- **DIKSHA Platform:** AI-enabled keyword video search and read-aloud tools; improves accessibility for visually impaired & diverse learners.
- **Youth for Unnati and Vikas with AI (YUVAI):** Trains **Classes VIII–XII** students in foundational AI and socio-technical skills through experiential learning across agriculture, health, rural sectors.

■ **AI for Healthcare:**

- **Suman Sakhi WhatsApp Chatbot:** Launched under **NHM (2013)** in **Madhya Pradesh**; AI-based tool providing maternal and newborn health information.

■ **Multilingual Governance:**

- **BHASHINI:** AI language platform offering translation, speech-to-text, voice interfaces in **36+ languages**; integrates with **23+ govt services**; **350+ AI models**; **1 million+ downloads** (Oct 2025).
- **Adi Vaani:** Provides governance, education, healthcare access in tribal languages under **Adi Karmayogi framework**.
- **BharatGen:** Govt-funded sovereign multilingual, multimodal **LLM** under National Mission on Interdisciplinary Cyber-Physical Systems & **IndiaAI Mission**; supports **22 languages**; integrates text, speech, document-vision.

■ **Digital ShramSetu Mission:** Deploys AI in informal sector to improve service delivery and livelihood support for rural workers.

Key Risks Associated with Use of AI in Rural Development	Suggestions
❍ **Digital Infrastructure Deficit:** Poor internet and power supply limit AI-enabled governance and services; device ownership skewed (**Urban: 21.6%**, **Rural: 4.2%**) creating "poverty of access."	❍ **Universal Digital Connectivity:** Strengthen infrastructure through **BharatNet** and **National Broadband Mission 2.0** (**2025–30**); ensure device access via subsidies/shared models.
❍ **Data Deserts & Algorithmic Bias:** Scarce rural data; AI trained on urban datasets may cause biased welfare decisions.	❍ **Representative Datasets:** Develop localized rural datasets; ensure strong data protection, sovereignty, and privacy frameworks.
❍ **Black Box Problem:** Opaque AI decisions (e.g., subsidy denial) reduce transparency & trust.	❍ **Transparent & Explainable AI:** Maintain **human-in-the-loop**; adopt explainable models and clear accountability to address the **Black Box** issue.
❍ **Rural Job Displacement:** Automation in agriculture and clerical services may widen economic gaps.	❍ **Future-Ready Rural Livelihoods:** Invest in reskilling (e.g., **IndiaAI FutureSkills**), social safety nets, and green jobs in the rural digital economy.
❍ **Cultural & Linguistic Barriers:** Limited support for local dialects; risk of culturally insensitive outputs.	❍ **Ethical Procurement & Grievance Redressal:** Prioritise ethical vendors, open-source platforms; establish simple grievance mechanisms for AI-based decisions.
❍ **Infrastructure & Cybersecurity Gaps:** Lack of local technical capacity; data centralisation raises privacy and cyberattack risks.	❍ **Sovereign AI:** Build AI on domestic infrastructure and data; promote culturally grounded models (e.g., **Sarvam Vision**) and voice-based tools (e.g., **Bulbul V3**) for inclusion.
❍ **Displacement of Indigenous Knowledge:** Over-reliance on AI advisories may marginalise traditional practices (FAO, 2023).	

"Artificial Intelligence has the potential to transform rural governance in India, but it also carries significant risks of exclusion and bias." Discuss.

Drishti Mains Question

Rail Tech Policy and e-RCT Digitization

The Ministry of Railways unveiled two major reforms under its **"52 Reforms in 52 Weeks" initiative**—the **RailTech Policy** and the **Railway Claims Tribunal (e-RCT)** digitization—aimed at enhancing transparency and improving access to justice.

Rail Tech Policy and e-RCT Digitization

- **Rail Tech Policy**
  - **About:** It is a dedicated, **high-tech, round-the-clock** digital single-window platform that enables **end-to-end digital submission** and **processing** of proposals. Innovators can submit detailed proposals in a simplified **single-stage process**, replacing outdated multi-stage vendor selection mechanisms.
  - **Rail Tech Portal:** A dedicated **Rail Tech Portal** will be established for **innovators, startups, industry**, and **institutions** to promote **innovation in Railways**.
  - **Funding Boost:** The policy increases the **scale-up grant** more than **three times** and **doubles** the maximum grant for prototype development and trials. The **Railways** will support up to **50% of development funding** for viable solutions.
  - **Key Innovation Areas:** The policy targets **critical operational challenges**, including:
    - AI-based Elephant Intrusion Detection System (EIDS)
    - AI-based fire detection in coaches
    - Drone-based broken rail detection
    - Obstruction detection in foggy environments
    - AI-based coach cleaning monitoring
    - Sensor-based load calculation on parcel vans
  - **Scalability:** Successful innovations will be supported with **substantial long-term orders** to enable **scaling of the solution** across the **railway network**.

Railway Claims Tribunal (e-RCT) Digitization

- **About e-RCT Digitization:** It introduces **end-to-end computerization and digitization** of the **Railway Claims Tribunal (RCT)**, making claim filing, processing, and adjudication faster and transparent.
- **Core Modules of e-RCT:** The platform is built on three key components:
  - **E-Filing: 24x7 online filing** with instant acknowledgement through SMS and email.
  - **Case Information System (CIS):** Centralized database for **real-time case tracking** from filing to final disposal.
  - **Document Management System (DMS):** Digital storage of **pleadings, orders, and judgements** with digitally signed records.
- **Legal Basis of e-RCT:** The Railway Claims Tribunal is a **quasi-judicial body** constituted under the **Railway Claims Tribunal Act, 1987** to adjudicate claims related to **death/injury in accidents**, untoward incidents, loss of goods, and refund of fares. It has **23 benches** across India (Principal Bench at Delhi).
- **Timeline and Expansion:** All **23 RCT benches** across India are targeted to be **fully digitized** within the next **12 months**. If successful, this model could be extended to other tribunals like the **Central Administrative Tribunal**.
- **Citizen-Centric Benefits:** The new system allows **aggrieved passengers** to file **claims electronically** from anywhere in the country, eliminating confusion over jurisdictional benches, especially in **cross-state travel incidents.**
  - It ensures **faster case processing**, reduced adjournments, real-time status updates, **online access to orders**, and **significant cost savings** for litigants by reducing travel, printing, and courier expenses.

52 Reforms in 52 Weeks Initiative

- **About:** Launched in early **2026** it is an ambitious, **time-bound program** committing **Indian Railways** to implement **one major structural reform per week** throughout the **calendar year 2026**, aiming for a **comprehensive** and **transparent transformation** of the **national transporter**.
- **Vision Alignment:** The initiative aligns with broader **"Reforms Express" vision** and builds upon previous **reforms** implemented in the **railways** over the preceding decade.

Independence of the Election Commission of India

The independence of the **Election Commission of India (ECI)** is under scrutiny following concerns over voter roll revisions, including the **Special Intensive Revision (SIR) in Bihar** and the reported deletion of around 65 lakh voters.

- An Opposition alliance has moved a resolution to **remove the Chief Election Commissioner (CEC),** bringing renewed focus on the **neutrality of the ECI** and the protection of adult franchise under **Article 326.**

Concerns Regarding the Independence of the ECI

- **Appointment Process Debate:** Historically, the Constitution did not prescribe a specific legislative process for the appointment of the CEC and ECs, leaving it to the **Executive** (President acting on the advice of the Council of Ministers).
  - In the ***Anoop Baranwal v. Union of India*** **case (2023),** the Supreme Court (SC) ruled that a collegium comprising the **Prime Minister, the Leader of the Opposition (LoP) in the Lok Sabha, and the Chief Justice of India (CJI)** should make appointments to insulate the body from executive bias, until Parliament passed a law.

- The Parliament subsequently passed the **Chief Election Commissioner and Other Election Commissioners Act, 2023** replacing the **CJI in the selection committee with a Union Cabinet Minister** nominated by the Prime Minister.
  - ❖ Critics argue this gives the **Executive a 2: 1 majority in the selection process,** potentially compromising institutional neutrality.

- **Flaws in the Removal Mechanism:** While the CEC enjoys the same protection against removal as a **Supreme Court judge (impeachment by Parliament)**, the two Election Commissioners (ECs) can be removed by **the President simply on the recommendation of the CEC.**
  - This disparity creates a **hierarchy and potential vulnerability for the ECs,** who might feel pressured to align with the CEC or the Executive.
- **Financial Autonomy:** Unlike the **Comptroller and Auditor General (CAG)** or the Supreme Court, the budget of the **ECI is not "charged" upon the Consolidated Fund of India.**
  - Instead, it is a **"voted"** expenditure, meaning it requires parliamentary approval, which theoretically subjects the **ECI's financial independence to the government of the day.**
- **Enforcement of the MCC:** The **Model Code of Conduct (MCC)** lacks statutory backing, leading to concerns that the ECI is "toothless" or selective when taking action against **high-profile political figures** for **hate speech** or campaign violations.
- **Post-Retirement Appointments:** The Constitution does not debar the retiring CEC or ECs from any further appointment by the government.
  - This creates a potential **"conflict of interest, "** as the prospect of **post-retirement sinecures** (like governorships or commissions) could influence their impartiality while in office.
- **Electoral Roll Integrity and "Vote Theft":** The **Special Intensive Revision (SIR)** of electoral rolls has become a flashpoint for allegations of "vote theft": In States like Bihar and West Bengal, allegations have surfaced regarding the potential deletion of millions of voters.
  - Opposition parties allege these deletions disproportionately target minority communities and their supporters.
  - The ECI's use of SIR to "weed out foreigners" has been criticized as a **"selective disenfranchisement based on religion"**.
  - Concerns have been raised that wide discretion given to Booth Level Officers during house-to-house verification, combined with limited oversight, may lead to arbitrary voter exclusions and undermine electoral fairness.
- **Technology and Transparency Debate:** The Election Commission has directed state poll officials to destroy CCTV, webcasting, and video footage of elections after 45 days if no court challenge is filed, a move that has raised concerns about transparency.
  - There is growing demand to extend the preservation **period to at least 180 days** to enable credible post-election audits and strengthen public trust.
  - At the same time, the rise of **AI-generated content and deepfakes,** particularly during recent state elections, has tested the **ECI's ability to curb disinformation** in a neutral manner, without creating perceptions of bias or **favoring any political narrative.**

Constitutional Mandate and Safeguards Ensuring the Independence of the ECI

- **Vesting of Electoral Authority:** Article 324(1) vests the superintendence, direction, and control of electoral roll preparation and **conduct of elections to Parliament, State Legislatures, and the offices of President and Vice-President in the Election Commission.**
  - This centralised authority ensures autonomy in managing the entire electoral process.
- **Composition and Appointment:** Under Article 324(2), the Election Commission consists of the CEC and other ECs as determined by the President.
  - Their appointment by the President, subject to **parliamentary law,** gives the body constitutional legitimacy while allowing statutory regulation.
- **Role of the CEC as Chairman:** Article 324(3) provides that when additional ECs are appointed, the **CEC acts as Chairman of the Commission.**
  - This ensures administrative leadership while maintaining a collegial decision-making structure.
- **Appointment of Regional Commissioners:** Article 324(4) allows the President to appoint Regional Commissioners, in consultation with the ECI, to assist during elections. This strengthens the Commission's operational capacity without undermining its autonomy.
- **Security of Tenure and Removal Safeguards:** Article 324(5) provides critical safeguards:
  - The CEC can be removed only in the same manner and on the same grounds as a Supreme Court judge.
  - Service conditions cannot be altered to the CEC's disadvantage after appointment.
  - These provisions protect the Commission from arbitrary executive action.
- **Administrative Support:** Article 324(6) mandates that the President or Governor must provide necessary staff to the ECI upon request, ensuring it has the resources required to function effectively.

Key Judgments Regarding ECI Independence

- **Indira Nehru Gandhi vs Raj Narain (1975):** The SC held that free and fair elections form part of the **Basic Structure of the Constitution,** ensuring that electoral integrity cannot be compromised and **reinforcing the ECI's central role in protecting democracy.**
- **Mohinder Singh Gill vs Chief Election Commissioner (1978):** The SC ruled that **Article 324 grants the ECI plenary powers** to act in areas where the law is silent to ensure free and fair elections, thereby strengthening its functional autonomy.
- **A. C. Jose vs Sivan Pillai (1984):** The SC clarified that the ECI cannot override existing laws, limiting its Article 324 powers to gaps in legislation and ensuring that independence operates within the rule of law.
- **T. N. Seshan vs Union of India (1995):**
  - The SC upheld the validity of a **multi-member Election Commission** and stated that the **CEC is "first among equals, " not superior to other commissioners, promoting collective decision-making and preventing concentration of power.**
- **Vineet Narain vs Union of India (1997):** The SC held that the CEC cannot recommend the **removal of Election Commissioners suo motu,** safeguarding their tenure and protecting institutional independence.
- **Anoop Baranwal vs Union of India (2023):**
  - The SC directed that appointments of the CEC and Election Commissioners be made by a committee including the Prime Minister, Leader of Opposition, and Chief Justice of India, reducing executive dominance in appointments.

Key Committee / Commission Recommendations for ECI Independence

- **Dinesh Goswami Committee (1990):** Recommended a statutory selection committee and making the **Model Code of Conduct (MCC)** legally enforceable to prevent its selective application.
- **Indrajit Gupta Committee (1998):** Advocated for **State Funding of Elections** to reduce the "money power" that the ECI often struggles to monitor effectively.
- **Second Administrative Reforms Commission (ARC) (2005):** Suggested a collegium headed by the Prime Minister, with the Speaker of the Lok Sabha, the LoP, the Law Minister, and the Deputy Chairman of the Rajya Sabha as members.
- **Law Commission (255th Report) (2015):** Proposed that all three Commissioners (CEC and ECs) should have **equal constitutional protection** against removal, ending the hierarchy that makes ECs vulnerable, ensuring equal constitutional security of tenure.
  - Proposed establishment of a permanent, independent Secretariat for the ECI to strengthen administrative autonomy.

Measures to Strengthen the Independence of ECI

- **Parity in Security of Tenure:**
  - The Constitution must be amended to provide the same protection against removal to the ECs as is currently guaranteed to the CEC.
  - They should only be removable through a rigorous parliamentary impeachment process, insulating them from executive pressure.
- **Reforming the Appointment Process:**
  - The CEC and Other ECs Act of 2023 should be reviewed to restore a balanced, **neutral selection collegium.**
  - Reintroducing the **Chief Justice of India or mandating a unanimous consensus** within the committee would mitigate the current executive dominance.
- **Granting Contempt Powers:** Amending the Contempt of Courts Act of 1971 to empower the ECI to punish those who make **baseless, malicious accusations** against it would help preserve its institutional credibility and authority.
- **Financial and Administrative Autonomy:** To guarantee absolute financial independence, the budget of the Election Commission of India should be directly "charged" upon the Consolidated Fund of India.
- **Mandatory Cooling-Off Period:** To eliminate the lure of future political patronage, a mandatory cooling-off period or a **complete constitutional bar on post-retirement government appointments (such as state Governorships) must be instituted** for retiring Chief Election Commissioners and Election Commissioners.
- **Transparent Electoral Roll Revisions:**
  - To prevent arbitrary voter deletions, SIR exercises should include transparent data audits, regular publication of supplementary lists, and strong grievance redressal mechanisms.
  - Upholding transparency and addressing stakeholder **concerns are essential to maintain trust in elections, the bedrock of democracy.**
- **Technological Safeguards:**
  - Mandating statistically significant cross-verification of **Electronic Voting Machines with Voter-Verifiable Paper Audit Trails**, especially in cases of data discrepancies, is vital to restoring and maintaining absolute public trust in the electoral machinery.

"The independence of the Election Commission is central to India's democratic framework. " Examine the constitutional safeguards and emerging challenges to its autonomy.

Drishti Mains Question

India's Defence Forces Vision 2047

The Defence Minister of India unveiled the **"Defence Forces Vision 2047: A Roadmap for a Future-Ready Indian Military"**. Prepared by the Headquarters Integrated Defence Staff, this vision document outlines a comprehensive strategy to transform the Indian military into an integrated, agile, and multi-domain force by the centenary of India's independence.

Defence Forces Vision 2047

- **About:** The document acts as a **"meta-strategy,"** explicitly acknowledging that national security in the 21st century relies as heavily on industrial capacity and technological ecosystems as on direct battlefield capabilities.
- **The Three Core Pillars:**
  - **Technological Advancement:** Leveraging **Artificial Intelligence (AI),** autonomous systems, **quantum sensing**, and advanced surveillance to maintain an edge.
  - **Jointness and Synergy:** Deepening operational synergy across the Army, Navy, and Air Force to avoid duplication and optimize resources.
  - **Multi-Domain Capability:** Operating seamlessly across traditional (land, sea, air) and emerging (cyber, space, cognitive) domains.
- **Key Proposals & Structural Reforms:**
  - **Specialized Next-Gen Forces:** The roadmap proposes the creation of dedicated structures including a **Space Command, Cyber Command, Data Force, Drone Force, and a Cognitive Warfare Action Force**.
  - **Doctrinal Shift:** Proposes transition from net-centric warfare to **data-centric warfare**. The goal is to move from "information superiority" to "decision superiority" in the battlefield.
  - **Mission Sudarshan Chakra:** Under **Mission Sudarshan Chakra**, the vision proposes expanding ballistic missile and air defence systems to protect India's strategic, economic, and civilian assets from evolving aerial threats.
  - **Phased Implementation:** The vision outlines a **three-phase transition** identifying short-term, mid-term, and long-term priorities culminating in a "world-class military" between 2040 and 2047.
    - ❖ **'Era of Transition' (till 2030):** Restructuring the military, strengthening deterrence, and boosting indigenous technologies like drones.
    - ❖ **'Era of Consolidation' (2030–2040):** Integrating cyber and space warfare and developing layered air-missile defence.
    - ❖ **'Era of Excellence' (2040–2047):** Creating a fully integrated, self-reliant all-domain military force.

Significance

- **Changing Character of Warfare:** Conflicts (**US-Iran tensions**, **Russia–Ukraine War**) show how drones, loitering munitions, and cyber attacks dominate modern battlefields. This vision prepares India for **hybrid, proxy, and "grey-zone" warfare.**
- **Geopolitical Realities:** India's expanding strategic interests in the **Indo-Pacific region,** coupled with persistent border friction, require a shift from a strictly defensive posture to proactive deterrence.
- **Economic-Security Nexus:** By intertwining the military roadmap with the goal of *Viksit Bharat* (Developed India) by 2047, the government acknowledges that military modernization cannot be sustained by imports; it requires a booming domestic industrial base.

Challenges in India's Defence Sector

- **Heavy Dependence on Imports:** India remains one of the **world's largest arms importers**, accounting for about **8. 2–8. 3% of global arms imports during 2021–2025**, making it the **second-largest importer globally** according to SIPRI.
  - Russia alone still supplies around **40% of India's arms imports**, followed by France, Israel, and the United States.
  - India produces roughly **70–75% of its defence equipment domestically**, meaning a significant portion still relies on imports.
- **Budgetary Pressures:** India's defence spending is about **1. 9–2. 2% of GDP**, and a large share goes toward salaries and pensions rather than modernization and capital acquisition.
- **Delayed Structural Reforms:** The rollout of **Integrated Theatre Commands (ITCs)** has faced inter-service friction and institutional resistance.
- **Slow Procurement and Technological Gaps:** Bureaucratic delays and complex procurement procedures often slow down defence acquisition, while India still lacks critical technologies such as **jet engines, advanced semiconductors, and stealth systems**, affecting military modernization.
- **Technological Asymmetry:** India still heavily relies on foreign Original Equipment Manufacturers (OEMs) for

critical niche technologies, such as advanced jet engines and semiconductor chips.

Measures Taken to Boost Defence Capabilities

- **Capital Budget Earmarking:** Around 75% of the Capital Acquisition budget is reserved for domestic defence industries in FY 2026-27 for procurement from domestic industry, directly boosting the local manufacturing ecosystem.
- **Institutional Frameworks:** The creation of the **Chief of Defence Staff (CDS)** and the Department of Military Affairs (DMA) to promote jointness in operations and procurement.
- **Positive Indigenisation Lists:** Banning the import of hundreds of weapons, platforms, and sub-systems to forcefully pivot procurement toward indigenous sources.
- **Innovation Ecosystem:** Platforms like **iDEX (Innovations for Defence Excellence)** and the **Make-I/II frameworks** are enabling start-ups and private firms to participate in R&D, especially in AI, drones, and space-based ISR (Intelligence, Surveillance, and Reconnaissance).
- **Defence Corridors & Exports:** Two **Defence Industrial Corridors** have been established in Uttar Pradesh and Tamil Nadu.
  - Consequently, defence exports have grown exponentially, with the government targeting Rs 50, 000 crore in exports by FY29.

Measures Needed to Realize India's Defence Forces Vision 2047

- **Accelerating Theaterisation and Jointness:** Overcoming institutional resistance to structural reforms is paramount. The swift rollout of **ITCs must be prioritized to pool resources and ensure seamless interoperability.**
- **Pivoting to Technological Sovereignty:** To move from being an assembler to an innovator, India must aggressively pursue **indigenous development** in critical "chokepoint" technologies under **Defence Acquisition Procedure (DAP) 2020.**
  - This requires incentivizing **private sector R&D and securing deep technology-transfer agreements.**
- **Instituting Agile Procurement Models:** Traditional bureaucratic acquisition cycles are too slow for the rapid lifecycle of emerging technologies.
  - India must implement an **"agile acquisition pathway"** specifically designed for software, AI, and cyber tools.
- **Budget Rationalization and Innovative Funding:** The immediate focus must be on optimizing existing capital.
  - This includes exploring alternative funding models like **public-private partnerships (PPPs)** for defence infrastructure and leveraging defence bonds.
- **Cultivating Specialized Human Capital:** The shift to data-centric warfare requires a fundamental change in personnel management.
  - The military needs to aggressively recruit and retain specialists in AI and cognitive warfare, potentially introducing lateral entry avenues for civilian tech experts.
- **Expanding the Geostrategic Export Footprint:** A booming domestic industrial base relies on economies of scale.
  - India must build upon its recent export successes by aggressively marketing its battle-tested indigenous platforms to friendly nations in the Global South.

Defence Forces Vision 2047 is not merely a military modernization plan, but a meta-strategy integrating national security with economic development. Discuss.

Drishti Mains Question

Securing India in the Age of AI Warfare

Growing use of **AI** in **defence, surveillance, and geopolitics** has intensified debates on **AI sovereignty**, making it a **national security priority for countries like India**.

Use of AI in Promoting National Security

- **Military precision: AI integrated into combat operations**. Examples include **US military's use of Anthropic's Claude in Operation Roaring Lion** and **Israel's "Where's Daddy?"** AI tool for tracking Hamas terrorists, aimed at reducing collateral damage.
- **Strengthening C4ISR: AI integrated into C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance)** to process large data, enable predictive analytics, and accelerate decision-making.
  - Used in **maritime domain awareness** to detect **"dark ships" involved in smuggling or illegal fishing**.
- **Countering asymmetric threats: AI-powered drones and autonomous weapons** could enhance **terrorist capabilities**, driving the need for **AI-based counter-drone and surveillance systems**.
- **Protecting critical infrastructure:** AI detects anomalies in power grids and networks for proactive cyber defence and strengthens **security of military bases and nuclear facilities** through **AI-powered video analytics detecting suspicious behaviour**.
- **Countering disinformation: AI detects coordinated disinformation campaigns, bot networks, and deepfakes**, helping protect public discourse and societal trust.

As of **March 2026**, **AI sovereignty** is a **central policy focus**, driven by the **IndiaAI Mission** and highlighted at the **India AI Impact Summit 2026** amidst **US-China AI rivalry**.

Threats to India's National Security from the Weaponisation of AI

- **Threat to military dominance: AI-driven asymmetric warfare** through **LAWS, drone swarms, and AI-enhanced A2/AD strategies by China** in the Indian Ocean Region.
  - **System glitches along LoC/LAC** may trigger **inadvertent escalation**.
  - **Example:** In early 2026, **China demonstrated control of a swarm of 200+ drones by a single soldier** for reconnaissance and strike missions.
- **AI-enabled cyber threats: Adaptive cyber-attacks on power grids, financial systems, and defence networks**.
  - **Example:** Pakistan's **"Iron Wall" cyber attack** (May 2025) caused power grid failure across 23 states.
- **Weaponisation of information: Deepfakes and AI-driven disinformation** can **exacerbate communal tensions, erode institutional trust, and influence elections**.
  - **Example:** AI-generated deepfakes in the 2024 general elections spread disinformation and incited violence.
- **Threat to economic sovereignty:** AI-driven cyber espionage can steal intellectual property from pharma, space, and IT sectors and **map supply chains to disrupt defence production**.
  - **Example: Chinese group APT41** targeted **Indian and multinational pharma firms** to steal **drug formulas (diabetes, obesity treatments)**.
- **AI-powered bioweapons:** AI combined with synthetic biology could enable **design of novel pathogens, toxins, or gene-editing payloads** that **bypass vaccines or target specific populations**.
- **Data poisoning: Hidden biases or backdoors** can cause **critical systems to malfunction** (e. g. , facial recognition missing terrorists, autonomous vehicles misclassifying obstacles) **without visible hacking signs**.

Steps to Promote National Security in the Age of AI Weaponisation

- **Indigenous defence AI ecosystem:** Establish a strong **Defence AI Agency (DAIA)** and launch **National Defence AI Missions** such as **Project Drona** (AI drone swarms), **Project Kavach** (cyber defence), **Project Netra** (battlefield surveillance).
- **Secure Nation's AI backbone:** Create a **National Secure Data Set** for training algorithms and invest in sovereign AI infrastructure, including domestic semiconductors and **high-performance computing centres in India**.
- **Infrastructure resilience:** Develop **offensive cyber capabilities** and mandate **"AI-safe" design standards for critical infrastructure** (e. g. , power plants, grids).
- **Cognitive security:** Establish a **National Cognitive Security Centre** for deepfake detection, bot network neutralisation, and digital literacy campaigns.
- **Robust regulation:** Frame **guidelines for LAWS and AI-driven cyber warfare**, ensuring **human oversight**.
- **Global partnerships:** Strengthen alliances (e. g. , **India AI Impact Summit 2026**) for **technology transfer** and promote **equitable global AI norms**.

Examine the concept of AI sovereignty. Why is it becoming a central pillar of India's national security policy, and what challenges does India face in achieving it?

Drishti Mains Question

National Counter-Terrorism Policy and Strategy: PRAHAAR

MHA unveiled India's first-ever National Counter-Terrorism Policy and Strategy (**PRAHAAR)**.

PRAHAAR

- **PRAHAAR** is built on seven pillars:
  - **P** – Prevention of terror attacks
  - **R** – Response (swift & proportionate)
  - **A** – Aggregating internal capacities
  - **H** – Human rights & Rule of Law
  - **A** – Attenuating conditions enabling terrorism
  - **A** – Aligning international efforts
  - **R** – Recovery & resilience

Key Highlights

- **Prevention:** Intelligence-led approach (MAC, JTFI); disrupt terror funding, OGWs, arms nexus; tech-enabled border & critical infrastructure security.
- **Response:** Local police first responders; CAPFs & NSG for elite intervention; NIA ensures investigation & prosecution.
- **Aggregating Capacities:** Modernization, standardized training (BPR&D, CAPFs, NSG); interoperable multi-agency framework.
- **Human Rights Framework:** Based on Rule of Law; UAPA, PMLA, new criminal codes; judicial safeguards & due process.
- **Attenuating Conditions:** De-radicalization, community engagement, socio-economic empowerment, prison reform.
- **International Alignment:** MLATs, Extradition Treaties, UN coordination; deny safe havens globally.
- **Recovery & Resilience:** Whole-of-society approach; public-private partnership; rapid restoration & long-term resilience.

Cross-Border and Emerging Terror Threats

- **State-Sponsored Terrorism:** Persistent cross-border support to jihadi outfits and affiliated groups planning and executing attacks in India.
- **Global Terror Linkages:** Groups such as Al-Qaeda and ISIS attempt to incite violence through sleeper cells and online radicalisation.
- **Use of Advanced Technologies:** Drones and modern tools are used by handlers abroad to facilitate attacks, especially in Punjab and Jammu & Kashmir.
- **Criminal-Terror Nexus:** Terror groups increasingly collaborate with organised crime networks for logistics, recruitment, and funding.
- **Digital Ecosystem Misuse:** Social media, encrypted messaging apps, **dark web**, and cryptocurrencies enable propaganda, coordination, and anonymous financing.
- **CBRNED Threats:** Risks of terrorists accessing Chemical, Biological, Radiological, Nuclear, Explosive, and Digital (CBRNED) materials remain a major concern.
- **Drone and Robotics Risks:** Potential misuse by state and non-state actors for surveillance and lethal operations.
- **Cyber Threats:** Criminal hackers and hostile nation-states continue to target India through cyber-attacks on critical systems.

Implementation Challenges of PRAHAAR Strategy

- **Federal Friction in Execution:** "Public Order" and "Police" are subjects under the **State List of the Indian Constitution.**
  - Centralizing the anti-terror structure can lead to jurisdictional overlaps and center-state operational delays.
- **Technological and Capacity Asymmetries:** Local police (the first responders) often lack the funding, cyber-training, and advanced infrastructure needed to tackle modern threats like drones and the dark web.
  - Upgrading these state units requires massive financial outlays that many states cannot independently afford.
- **Subjectivity in De-radicalization:**
  - The policy proposes a **"graded police response"** based on the level of an individual's radicalization.
  - Because measuring **radicalization is inherently psychological and subjective, lacking clear legal benchmarks** could lead to inconsistent application, arbitrary profiling, or localized grievances.
- **Concerns Regarding Stringent Security Laws:** Heavy reliance on stringent security laws often brings up concerns regarding low conviction rates and prolonged pre-trial detentions.
- **Inter-Departmental Silos:** Despite advocating for a "Whole-of-Government" approach, the Indian security apparatus has historically struggled with institutional **turf wars**.
  - Ensuring seamless, real-time intelligence sharing and operational synergy among local police, central armed police forces, and national intelligence networks without bureaucratic delays remains a practical hurdle.

Measures to Strengthen the PRAHAAR Strategy

- **Inter-Agency Coordination:** Strengthen intelligence-sharing mechanisms and regularly update counter-terror laws to address emerging threats.
- **Capacity Building:** Enhance State and UT Counter-Terrorism Units and Anti-Terrorism Squads (ATS) with **uniform structures, modern resources, advanced training, and standardised investigation methods.**
  - Embed legal experts throughout terror investigations to improve prosecution quality and conviction rates.
- **Global Cooperation:** Expand national, regional, and international collaboration to combat transnational terrorism and advance a comprehensive global framework aligned with PRAHAAR.
- **Technological Countermeasures:** Invest in technology and partner with the private sector to counter terrorist misuse of **Information and Communication Technology (ICT)** and address evolving digital threats.
  - Amend **IT Rules** to hold social media platforms accountable for promoting extremist content and mandate independent radicalisation audits.
  - Integrate Crypto-Based Financing tracking tools into the **Central Bank Digital Currency framework** and enforce strict KYC norms on decentralized finance platforms to curb terror funding.
  - Use **big data** fusion and machine learning to detect suspicious financial and behavioural patterns before attacks materialise.
- **Specialised Terror Prosecution:** Create a dedicated cadre of **federal prosecutors trained in cyber forensics and anti-terror laws** to improve conviction rates.
- **Digital Evidence Sharing:** Establish fast-track international agreements for real-time access to encrypted data during critical investigations.

Evaluate the significance of the 'PRAHAAR' policy in the context of India's evolving internal security challenges.

Drishti Mains Question

Economic Scenario

India's Infrastructure Financing

India has undergone a **paradigm shift** in **infrastructure development**, transitioning from a **budget-reliant model** to a sophisticated ecosystem of **public-private partnerships (PPP)** and innovative financial instruments.

Key Pillars of Transformation in Infrastructure Financing

- **Exponential Capex Growth:** Public capital expenditure has surged from **Rs 2 lakh crore** in FY 2014–15 to a Budget Estimate of **Rs 12. 2 lakh crore** in FY 2026–27, creating a massive **multiplier effect** on economic demand and job creation.
- **Urban Growth Engines:** The introduction of **City Economic Regions (CERs)** with an allocation of Rs **5, 000 crore each** aims to develop **Tier II and Tier III cities** (population >5 lakh) through a reform-linked **challenge mode**.
- **Institutional Anchors:**
  - **NIIF (National Investment and Infrastructure Fund):** Manages **USD 4. 9 billion** in Assets Under Management (AUM), partnering with global **sovereign wealth funds** (e.g., Temasek) to fund greenfield and brownfield projects.
  - **NaBFID (National Bank for Financing Infrastructure and Development):** Acts as a premier **Development Finance Institution (DFI)**, providing long-term non-recourse finance and **Partial Credit Enhancement (PCE)** to improve bond ratings.
  - **IRFC (Indian Railway Finance Corporation):** Functions as the dedicated market borrowing arm, financing nearly **75% of the rolling stock** for Indian Railways.
- **Asset Monetization Models:**
  - **InvITs (Infrastructure Investment Trusts):** Enabled developers to unlock Rs **1.5 lakh crore** by pooling operational assets, allowing retail investors access to infrastructure yields.
  - **REITs (Real Estate Investment Trusts):** Facilitates monetization of government-owned real estate; the **Union Budget 2026–27** specifically introduced **dedicated REITs** for **Central Public Sector Enterprises (CPSEs)**.
- **Risk Mitigation:** The newly launched **Infrastructure Risk Guarantee Fund** provides **partial guarantees** to lenders, effectively **crowding in private capital** by reducing default risks during early-stage construction.
- **Debt Market Reforms:** Measures include the **Electronic Book Provider (EBP)** framework for transparency and the launch of **ESG Financing instruments** (Green and Sustainability Bonds) to align with global climate goals.

Status of Infrastructure Development in India

- **Roads and Highways:** The National Highway network has expanded by over **60% since 2014**, reaching **1, 46, 572 km** by late 2025. **Access-controlled expressways** have surged from a mere 93 km in 2014 to over **5, 000 km** today, with a construction pace averaging **33–34 km per day**.
- **Railway Modernization:** The broad-gauge network is **99-100% electrified**, with **Vande Bharat train** services exceeding **160 operational trains** by early 2026. The **Union Budget 2026-27** announced **7 new High-Speed Rail corridors** (e. g. , Mumbai-Pune, Delhi-Varanasi) to act as "**growth connectors**. "
- **Aviation:** The number of operational airports has doubled from **74** in 2014 to **164** by **2025**, with plans to add 120 more over the next decade under the **UDAN scheme**.
- **Ports:** Total port capacity has nearly doubled from 1, 400 million metric tonnes per annum in 2014 to **2, 762 million metric tonnes in 2025**. Under the **National Waterways project**, 111 waterways have been declared as **National Waterways** (**NWs**).
- **Urban Economic Regions** (**CERs**): A flagship 2026 initiative targeting cities with populations >5 lakh, providing **Rs 5, 000 crore per region** over 5 years via a "**challenge mode**" to unlock agglomeration-led growth.
- **Digital and Green Transition: Data Centers** (with more than 5 megawatt) and **Energy Storage Systems** now hold "**Infrastructure Status, "** benefiting from a **tax holiday until 2047** to promote AI-driven management and climate-resilient growth.

Challenges Associated with Infrastructure Financing in India

- **Public Fund Dependence:** An estimated **USD 2. 2 trillion** investment in infrastructure development is crucial for India to expand its GDP to **USD 7 trillion by 2030**. Investment opportunity for the **private sector** in India's infrastructure development ranges from **USD 103 billion to USD 324 billion**.
  - However, private capital remains **underutilized**, with institutional investors (insurance and pension funds) allocating **only around 6% to infrastructure** due to perceived risks.
- **Land Acquisition Bottlenecks:** Cited as the single largest cause of **project delays**, land issues account for nearly **35% of unresolved project hurdles** reviewed under the **PRAGATI Platform**. High costs (up to 4x market value in rural areas) and legal disputes over titles remain primary friction points.

- **Asset-Liability Mismatch in Banking:** Banks primarily rely on short-term deposits, but infrastructure projects require **long-gestation loans (20-30 years)**. This structural mismatch limits the banking sector's ability to fund **greenfield (new) projects** without risking systemic instability.
- **Asset-Light vs. Substantial Risk Models:** There is a persistent trend toward **"risk-light" models** where private participation is limited. Global investors remain cautious about **early-stage construction risks**, preferring **"brownfield" (operational)** assets like those in **InvITs and REITs** over new, high-risk developments.
- **Fragile Municipal Bond Market:** While central and state funding is robust, the **Municipal Bond** market remains shallow. **Urban Local Bodies (ULBs)** often lack the **credit ratings** or financial transparency required to raise independent capital, leading to an over-reliance on government grants.
- **Weak Project Preparation and Bankability:** Many projects **lack robust feasibility studies**, detailed risk allocation, or realistic revenue models, resulting in delays, cost overruns, and financing stress. Insufficient **upfront de-risking** discourages lenders and investors.

Steps Needed to Ensure Sustainable Infrastructure Financing in India

- **Expansion of Asset Monetization:** Recycle capital from operational **"brownfield" assets** into new **"greenfield" projects** through the **National Monetization Pipeline (NMP)** to create a self-sustaining investment loop.
- **Institutional De-risking:** Deepen the **corporate bond market** by utilizing **Partial Credit Enhancement (PCE)**, which allows infrastructure projects to **"uplift" their credit ratings** and attract low-cost, long-term capital from insurance and pension funds.
  - Operationalize the **Infrastructure Risk Guarantee Fund** to provide partial guarantees to lenders, specifically de-risking the **high-stakes construction phase** and **"crowding-in"** private developers who are currently risk-averse.
- **Green & Integrated Finance:** Mainstream **Green Bonds** and **Blue Bonds** to finance climate-resilient infrastructure, such as **coastal protection and green hydrogen hubs**.
  - Leverage **Blended Finance models** where government **"seed capital"** or grants are used to mobilize much larger volumes of private commercial credit for socially critical but low-margin projects like **rural piped water or sewage treatment**.
- **Reform-Linked Urban Financing (CERs):** Move away from unconditional grants to a **"Challenge Mode"** for **City Economic Regions**. Cities must implement property tax reforms and digital governance to access the required finance.
  - Expand the use of **InvITs and REITs** beyond roads and power into newer sectors like **warehousing, data centers**, and **urban transit** to tap into domestic household savings and global retail capital.
- **GIFT City as a Global Gateway:** Leverage the **International Financial Services Centre (IFSC)** in Gujarat to attract **foreign direct investment (FDI)** via specialized investment arms and **tax-neutral** sustainable finance instruments.

What are the major challenges in mobilizing private investment for infrastructure in India? Suggest reforms.

Drishti Mains Question

IPOs for Profitable RRBs

A **Parliamentary panel** has recommended launching **Initial Public Offerings (IPOs)** for highly profitable **Regional Rural Banks (RRBs)** to **unlock their value**, attract market capital, and enforce stronger **corporate governance** standards.

- An IPO is the process by which a privately held company offers its **shares** to the **public for the first time**, thereby transitioning into a **publicly traded company**. This enables the company to **raise capital** from a broad base of investors while allowing its shares to be **listed and traded** on a **stock exchange**.

Key Observations of the Parliamentary Panel Regarding RRBs

- **Fiscal Performance:** RRBs recorded a **consolidated net profit of Rs 7, 720 crore** in the first nine months of FY 2025-26, bringing **gross non-performing asset (GNPA)** to a 13-year low of **5. 4%**.
- **Successful Consolidation:** Following the **4th phase of RRBs consolidation** under the **'One State-One RRB' policy**, the number of RRBs has been reduced from a peak of **196 to 28** in 2025-26 across 26 states and 2 UTs (Jammu & Kashmir and Puducherry).
- **Sectoral Risks:** Despite overall growth, **priority sector education loans** show a high **GNPA of 13. 8%**. The panel suggests using **AI-driven Early Warning Signals (EWS)** and the **Credit Guarantee Fund Scheme for Education Loans (CGFSEL)** to mitigate this.

Regional Rural Banks

- **About:** RRBs are **specialised scheduled commercial banks** established to provide accessible banking and credit services primarily in **rural and semi-urban areas**. They were designed to **bridge the gap** between the sophisticated commercial banking sector and the credit needs of the rural poor.

- **Establishment and Legal Status:** RRBs were created based on the recommendations of the **Narasimham Working Group (1975)**. The first RRB, **Prathama Bank**, was set up on 2nd October, 1975. This was later formalized under the **Regional Rural Banks Act, 1976**.
- **Purpose:** To develop the rural economy by providing credit for agriculture, trade, commerce, and industry, particularly to **small and marginal farmers, agricultural laborers, and artisans**.
- **Ownership Structure:** Under the **RRB Act, 1976** (amended in 2015), the current shareholding stands at **Central Government (50%)**, **Sponsor Banks (**a Public Sector Bank, **35%)**, and **State Governments (15%)**.
  - Even after raising market capital, the combined shareholding of the **Centre and Sponsor Banks cannot fall below 51%**, ensuring continued public sector character.
- **Key Characteristics and Operations:**
  - **Area of Operation:** Unlike Nationalized Banks, the area of operation for an RRB is limited to a specific region comprising **one or more districts** within a state.
  - **Priority Sector Lending (PSL):** RRBs have a much higher mandate for rural credit. While commercial banks usually have a **40% Priority Sector Lending (PSL) target**, RRBs must direct **75% of their total credit** toward Priority Sectors (e. g. , agriculture, **MSMEs**).
  - **Hybrid Nature:** They combine the **local feel and familiarity** of cooperative banks with the **professionalism and resource mobilization** capacity of commercial banks.
- **Regulation and Supervision:** RRBs are regulated by the **Reserve Bank of India (RBI)** under the **Banking Regulation Act, 1949**, and must maintain a **Capital to Risk-Weighted Assets Ratio (CRAR)** of at least 9%.
  - **NABARD (National Bank for Agriculture and Rural Development)** provides refinance facilities, conducts inspections, and supervises their performance.
  - For taxation, they are treated as **cooperative societies** under the **Income Tax Act, 1961**.

One State-One RRB Policy

- **About:** The **'One State-One RRB'** policy is a strategic initiative of the **Department of Financial Services** under the Ministry of Finance to consolidate multiple **RRBs** within a single state into a single, unified entity.
- **Key Objectives:** Key objectives include achieving **economies of scale**, eliminating **redundancies** from multiple administrative structures, rationalising costs, strengthening the capital base and financial resilience, and accelerating **credit flow to priority sectors**, particularly **agriculture**.
- **Phase of Consolidation:** The **consolidation process** began in **2005** based on the recommendations of earlier committees, notably the **Vyas Committee (2001)**. Till early 2026, the government has carried out **4 phases** of consolidatio
  - Consolidations were executed under **Section 23A** of the RRB Act, 1976, through notifications issued by the Central Government.

Washington Consensus

The **Washington Consensus (WC)**, once considered a **"talisman" of economic policy,** is increasingly viewed as outdated in today's **multipolar, digital, and geopolitically fragmented world**.

- Recent global developments, such as **protectionism, industrial policy revival, supply chain restructuring, and economic nationalism,** have revived debates about the relevance of the WC model.

Washington Consensus (WC)

- **About:** WC refers to a set of **economic policy prescriptions** aimed at promoting **macroeconomic stability and market-oriented reforms in developing countries**.
  - The term was **coined by economist John Williamson in 1989** to describe the policy approach advocated by **Washington-based institutions such as the IMF, the World Bank, and the US Treasury**.
- **Core Principles:** The Consensus essentially promoted a neoliberal ideology of **Liberalisation, Privatisation, Globalisation, and Deregulation** to encourage **market-led economic growth**.
- **WC as a "Talisman" of Economic Policy:** For decades, the Washington Consensus was viewed as a "talisman" or a magic formula for economic prosperity.
  - **Perceived Universal Solution:** In the 1980s–90s, when many developing countries faced **debt crises, hyperinflation, and slow growth,** the WC was promoted as a standard policy formula of **liberalisation, privatisation, and globalisation, s**een as the undisputed path to macroeconomic stability and economic growth.
  - **India's 1991 Reforms:** India's historic **1991 LPG (Liberalisation, Privatisation, Globalisation)** reforms were heavily influenced by these principles, which helped pull the country out of a severe **Balance of Payments (BoP) crisis and ushered in an era of high growth.**
  - **Trickle-Down Growth Belief**: WC was based on the idea that free markets and reduced government intervention would generate growth, **which would eventually reduce poverty through "trickle-down" effects.**

- **Global Integration:** It successfully drove the era of **hyper-globalisation,** leading to the rapid expansion of **global supply chains** and massive wealth creation in **emerging markets like East Asia.**
- **Institutional Support:** It was strongly promoted by regional bodies like the **Asian Development Bank (ADB)** and Bretton Woods institutions such as the IMF and World Bank, giving it the status of a dominant global economic policy framework.

Criticisms Regarding the Relevance of the WC

- **"One-Size-Fits-All" Approach:** The WC applied **uniform economic reforms to diverse developing countries**, ignoring their **local political, cultural, and institutional contexts**.
  - The WC was largely formulated in Western capitals without meaningful participation from developing countries, creating a policy mismatch with local realities.
  - While some countries like **East Asian economies and Chile** combined **market reforms with strong state intervention**, others particularly in **Latin America and post-Soviet states** experienced **debt crises, rising inequality, and social unrest**.
- **Severe Social Costs and Rising Inequality:** Policies of fiscal austerity and structural adjustment forced cuts in food subsidies, healthcare, and education, often increasing poverty, unemployment, and **wealth inequality.**
  - The assumption that **market-led growth would automatically reduce poverty** often failed, leading to **persistent inequality and social unrest**.
- **Financial Instability:** Rapid **capital account liberalisation** exposed economies to volatile **"hot money" flows**, contributing to crises such as the **Asian Financial Crisis (1997)** and the **Argentine economic crisis (2001)**.
- **Rejection of Industrial Policy:** The Consensus discouraged **state-led industrial strategies**, while **WTO rules such as TRIMs, TRIPS, and subsidy regulations** restricted developing countries' ability to **support domestic industries**.
  - Many successful economies like **the US, Japan, and South Korea** historically used **protectionism and subsidies** to build domestic industries.
- **Excessive Faith in Deregulation:** The model promoted **free markets and deregulation**, even in countries with **weak institutions and underdeveloped market systems**, particularly in **Africa and least developed economies**.
  - Critics argue developed countries **used protectionist policies during their development**, but later promoted **free-market rules for developing nations**, limiting their policy space.
- **Loss of Economic Sovereignty:** WC reforms were often imposed as **conditionalities for IMF and World Bank loans**, reducing **policy autonomy of developing countries** and creating a **democratic deficit**.
- **Backlash and Rise of Economic Nationalism:** Growing dissatisfaction with globalization has contributed to **protectionist policies, tariffs, and industrial subsidies**, even in countries that once championed free markets.

Alternative Models

- **The Beijing Consensus:** A model characterized by heavy state capitalism, political authoritarianism, and aggressive state-led investments (like the **Belt and Road Initiative**), which has appealed to many developing nations.
- **The Cornwall Consensus** (2021): Proposed during the **G7 summit**, this framework advocates for **state intervention to achieve broader societal goal**s such as environmental sustainability, social equity, and economic resilience rather than just market efficiency.

Measures India can Take in the Post-Washington Consensus Global Economic Order

- **Calibrated Industrial Policy:** India must continue to champion active state support for strategic sectors.
  - Initiatives like the **Production-Linked Incentive (PLI)** schemes for semiconductors, green energy, and pharmaceuticals are crucial steps to build **domestic manufacturing capacities.**
- **Building Supply Chain Resilience:** The focus must shift from pure cost-efficiency to **economic security.**
  - India should actively participate in **"friend-shoring" initiatives** and regional frameworks (like the **Indo-Pacific Economic Framework**) to **de-risk its supply chains and reduce over-reliance on single**, hostile geographies for critical raw materials.
- **Prioritizing Targeted Public Investment:** While macroeconomic stability and fiscal prudence remain important, they should not trigger **austerity measures that choke growth.**
  - The state must lead capital expenditure in physical infrastructure (via **PM Gati Shakti**), **digital public infrastructure (DPI)**, education, and healthcare.
- **Balancing Protectionism with Global Integration:** India must walk a tightrope using calibrated tariffs to protect its vulnerable **Micro, Small, and Medium Enterprises (MSMEs)** and infant industries, while simultaneously negotiating equitable, new-age **Free Trade Agreements (FTAs)** with developed economies.
- **Spearheading the Global South's Agenda:** India must leverage multilateral platforms like th**e G20, BRICS, and the Shanghai Cooperation Organisation (SCO)** to push for the **democratization of Bretton Woods institutions** and the WTO.

- The goal is to ensure that **future global economic frameworks are collaborative and reflect the realities of developing nations**, rather than being coercive.

- **Investing in the Green Transition:** As the **Cornwall Consensus** highlights the need for sustainable growth, India must accelerate its **National Green Hydrogen Mission and investments in indigenous renewable technologies.**
  - This ensures economic growth aligns with climate resilience without compromising developmental goals.

"The Washington Consensus, once considered the talisman for economic development, has lost its relevance in the contemporary geopolitical and economic landscape." Discuss.

Drishti Mains Question

Fiscal Health Index 2026

NITI Aayog released the **second edition of the Fiscal Health Index (FHI) 2026** to evaluate the fiscal performance of Indian states. The index provides a **data-driven framework to assess fiscal sustainability, compare state finances, and guide reforms**.

- The report gains significance as **global public debt has surged to about USD 102 trillion in 2024**, increasing pressure on public finances worldwide.

Fiscal Health Index

- **About:** The FHI is a comprehensive framework developed by NITI Aayog to assess and compare the fiscal performance of Indian states.
  - It evaluates states across five key pillars: **Quality of Expenditure, Revenue Mobilisation, Fiscal Prudence, Debt Index, and Debt Sustainability.**
  - The index uses data verified by the **Comptroller and Auditor General (CAG),** ensuring rigour and transparency.
  - The goal is to guide reforms, encourage evidence-based policymaking, and enable peer benchmarking across states.
- **FHI 2026:** It analyses fiscal trends over a decade from FY 2014-15 to FY 2023-24 providing a longitudinal perspective on how states are progressing or regressing.
  - The second edition expands coverage from **18 General Category States to also include 10 North-Eastern and Himalayan States,** making the index more inclusive of India's diverse fiscal landscape.
    - ❖ Sub-indicators for NE states have been refined to reflect their unique challenges such as geographic remoteness, sparse population density, limited own-revenue capacity, elevated committed expenditures, and greater dependence on Union transfers.
  - NE and Himalayan states are ranked **separately from general category states to ensure fair and contextually appropriate comparison.**
  - The edition retains the same five pillars for major states while improving the depth of narrative insights and trend analysis.

Major Sub-Indices	Minor Sub-Indices
1. Quality of Expenditure	1.1 Total Developmental Expenditure/Total Expenditure
	1.2 Total Capital Outlay/ GSDP*
2. Revenue Mobilisation	2.1 State Own Revenue/ GSDP*
	2.2 State Own Revenue/ Total Expenditure
3. Fiscal Prudence	3.1 Gross Fiscal Deficit/ GSDP*
	3.2 Revenue Deficit/ GSDP*
4. Debt Index	4.1 Interest Payments/Revenue Receipts
	4.2 Outstanding Liabilities/ GSDP*
5. Debt Sustainability	5.1 Growth Rate of GSDP* – Growth Rate of Interest Payments
* GSDP at current prices for the year 2023 24	

Key Highlights of the FHI 2026

18 Major States

- **Achievers (Top Performers):** Odisha, Goa, Jharkhand.
  - Odisha continues to lead the rankings, driven by controlled deficits, stable revenues, and improving scores year-on-year.
  - Achiever states share common traits: own-tax shares above 60%, capital outlay of around 4–5% of **Gross State Domestic Product (GSDP)**, **fiscal deficits** below 3% of GSDP, moderate debt levels under 25% of GSDP, and contained interest burdens.
  - Goa and Odisha record high State Own Revenue ratios, reflecting strong tax bases and greater fiscal autonomy.
- **Front-Runners:** Gujarat, Maharashtra, Chhattisgarh, Telangana, Uttar Pradesh, Karnataka.
  - Gujarat and Maharashtra maintain low debt levels and contain interest burdens, supporting fiscal sustainability.
- **Performers:** Madhya Pradesh, Haryana, Bihar, Tamil Nadu, Rajasthan.
  - **Bihar has improved from Aspirational to Performer**, signalling better deficit management.
  - Karnataka and Telangana moved from Front Runner to Performer, highlighting slight fiscal slippage.
  - **Tamil Nadu has slipped from Performer to Aspirational,** indicating emerging fiscal pressures.
- **Aspirational (Bottom Performers):** West Bengal, Kerala, Andhra Pradesh, Punjab.

- These states face persistent revenue and fiscal deficits, often breaching **FRBM (Fiscal Responsibility and Budget Management)** norms.
- Debt levels range between roughly 35–45% of GSDP, significantly above the national comfort zone.
- Committed expenditure accounts for about 50–60% of revenue receipts, leaving little room for developmental spending.
- Interest payments exceed 15–20% of revenue receipts, further compressing fiscal flexibility.
- Punjab, Kerala, and West Bengal face the most elevated debt and interest commitments among all major states.

North-Eastern and Himalayan States

- **Achievers:** Arunachal Pradesh and Uttarakhand.
  - **Arunachal Pradesh** ranks first due to **high expenditure quality, prudent debt management, and controlled deficits**, occasionally recording fiscal surpluses.
  - **Uttarakhand** performs strongly because of **relatively higher own-revenue mobilisation**, giving it greater fiscal autonomy.
- **Performers:** Assam, Meghalaya, Mizoram, Sikkim, Tripura.
  - **Tripura** performs well in **debt sustainability**, while **Mizoram** faces challenges due to weaker debt sustainability indicators.
  - **Sikkim** shows lower performance in **fiscal prudence**, and **Nagaland** struggles with **weak revenue mobilisation and expenditure quality**.
- **Aspirational:** Himachal Pradesh, Manipur, Nagaland.
  - **Himachal Pradesh and Manipur** remain at the bottom due to **weak revenue bases, high committed expenditure (salaries and pensions), and persistent deficits**.
  - Their **debt levels are high, around 40–50% of GSDP**, increasing debt-servicing pressures and limiting fiscal flexibility.

Significance of the Fiscal Health of States

- **Macroeconomic Stability of India:** States account for **about one-third of India's total government debt**, making their fiscal position crucial for national fiscal sustainability.
  - When states face fiscal stress, it can trigger **inflationary pressures, crowd out private investment**, and force the central government to step in with bailouts, destabilising the broader economy.
  - India's overall **public debt is around 82% of GDP**, so responsible fiscal management by states is essential to keep the debt burden under control.
- **Large Role in Public Spending and Development:** State governments undertake a large share of spending on **health, education, infrastructure, and welfare programmes**, which directly affect citizens' well-being and development outcomes.
  - Strong fiscal health allows states to invest more in **capital expenditure**, helping reduce **regional disparities** and supporting long-term economic growth.
- **Rising Debt and Fiscal Pressures:** The **debt-to-GSDP ratio of states increased from about 16. 7% in 2013-14 to nearly 23% in 2022-23**, indicating rising borrowing pressures.
  - The **combined fiscal deficit of states increased to around 3. 2% of GDP in FY25**, reflecting growing fiscal pressures on state governments which can threaten fiscal sustainability if not managed carefully.

Recommendations of the FHI 2026 to Strengthen State Finances

- **Boost Revenue:** Broaden the **GST tax base**, improve **tax compliance**, and strengthen **state own-tax revenues** such as property tax, excise, and stamp duties. Improve **digital tax administration and data analytics** to reduce tax evasion.
- **Control Spending:** Curb "committed expenditures" (like massive pension and salary bills) and rationalise subsidies to restore fiscal flexibility.
  - The **16th Finance Commission (2026–31)** called for **rationalising subsidies**, particularly unconditional cash transfers that account for **about 20. 2% of total subsidy spending**.
- **Improve Capital Outlay:** Focus on improving the composition and quality of capital spending to drive long-term growth.
- **Plan for the Future:** Follow **FRBM targets** by keeping the **state fiscal deficit around 3% of GSDP**.
  - The **16th Finance Commission (2026–31)** also recommended reducing the **Centre's fiscal deficit to 3. 5% of GDP by 2030–31** to maintain fiscal discipline and sustainable debt levels.
- **Enhance Transparency:** Implement tighter controls on off-budget borrowings, improve cash management, and utilize verified CAG data for better public financial management.

"Fiscal health of states is central to India's macroeconomic stability. " Examine in the context of the Fiscal Health Index 2026.

Drishti Mains Question

Farm Loan Waivers in India

The **Maharashtra government** announced the **₹35, 000 crore Punyashlok Ahilyadevi Holkar Farmers Loan Waiver Scheme**, waiving **overdue crop loans up to ₹2 lakh (as of 30th Sept 2025)** and giving **₹50, 000 incentives for regular repayers**.

- It is the **state's third loan waiver in a decade**, raising concerns about **credit discipline and fiscal stability**, with **RBI warning that frequent waivers weaken the rural credit system**.

Historical Context of Farm Loan Waivers

- **Farm Loan Waiver:** Government **repays farmers' agricultural loans to banks/financial institutions**.
  - Used during **agrarian distress** caused by **crop failures, natural disasters, or price crashes**.
- **Types of Farm Loan Waiver**
  - **Complete (Blanket) Waiver:** Entire **outstanding loan written off for all farmers**; rare due to **heavy fiscal burden**.
  - **Partial Waiver:** Loans waived **up to a fixed limit (e.g., ₹1–2 lakh per farmer)**; remaining amount must be repaid.
  - **Targeted Waiver:** Relief limited to **specific groups** (e. g. , **small and marginal farmers, disaster-affected areas, or certain loan types like crop loans**).
  - **Interest Waiver:** Only interest/penal interest waived; principal must still be repaid.
- **Central Initiatives**
  - **Agriculture and Rural Debt Relief Scheme (ARDRS), 1990:** Relief up to ₹10,000 per farmer; cost about ₹10,000 crore.
  - **Agricultural Debt Waiver and Debt Relief Scheme (ADWDRS), 2008**: Cost ₹52, 500 crore; provided higher relief to small and marginal farmers (up to 5 acres).
- **State-Led Surge:** Since **2014–15**, loan waivers increasingly announced by **state governments**.
  - States include **Andhra Pradesh, Telangana, UP, Maharashtra, Karnataka, Punjab, MP, Chhattisgarh, Jharkhand, and TN**. Total waivers around **₹2.5 lakh crore (~1.4% of 2016–17 GDP)**.
- **Total Expenditure:** Over **35 years**, **Centre and states combined** spent **~₹3 lakh crore** on farm loan waiver schemes.

Implications of Rising Farm Loan Waivers

Positives

- **Immediate Financial Relief:** Supports farmers during **crop failures, droughts, or price crashes**.
- **Breaking the Debt Trap:** Clearing **institutional loan arrears** helps farmers regain **eligibility for fresh credit**.
- **Boost to Rural Demand: Lower debt repayments** increase **disposable income & rural consumption**.
- **Psychological Relief:** In **2023, over 10,700 farming-sector suicides** were reported; waivers reduce **mental stress from debt** and may help **lower suicides linked to indebtedness**.

Negatives

- **Destruction of Credit Culture:** Anticipation of waivers leads farmers to **stop repaying loans**, encouraging **strategic defaults** and weakening **credit discipline**.
- **Spike in NPAs: Agricultural Gross NPAs reached 8. 44% (March 2019)**.
  - NPAs increased in **states announcing waivers in 2017–18 and 2018–19**, making banks risk-averse and reluctant to issue fresh loans.
- **Fiscal Squeeze: RBI Internal Working Group (2019)** noted waivers consume **0.1%–1.8% of state GSDP**, reducing funds for **agricultural infrastructure** such as **irrigation, cold storage, and rural roads**.
- **Poor Targeting & Implementation: SBI research–** only **~50% of eligible farmers** received promised waivers (**2014–2022**).
  - Often benefits **farmers with access to formal banking**, while landless labourers dependent on informal lenders are excluded.
- **Political Tool, Not a Cure:** Provides **temporary relief for one season**, leaving farmers exposed to the **same risks later**.
  - **8 out of 10 state waivers since 2014** were announced **within 90 days of election results**, indicating **political timing**.
- **Crowding Out of Private Investment: Higher government borrowing raises interest rates**, reducing **private sector credit and investment**.

Alternatives to Farm Loan Waivers

- **Direct Income Support:** Regular transfers to farmers; e.g., **PM-KISAN** ensures **predictable income support** and wider coverage.
- **Strengthening Crop Insurance:** Improve **coverage and timely payouts** under **PM Fasal Bima Yojana** to protect against **droughts, floods, pests, and extreme weather**.
- **Investment in Agricultural Infrastructure:** Increase spending on **irrigation, cold storage, warehousing, and rural logistics** to reduce post-harvest losses and improve productivity.
- **Improving Market Access and Price Realisation:** Strengthen **e-NAM**, expand **value chains & food processing** to ensure **better prices for farmers**.
- **Affordable Institutional Credit:** Expand **low-interest loans through Kisan Credit Card (KCC)** to reduce dependence on **informal lenders**.
- **Climate-Resilient Agriculture:** Promote **drought-resistant seeds, micro-irrigation, and climate-smart farming**.
- **Diversification of Rural Income:** Encourage **dairy, fisheries, horticulture, and agro-processing** to reduce **dependence on single crops**.

Farm loan waivers provide immediate relief but may weaken credit discipline and fiscal stability. Critically examine.

Drishti Mains Question

AI Impact Study on the Labour Market

A **labour market study by Anthropic** highlights AI's growing influence on employment, noting that although **LLMs can theoretically perform many professional tasks**, their **real-world use remains limited**.

- The study introduced **"observed exposure"**, a measure assessing **what AI is actually doing in professional settings**, beyond theoretical capability.

Key Findings

- **Gap b/w Theoretical Capability and Actual Usage: LLMs like Claude** could theoretically perform **94% of tasks** for **computer and math professionals**.
  - In practice, they are used for only **~33% of those tasks**.
- **Identification of High-Exposure & Insulated Sectors**
  - **Most exposed jobs:** computer programmers, customer service representatives, financial analysts; high exposure in **business, finance, computer science, engineering, law, office administration**.
  - **Insulated sectors: construction, agriculture, protective services, personal care**, with limited AI applicability.
- **Sharp Decline in Entry-Level Hiring:** Since **ChatGPT launch (2022)**, entry into **high-exposure occupations (age 22–25)** has fallen by **14%**.
  - Companies reducing **graduate programmes, entry-level analyst cohorts, and junior developer pipelines**.
- **Demographic Disparities in AI Exposure:**
- **Gender: 54. 4%** of the most exposed workers are **female**.
- **Education:** Workers with **graduate degrees** are **~4× more likely** to be in the **most exposed quartile**.
- **Race: White workers – 65. 1%** of the high-exposure group; **Asian workers nearly twice as likely** to be highly exposed.
- **Age:** Average age **42. 9 years**, slightly higher than workers in unexposed roles.
- **India-Specific Implications: Indian IT sector** faces risks; **Nifty IT index** and stocks of **TCS, Wipro, Infosys** have **declined over 20% in the past year**.
  - **Anthropic's automation tools** can automate data processing, contract analysis, compliance monitoring, customer support, challenging the **Indian IT services model**.
  - Structural challenges include **lack of mathematical and scientific skills** and **low R&D spending** compared to **US and China**.

Impact of AI on Employment

- **Automation of Routine Tasks: AI systems (robots, OCR, process automation)** perform standardised tasks **faster and more accurately**, replacing roles in **assembly lines, data entry, basic processing**.
  - *Example:* **Ola Electric laid off 1, 000 employees** after adopting AI tools.
- **Substitution in Customer Service: Generative AI chatbots and virtual agents** handle **queries, complaints, and transactions**, reducing need for **call-centre staff**.
  - *Example:* **LimeChat** enables firms to cut **~80% workforce** for **10, 000 monthly queries**.
- **Reduced Demand for Entry-Level Technical Skills: AI coding assistants (GitHub Copilot)** and **automated testing tools** generate and maintain code faster than **junior developers**.
  - Leads to **"hourglass effect"**—high demand for **senior specialists** but fewer **mid/entry-level jobs**.
  - *Example:* **IT sector saw 50, 000+ job cuts in 2024**, mainly **entry-level programmers**.
- **Devaluation of Creative Work: AI tools (DALL-E, Midjourney)** generate **logos, designs, content**, reducing demand for **graphic designers and writers**.
  - Human role shifts to **editing AI output** rather than creating original work.

Measures to Make Employment Resilient against the Growing Impact of AI

- **Revolutionize Education:** Introduce **AI literacy in schools** covering data, algorithms, and ethics, integrated with math and social studies.
- **National Re-skilling Pipeline:** Create **"Future Skills" Tax Credit** to incentivize firms to up-skill workers in prompt engineering, data annotation, robotics maintenance.
- **Adopt "Cobotics":** Promote **human–AI collaboration** instead of full automation (e. g. , **AI tools assisting call centre agents**).
- **Protect Apprenticeship Economy:** Create **IT sector sandbox environments** where junior employees use AI but are evaluated on innovation and value addition.
- **Cyber-Resilience for MSMEs:** Provide subsidised **"AI Firewall as a Service"** for **MSME clusters** (e. g. , Hyderabad pharma, Surat textiles) to prevent **IP theft**.
- **Portable Social Security:** Enforce **Social Security Code, 2020**, so gig workers' contributions remain portable, ensuring pension and health insurance.

Discuss the various mechanisms through which Artificial Intelligence poses a threat to employment. Illustrate your answer with relevant India-specific examples.

Drishti Mains Question

India's Income Mobility

India's income mobility (2014–25) shows a **declining trend**, with **more households moving down the income ladder than rising up**. This raises concerns about **inclusive growth** and highlights increasing **economic vulnerability across rural areas, caste groups, and religious communities**.

Key Trends in India's Income Mobility

- **Downward mobility doubled: 14% (2015) → 26.8% (2025)**; by **2025, over 1 in 4 households** were worse off than **2014**.
- **Upward mobility lagging:** Increased **14. 1% → 23. 5%**, but remained **below downward mobility**.
- **Shrinking middle:** Households staying in the **same income tier fell from >70% to <50%**.
- **Rural vulnerability: ~29% rural households** moved down the income ladder by **2025**; downward mobility exceeds upward movement.
- **Urban pattern:** Higher upward mobility than rural areas, but downward mobility also increased, indicating **widespread economic insecurity**.
- **Caste factor:** Economic mobility strongly shaped by **caste-based structural inequalities and unequal opportunities**.
  - **Downward mobility:** Increased across all groups, with **sharp rises among OBC and SC households**.
  - **SC households:** Upward mobility remained weak and uneven (2014–2025).
  - **ST households: Lower downward mobility** and occasional stronger upward movement, linked to **regional development and targeted interventions**.
- **Religious groups:** Downward mobility increased across all groups, most pronounced among **Hindu & Muslim households**.
  - **Sikh & Christian households**: Stronger upward mobility early in the decade, but momentum weakened later.

Causes for Downward Shift in India's Income Mobility	Suggestions
■ **Rising income inequality: Top 10% earn 58% of national income, bottom 50% receive 15%; top 10% hold ~65% of wealth, top 1% ~40%.** Limits access to **capital, networks, and quality education**.	■ **Strengthen rural livelihoods:** Expand **PM-KUSUM**, promote **FPOs**, and invest through the **Agriculture Infrastructure Fund** to stabilise farm incomes and reduce income volatility.
■ **Impact of Covid-19: Uneven post-pandemic recovery** with growth in tech and finance, while tourism, retail, hospitality faced lasting income losses, creating a **K-shaped recovery**.	■ **Boost MSMEs & informal sector formalisation:** Improve credit via **PM MUDRA Yojana** & **ECLGS**, and formalise businesses through **Udyam Registration** to generate stable employment.
■ **Neglect of informal sector & MSMEs: ~80–85% workforce informal**; **MSMEs** (**~30% of GDP, 11+ crore jobs**) face credit constraints, delayed payments, weak demand, reducing stable jobs & wages.	■ **Labour-intensive manufacturing:** Use **PLI Scheme**, **Make in India**, and **PM MITRA Parks** to expand **textiles, food processing, electronics assembly**, creating job-rich growth.
■ **Educational inequality:** Limited access to **quality higher education**; only **4 Indian universities in top 500** (**THE Rankings 2026**) and rising contractual faculty weaken teaching quality, deepening skill gaps.	■ **Improve education & skills:** Expand **Skill India Mission** & **PMKVY**; implement **NEP 2020** and **industry-linked training** to enable access to **high-productivity jobs**.
■ **Caste-based deprivation: Occupational segmentation, unequal asset access, and social discrimination** drive downward mobility, especially among **SCs & OBCs**.	■ **Promote inclusive growth: Post-Matric Scholarship Scheme, Stand-Up India**, and **National SC/ST Hub** to reduce **structural barriers** and improve opportunities for disadvantaged groups.
■ **Urban-centric growth:** Expansion concentrated in **Bengaluru, Hyderabad, Gurugram** (**IT, real estate, services**), while rural areas face stagnant farm incomes, climate shocks, and volatile crop prices.	■ **Increase women's labour force participation: DAY-NRLM** and **PM Matru Vandana Yojana** support women's economic participation; higher participation could **raise India's GDP by ~27%** (**IMF**).

Examine the structural factors responsible for rising downward mobility in India despite sustained GDP growth.

Drishti Mains Question

India's Export Surge

India's rising exports mark its post-pandemic economic emergence, with the **Economic Survey 2025–26 highlighting strong banking, foreign reserves, a stable current account**, and export growth supported by targeted import substitution and integration into global value chains.

Key Facts Regarding India's Export Performance

- **Overall Export Performance:**
  - **USD 720.76 billion (Apr 2025–Jan 2026)**; **6.15% growth** over the previous year despite **global uncertainties**.
- **Export diversification:** Among **top 5 globally in export product diversity** and **top 3 in trade partner diversity**, improving resilience to demand fluctuations and supply chain disruptions.
- **Sectoral Performance: Petroleum products: 7th-largest exporter** of refined petroleum products globally; India among top 5 refining nations.

- **Electronic Goods:** Rose from 7th largest export (FY22) to 3rd largest and fastest-growing (FY25); smartphone exports ₹1 lakh crore (first 5 months FY26), 55% rise YoY.
- **Pharmaceuticals & chemicals: 11th globally in pharma exports**, 3% global share; medical devices exports grew from USD 2.5 bn (FY21) → USD 4.1 bn (FY25).
- **Textiles & apparel: 6th-largest exporter globally**, 4% global share; exports increased USD 35.87 bn (FY24) → USD 37.75 bn (FY25).
- **Automobile:** Exports increased 4,131 thousand units (FY21) → 5,357 thousand units (FY25).
- **Defence:** ₹23,622 crore exports (FY25) from <₹1,000 crore in 2014; exports to **100+ countries (US, France, Armenia, etc.)**; target **₹50, 000 crore by 2029**.
- **Services**: USD 387.5 billion exports (FY25) with USD 188.8 billion trade surplus.

- **Trade partners & FTAs**: 9 FTAs signed in the last 3 years covering 38 countries, providing zero-duty access to markets representing ~70% of global GDP.

Steps Taken to Boost India's Exports

- **Production-Linked Incentives (PLI) Schemes:** PLI Scheme – Automobile & Auto Components; PLI Scheme – Bulk Drugs
- **Export Promotion Mission (EPM)**
  - **Outlay: ₹25, 060 crore (FY26–FY31)** to strengthen export ecosystem, trade finance access, and global market readiness.
  - **Sub-schemes:** Niryat Protsahan & Niryat Disha.
    - ❖ **Key Interventions:** E-Commerce Credit Assistance; TRACE; FLOW; LIFT; INSIGHT
- **Semiconductor and Electronics Manufacturing Initiatives:** Electronics Component Manufacturing Scheme (ECMS); India Semiconductor Mission (ISM) 2. 0
- **Customs & taxation measures:** Union Budget 2026–27 reduced customs duty on aviation parts, lithium-ion cell manufacturing, and defence & civil aviation components to lower manufacturing costs.
- **Sector-Specific Export Promotion:** PM E-DRIVE Scheme; Scheme to Promote Manufacturing of Electric Passenger Cars in India (SMEC)
- **Defence export promotion: DAP 2020** & **DPM 2025** ensure speed, transparency, innovation, and self-reliance.
- **Infrastructure initiatives:** Union Budget 2026–27 announced **Rare Earth Corridors, Chemical Parks, and Biopharma SHAKTI**.
- **Services exports:** Growth driven by **Global Capability Centres (GCCs)** expansion with SEZ tax incentives and India's 2nd global rank in AI skill penetration.

Main Challenges Related to India's Export Sector	Suggestions
■ **High tariffs & protectionism: US tariffs up to 50% (2025)** led to 22% decline in exports to the US; affected sectors: shrimp (15% volume fall), textiles (10% contraction), steel. ● **Interim US–India trade deal (Feb 2026)** reduced tariffs to 18%, but protectionism persists. ■ **Non-tariff barriers:** Exporters, especially **SMEs**, face **strict Rules of Origin, high documentation costs**, audit risks, and inconsistent customs interpretations under FTAs. ■ **Climate-related barriers: EU Carbon Border Adjustment Mechanism (CBAM) (2026)** to impose carbon taxes on steel, aluminium, and cement exports, increasing costs and reducing competitiveness. ■ **Export concentration: US accounts for ~18% of India's exports**, increasing vulnerability; global demand slowdown and currency volatility hinder diversification. ■ **Supply chain risks: Middle East supplies ~55% of India's crude oil imports; geopolitical tensions** raise **energy costs & export risks**. ● **India–GCC trade USD 178.56 billion (FY25)**, 15.42% of India's global trade. ● **~20% of global oil and gas passes through the Strait of Hormuz**; a blockade by Iran could raise oil and gas prices in India. ■ **Intensifying Sectoral pressures:** Rising competition from **Vietnam & Bangladesh** affecting labour-intensive exports, worsening sectoral crisis and employment challenges. ● **US–India trade disputes** over **reciprocal tariffs** (e.g., **India's 11% duty on American cotton**) complicate prospects for these industries.	■ **Strengthen policy frameworks:** Implement **AI-driven "Single Window 2.0"** integrating customs and certifications; conclude FTA renegotiations addressing **imports rising 82% vs exports 31% (2017–2022)**. ■ **Upgrade logistics:** Link **Dedicated Freight Corridors with mega ports** to cut **export costs by 20–30%**; expand export processing zones, multimodal parks, and cold chains for agriculture. ■ **Sustainability compliance:** Create **Green Export Credit facility** to address **EU CBAM**; develop indigenous carbon accounting frameworks for carbon-neutral branding. ■ **Scale manufacturing:** Expand **PLI schemes** (PLI 3.0 for rare earths and semiconductors) through **Sovereign Industrial Corridors**; **Mahatma Gandhi Gram Swaraj Initiative** (Union Budget 2026–27). ■ **Leverage digital growth:** Remove **₹10 lakh cap on e-commerce consignments**; adopt blockchain-based trade platforms for rules of origin verification; promote digital services exports through dedicated councils. ■ **Mitigate supply chain risks:** Maintain **buffer stocks of crude oil, rare earths, lithium, cobalt, and other critical minerals** to reduce shortage and price volatility risks.

"India's export sector has shown remarkable resilience post-pandemic. " Analyze the key factors contributing to this growth and the major challenges that threaten its sustainability.

Drishti Mains Question

India's New GDP Series With Base Year 2022-23

The **Ministry of Statistics and Programme Implementation (MoSPI)** released the **New Series of Annual and Quarterly National Accounts Estimates with base year 2022–23 replacing the earlier 2011-12,** marking a major update in the way the **Gross Domestic Product (GDP)** is measured.

Key Highlights of the New GDP Series (Base Year 2022–23)

- **Real GDP Growth: Estimated to grow by 7. 6% in Financial Year 2025-26** (revised upward from the 2011-12 base estimates).
  - The economy showed sustained performance with **7. 2% and 7. 1% growth in Financial Years 2023-24 and 2024-25**, respectively.
- **Nominal GDP Growth: Witnessed a growth of 8. 6% in Financial Year 2025-26**.
  - **Nominal GDP** previously registered at 11. 0% and 9. 7% growth rates during Financial Years 2023-24 and 2024-25.
- **Quarterly Performance Drivers:** The overall economic performance in Financial Year 2025-26 is primarily driven by **robust real growth in the Second Quarter (8. 4%) and Third Quarter (7. 8%)**.
- **Manufacturing Sector:** Emerged as the **major driver contributing to economic resilience** for three consecutive financial years after rebasing, achieving **double-digit growth rates in Financial Years 2023-24 and 2025-26**.
- **Secondary and Tertiary Sectors:** Significantly boosted the economy by **registering growth rates above 9. 0% in the Financial Year 2025-26**.
- **Specific Services Sub-Sector:** The **'Trade, Repair, Hotels, Transport, Communication and Services related to Broadcasting, Storage' sector attained a notable growth rate of 10. 1%** at constant prices in Financial Year 2025-26.
- **Consumption and Investment:** On the demand side, both **Private Final Consumption Expenditure and Gross Fixed Capital Formation exhibited growth rates exceeding 7. 0%** in Financial Year 2025-26.

Reasons Why GDP Base Year Revised to 2022-23

- **Reflect a "Normal" Post-Pandemic Year:** The year 2022–23 was chosen because it represents the most **recent normal year after the disruptions** caused by **Covid-19.**
  - The years 2019–20 and 2020–21 were heavily distorted due to **lockdowns, supply chain disruptions, and abnormal consumption** and production patterns.
  - Using 2022–23 as the base ensures that growth comparisons are anchored in a stable economic environment.
- **Sectoral Coverage:** Over the past decade, India's economy has changed significantly.
  - **Renewable energy** has expanded, digital and platform-based services have grown rapidly, the number of hired domestic workers has increased, and the **gig economy** has become more prominent.
    - ❖ **Consumption and investment** patterns have evolved, while greater use of technology has boosted productivity across sectors.
  - **Rebasing** allows GDP estimates to better capture the contribution of these emerging sectors and shifts in relative prices.
- **Improved and High-Frequency Data Sources:** The revised series incorporates several new and richer data sources, reducing reliance on proxies and outdated benchmarks.
  - Earlier, household sector estimates were **largely based on proxy indicators** and growth rates between benchmark surveys.
    - ❖ In the revised series, actual levels are derived from regular annual surveys such as **Annual Survey of Unincorporated Sector Enterprises (ASUSE)** and **Periodic Labour Force Survey (PLFS)** allowing for more accurate and timely measurement of the sector's performance.
  - Wider use of **GST data** for manufacturing and services, including state-level allocation and quarterly estimates.
  - Data from the **e-Vahan portal** is used to estimate **Private Final Consumption Expenditure (PFCE)** on road transport services, improving the measurement of household consumption.
  - **Public Financial Management System (PFMS)** data is used to compile and distribute **central government accounts across states,** allowing actual expenditure figures to be used at the **First Revised Estimates stage instead of relying on Revised Estimates.**
  - Updated sector-specific studies in agriculture, fisheries, dairy, and transport. These additions improve granularity, timeliness, and reliability.
- **Strengthen Methodological Rigor:** The new base year accompanies important methodological upgrades:
  - **Refined Deflation Techniques: Double deflation** (separate adjustment of output and input prices) is now applied in manufacturing and agriculture, while **single extrapolation** (estimating growth using a single output indicator) is used in other sectors.
    - ❖ **Single deflation has been discontinued.** Deflators are applied at a more granular level, with over 260 item-level CPI indices incorporated.

- **Supply and Use Table (SUT) Framework:** Following **System of National Accounts 2008 (SNA 2008) guidelines**, the **new GDP series systematically integrates the SUT framework** and applies the product-balancing principle (total supply equals total use).
  - ❖ This reduces statistical discrepancies and ensures more consistent and reliable GDP estimates.
- **Segregation of Multi-Activity Corporations:** Value added of **multi-activity corporations** is now distributed across activities using detailed **corporate filings.**
- **Improved Estimation of PFCE:** Estimation of **Private Final Consumption Expenditure (PFCE)** has also been strengthened through a mixed approach that combines household survey data, administrative records, the commodity flow method, and the updated **Classification of Individual Consumption According to Purpose (COICOP) 2018**.

- **Strengthened GSDP Estimation:** The revision of the GDP base year to 2022–23 also strengthens GSDP estimation.
  - The **National Statistical Office (NSO)** under MoSPI ensures states follow uniform national accounting standards.
  - With the new base, states will shift toward greater **direct estimation, reduce reliance on fixed ratios and proxies**, and better use state-level data, improving accuracy and comparability across states.

Implications of the New GDP Series (Base Year 2022–23)

- **Contraction in Nominal GDP:** The new statistical framework has reduced India's nominal GDP by roughly 3% to 4% for the 2025–26 financial year and the preceding three years.
- **Pressure on Fiscal Deficit Targets:** The **fiscal deficit** is calculated as a percentage of nominal GDP, a **smaller nominal GDP mathematically inflates the deficit ratio for past and present years.**
  - The 2025–26 fiscal deficit target was initially set at 4.4% based on the old series. Applying the new, lowered nominal **GDP pushes this ratio up to 4.5%.**
  - To achieve the **targeted 4.3% fiscal deficit for the 2026-27 financial year,** the economy will now require a massive nominal growth rate of 13% to 14%.
    - ❖ This is notably higher than the **10% assumption outlined in the Union Budget 2026–27,** indicating the government may need to aggressively recalibrate its borrowing strategies.
- **Rising Debt-to-GDP Ratios:** Reduced size of the economy negatively impacts the **national debt-to-GDP ratio.**
  - The Centre's debt ratio is **estimated to rise from 56.2% to 58.1% for 2025–26 under the new series.**
  - Current calculations suggest that even if nominal growth successfully hits 10% in 2026–27, the ratio will hover around 57.5%, **missing the government's target of 55.6%.**
- **Hurdles for the USD 4-Trillion Economy Goal:** In 2025–26, India's GDP stood at about USD 3.8 trillion.
  - Crossing the USD 4-trillion mark in 2026–27 is still possible, but it leaves little room for error and requires at least 10% nominal growth.
  - The target is also highly **sensitive to the exchange rate,** as any further **rupee depreciation** would make achieving it more difficult despite strong domestic growth.
- **Sectoral Realignments:** The agricultural sector is now estimated to be about 5% larger due to better capture of high-value crops and lower input costs, including increased use of solar power under schemes like **PM KUSUM.**

Measures to Further Advance India's Economic Measurement Framework

- **Introduce a Producer Price Index (PPI):** India currently relies heavily on the **Consumer Price Index (CPI) and Wholesale Price Index (WPI).**
  - As recommended by the **Working Group chaired by Prof. B. N. Goldar (2014)**, introducing **PPI** will provide a much more accurate measure of the average change in selling prices received by domestic producers for their output, aligning India with global standards.
- **Expedite the WPI Base Revision:** While the CPI and IIP base years are being updated, the **WPI base year revision must be completed swiftly to ensure that the deflators** used across all sectors represent current market realities.
- **Global Alignment:** The UN Statistical Division is transitioning to **SNA 2025 (expected to be adopted globally by 2029–30).**
  - India must proactively build the data infrastructure to adopt SNA 2025, which includes specialized guidelines for measuring the digital economy, crypto assets, and environmental/green accounting.
- **Mitigating Large Firm Bias:** Heavy reliance on Ministry of Corporate Affairs data may overstate large firms' performance while underestimating **MSMEs that do not file timely returns.**
  - **I**mproved methods are needed to better capture the value added by smaller enterprises.

The revision of GDP base year is a technical exercise with significant fiscal consequences. Discuss in the context of India's 2022–23 rebasing.

Drishti Mains Question

16th Finance Commission on Centre-State Fiscal Relations

The **16th Finance Commission** (2026–31) has retained the **States' share** of tax devolution at **41%**, imparting it a **"semi-permanence, "** while introducing significant changes to the horizontal distribution formula and proposing a **'grand bargain'** to merge **cesses and surcharges** into the **divisible pool**.

Key Recommendations of the Commission

- **Vertical Devolution and a 'Grand Bargain':** The Commission retained **States' share in the divisible pool at 41%**, unchanged from the **15th Finance Commission**.
  - To address the states' concern over **fiscal space eroded** by rising cesses and surcharges (which are outside the **divisible pool**), the 16th FC proposed a **'grand bargain',** i.e., **states** accept a **smaller share** of a **larger divisible pool** if the Centre merges most levies into **shareable taxes**.
- **Horizontal Devolution:** The Commission introduced a major shift toward rewarding **economic performance** with a revised formula:
  - **Income Distance (42.5%)**: Based on the gap from the average of the top three states, ensuring **equity**.
  - **Population (2011 Census) (17.5%)**: Reflects **expenditure needs**.
  - **Demographic Performance (10%)**: Rewards lower **population growth (1971–2011)**.
  - **Forest & Ecology (10%)**: Now includes **open forests**, not just dense forests.
  - **Area (10%)**: Remains unchanged at **10%** (as per 15th FC).
  - **Contribution to GDP (10%)**: A new criterion measured by **share in all-State GSDP** (using its **square root to moderate impact**), replacing the **tax effort/fiscal discipline criterion**.

Criteria	15th FC (2021–26)	16th FC (2026–31)
Income Distance	45%	42.5%
Population (2011)	15%	17.5%
Demographic Performance	12.5%	10%
Area	15%	10%
Forest	10%	10%
Tax and Fiscal Efforts	2.5%	–
Contribution to GDP	–	10%
Total	100%	100%
Sources: Reports of the 15th and 16th Finance Commissions.		

- **Grants-in-Aid (Rs 9.47 Lakh Crore):**
  - **Local Bodies (Rs 8 Lakh Cr)**: Split into **rural (Rs 4.4 Lakh Cr)** and **urban (Rs 3. 6 Lakh Cr)**. Grants are subject to **entry conditions** (constitution of local bodies, audited accounts, and timely constitution of **State Finance Commissions**).
    - ❖ New initiatives include an **Urbanisation Premium Grant** (Rs 10, 000 Cr) for **rural-urban transition** and **Special Infrastructure Grants** (Rs 56,100 Cr) for **wastewater management**.
  - **Disaster Management (Rs 2.04 Lakh Cr)**: For State Disaster Relief and Management Funds, with **cost-sharing of 90:10** for northeastern/Himalayan states and **75:25** for others.
- **Fiscal Roadmap and Reforms:**
  - **Fiscal Deficit:** Recommended Centre to reduce the deficit to **3.5% of GDP by 2030–31**; States to maintain **3% of GSDP**.
  - **Off-Budget Borrowings:** Recommended ending **off-budget borrowings** and including all such **liabilities** in fiscal deficit/debt calculations.
  - **Power Sector:** Encouraged **privatisation of DISCOMs**.
  - **Subsidies:** Recommended **rationalisation of subsidies**, especially **unconditional cash transfers**, noting they now account for **20. 2% of total subsidy spending** (up from 3% in 2018–19), partly enabled by the **JAM trinity**.
  - **Public Sector Enterprise (PSEs) Reforms:** Recommended closure of **308 inactive State PSEs** and a review mechanism for consistently loss-making enterprises.
- **Transparency Measures:** Recommended annual disclosure of **CAG-certified data on net tax proceeds under Article 279** to clarify the size of the **divisible pool**.
  - Article 279 of the Constitution defines **"net proceeds"** of a tax as **gross revenue minus collection costs,** with the CAG's certification of these proceeds being final.

Key Issues with the Recommendations

- **Status Quo vs. Growing Imbalances:** The Commission retained **states' share in the divisible pool at 41%,** rejecting states' demand for an increase to **~50%**. Critics argue this prioritizes the **Centre's fiscal needs (defence, infrastructure)** over states' requirements, limiting their **untied revenue** and failing to address growing **vertical fiscal imbalances**.
- **Unchecked Cesses and Surcharges:** The Commission failed to recommend curbs on **non-shareable cesses and surcharges**, which have grown significantly, effectively shrinking the **shareable tax base**. This practice is seen as undermining **fiscal federalism** by centralizing resources.
- **Rewarding Contribution over Need:** The introduction of a new **10% weight for 'contribution to GDP'** (replacing the **tax effort criterion**) rewards **industrialized states** (e. g. , Tamil Nadu, Karnataka, Maharashtra). This dilutes **progressive redistribution** by reducing the weight of

income distance (from 45% to 42.5%) and area (from 15% to 10%), tilting the formula toward **richer states** amid widening **regional disparities**.

- **Discontinuation of Revenue Deficit Grants:** The elimination of **revenue deficit grants** has drawn sharp criticism, particularly from **hill states, northeastern states**, and others with **structural deficits** and geographical constraints.
- **Conditional Fiscal Discipline:** Recommendations capping **state deficits at 3% of GSDP**, ending **off-budget borrowings**, rationalizing **subsidies**, and pursuing **DISCOM privatisation** are seen as imposing **stringent conditions** that limit **state flexibility**.
- **The Equity Gap:** Major losing states compared to the **15th Finance Commission** include **Uttar Pradesh, Bihar,** West Bengal, Madhya Pradesh, Odisha, and several northeastern states (**Arunachal Pradesh**, **Meghalaya**, Manipur, Nagaland, Tripura, Sikkim, and Goa). Gains by **richer states** have not been uniform.
  - This **fiscal contraction** risks trapping **populous northern and eastern states** in a **vicious cycle** where they receive **fewer resources** precisely when they need the most **investment**, potentially widening **India's regional economic divide**.
- **Missed Opportunity Under Article 275:** The Commission could have mitigated these losses through **Article 275 grants**, which are designed for **State-specific 'needs' (like health and education)** separate from **revenue deficits**. By dropping all such grants, it missed a chance to balance **efficiency** with the **equalisation objective** for India's **highly differentiated states**.

Steps to Bolster Fiscal Federalism in India

- **Enhance Vertical Transfers:** Increase **states' share beyond 41%** and cap **cesses/surcharges** (e.g., at 10% of gross tax revenue (GTR), (currently, nearly 20% of GTR)) through legislation, restoring **predictability** and expanding **untied resources**.
- **Ensure Phased Transition:** Provide a **"Floor Guarantee"** ensuring no state's **absolute share** drops below 15th Finance Commission levels during the shift toward performance-based transfers.
- **Balance Equity with Efficiency:** Retain **progressive criteria** (income distance, forest cover) while introducing **elasticity-linked transfers** rewarding **revenue buoyancy** and performance in social indicators/climate action.
- **Empower Local Bodies:** Strengthen **PRIs/ULBs** through **matching grants** for states implementing **State Finance Commission (SFC)** recommendations and grant genuine **taxation powers** (e. g. , property taxes).
- **Strengthen Federal Dialogue:** Reactivate **Inter-State Council (Article 263)** meetings for **"Real-time Federalism"** to resolve **fiscal disputes** without **litigation**.

"Critically analyze the recommendations of the Sixteenth Finance Commission regarding vertical and horizontal devolution. How do they balance the dual objectives of equity and efficiency? "

Drishti Mains Question

PSB Reforms under EASE 9.0

Under **EASE 9.0**, **public sector banks (PSBs)** will undertake reforms to leverage technology, enhance productivity, and scale operations through new business models.

Reforms to Be Pursued under the EASE 9. 0 Reform Agenda

- **GCC Strategy & Leadership:** Implement **Global Capability Centre (GCC)** strategy in **FY 2026–27**; capacity-building roadmap; **SBI** to lead (first GCC set up in Karnataka).
- **Technology Infrastructure Plans:** Assess **active-active data centre models**.
  - Develop core **AI stack** (LLM licensing, GPU strategy, private cloud).
  - Build enterprise-wide **consent management**.
  - Implement large-scale **data tokenisation & anonymisation**.
- **Collaborative Solutions:** Joint banking solutions using **blockchain**, advanced **risk assessment**, and **fraud detection models**.

Banking, Financial Services, and Insurance (BFSI) GCC

- **About:** A BFSI GCC is a 100% owned and operated subsidiary of a global BFSI institution in talent-rich locations like India, serving as strategic extensions that centralize high-value functions, drive innovation, and achieve operational efficiency.
  - Unlike general GCCs, BFSI GCCs specifically serve the Banking, Financial Services, and Insurance sector in areas such as risk management, compliance, fintech, and cybersecurity.
- **Strategic Evolution:** GCCs have evolved significantly from initial cost arbitrage (achieving 50–60% savings compared to home markets) to advanced hubs for proprietary capabilities including artificial intelligence (AI), machine learning (ML), cybersecurity, regulatory technology (RegTech), data analytics, and core platform development.
- **India's Position in BFSI GCC Ecosystem:** India's BFSI GCCs are projected to grow to USD 125 billion by 2032 (from USD 40-41 billion in 2023). Currently, 185-190 BFSI GCCs

operate across India, employing approximately 540,000 professionals, representing 25% of all GCC employees in the country.

- Major hubs include Bengaluru (analytics and engineering), Hyderabad (fintech), Mumbai (financial services core), Pune, Chennai, and Gurugram/NCR.

- **Examples of BFSI GCCs in India:** JPMorgan Chase, HSBC, Wells Fargo, Citigroup, Standard Chartered, Deutsche Bank, Barclays, Bank of America, Goldman Sachs, and Morgan Stanley.

EASE 9.0 Reforms

- **About:** The EASE 9.0 reforms, launched in February 2026 by the Department of Financial Services, aim to transform PSBs into globally competitive institutions aligned with the national vision of Viksit Bharat @2047.
  - It emphasizes technology-led modernization, resilience, and operational excellence through four foundational pillars abbreviated as R.I.S.E.
- **Core Structure - Four Foundational Pillars (R.I.S.E.):**
  - **Risk & Resilience:** Strengthening financial and credit risk management, operational resilience, and frameworks for enterprise-wide risk oversight.
  - **Innovation:** Driving deep integration of advanced technologies, including AI, generative AI (GenAI), machine learning (ML), cloud architectures, and microservices.
  - **Socio-economic Impact:** Promoting inclusive banking, financial access for underserved segments (including gig and platform workers), and contributions to broader economic goals.
  - **Excellence:** Enhancing operational efficiency, customer-centric processes, governance, and cost-effective next-generation operating models.

Sustainable Tourism Push in Budget 2026–27

Tourism has emerged as a focal point in the Union Budget 2026-27, with the government unveiling a comprehensive set of measures aimed at positioning the sector as a strategic growth driver for the Indian economy.

- The tourism sector accounts for 5.22% of India's GDP (total impact) with a direct share of 2.72%, while supporting an impressive 13.34% of total employment, according to the India Tourism Data Compendium 2025 by the Ministry of Tourism.

New Initiatives Announced for Tourism Development in Union Budget 2026-27

- **Development of Buddhist Circuits in Northeast Region:** A dedicated scheme was announced to develop Buddhist circuits across Northeast India (Arunachal Pradesh, Assam, Sikkim, Manipur, Mizoram, Tripura), including pilgrimage interpretation centres, improved connectivity, pilgrim amenities, and heritage infrastructure.
  - This initiative builds on the experience of the Swadesh Darshan Scheme (launched 2014-15), under which 76 projects were sanctioned and 75 completed.
- **Eco-Trails and Sustainable Tourism Initiatives:** The Budget has proposed the development of ecologically sustainable mountain and nature trails in Himachal Pradesh, Uttarakhand, Jammu & Kashmir, Araku Valley in the Eastern Ghats, and Podhigai Malai in the Western Ghats.
  - Turtle trails along key nesting sites in the coastal areas of Odisha, Karnataka and Kerala, and bird-watching trails along Pulicat Lake in Andhra Pradesh have also been announced.
- **Global Big Cat Summit 2026:** India will host the first-ever Global Big Cat Summit in 2026, inviting heads and ministers from 95 range countries to deliberate on conservation, habitat protection, scientific collaboration, and sustainable wildlife tourism.
  - This initiative reflects the Government's intent to elevate India's role in eco-tourism and international wildlife cooperation. India is home to five of the world's seven big cat species, i.e., tiger, lion, leopard, snow leopard and cheetah.
- **National Institute of Hospitality:** The National Council for Hotel Management and Catering Technology, Noida (Uttar Pradesh), will be upgraded to a National Institute of Hospitality, aimed at providing high-quality professional education. It will also function as a bridge between academia, industry and the Government, addressing skill gaps and aligning academic training with industry requirements.
- **Tourist Guide Upskilling Programme:** A pilot scheme for upskilling 10,000 tourist guides across 20 iconic destinations has been announced. It will follow a 12-week hybrid training model combining classroom instruction, field training, and digital modules.
- **National Destination Digital Knowledge Grid:** A digital platform will be created to document cultural, spiritual, and heritage sites across India, providing resources for researchers, content creators, historians, and tourism stakeholders.
- **Experiential Cultural Destinations:** The Budget proposed development of 15 archaeological sites into vibrant experiential cultural destinations, including Lothal, Dholavira, Rakhigarhi, Sarnath, Hastinapur, and Leh Palace. It will complement existing schemes like Swadesh Darshan 2.0 and PRASHAD.
- **Regional Medical Hubs:** A Scheme to Support States in establishing five Regional Medical Hubs has been

introduced, aimed at promoting India as a global destination for medical and wellness tourism. The hubs will integrate advanced healthcare services, AYUSH centres, and medical value tourism facilitation centres.

- **Tourism Development in Purvodaya States:** The Budget proposes the creation of five tourism destinations, one in each Purvodaya state—Bihar, Jharkhand, West Bengal, Odisha and Andhra Pradesh—under an integrated framework including the East Coast Industrial Corridor with a node at Durgapur (West Bengal).
  - Additionally, provisions for 4,000 electric buses were announced to support improved connectivity, cleaner transport, and greater accessibility across these regions.

Initiatives Related to Tourism in India

- Ek Bharat Shreshtha Bharat
- Dekho Apna Desh Initiative
- Paryatan Parv
- PRASAD Scheme
- Swadesh Darshan Scheme

Challenges Associated with Tourism Development in India

- **Inadequate Infrastructure**: Deficient transportation networks and **poor last-mile connectivity** persist as major barriers. In **2025**, **Vyas Valley (Uttarakhand)** saw **tourist footfall** surge from **200 to 30,000** over a decade, but local **infrastructure** failed to keep pace, causing capacity strains and **degraded visitor experiences**.
- **Environmental Degradation**: **Overcrowding** in fragile regions leads to **pollution, waste accumulation,** and **biodiversity loss**.
  - From **68.9 lakh** domestic tourists in **2017**, Goa's total arrivals surged to nearly **1.1 crore by 2025**, leading to congested roads, garbage heaps, beach erosion, and calls for **carrying capacity limits**.
  - The **2025 Char Dham Yatra** attracted over **four million pilgrims**, exacerbating environmental pressures in hill stations.
- **Safety and Security Concerns**: Persistent **safety issues**, particularly for **women and solo travellers**, continue to deter visitors. **Travel advisories** from the **US and UK** have been issued, while incidents involving **foreign tourists** reinforce **negative perceptions**, pushing travellers toward Southeast Asian competitors.
- **Hygiene and Service Quality**: Inconsistent **sanitation standards** undermine **visitor satisfaction**, with **international travellers** often confining themselves to **luxury accommodations**, limiting economic benefits to local communities.
- **Visa and Regulatory Complexities**: Despite e-visa expansion, **processing delays** persist. **Overseas promotion funding** was slashed from **Rs 33 crore to Rs 3.07 crore** in **Budget 2025-26**, hampering efforts to compete with visa-on-arrival destinations like **Thailand and Vietnam**.
- **Global Competitiveness Gap**: **India** attracted only **10 million foreign tourists** in **2024**, versus **Thailand's 35 million, Malaysia's 25 million, and Vietnam's 17 million**. In 2023, Indians spent an estimated **USD 33 billion** on **overseas holidays**, citing better **value, services, and transparency** abroad.

Steps Needed to Promote Tourism Development in India

- **Enhance Infrastructure and Connectivity**: Prioritize investment in **transportation networks** including **high-speed rail, multimodal corridors**, and regional airports under **UDAN scheme** to ensure equitable dispersal of tourism beyond major metros.
- **Revamped "Incredible India 2.0" Campaign**: Move beyond generic promotion with data-driven, **hyper-personalized** global marketing targeting specific demographics like **millennials, luxury travelers**, and **adventure enthusiasts**.
  - Expand domestic promotion via **Dekho Apna Desh** to encourage exploration of **lesser-known sites.**
- **Establish "Tourism-Ready" Certification for Destinations**: Develop **mandatory accreditation program** for tourist destinations based on benchmarks for **cleanliness, safety, accessibility, and sustainability**, creating healthy competition among states to improve standards.
- **Integrate Tourism with Rural Development**: Promote **agri-tourism** and **rural tourism** by connecting working farms and rural communities with **urban and international tourists**, providing **authentic cultural experiences** and generating additional income for farmers.
  - Integrate **local communities** under programmes like **Paryatan Mitra/Paryatan Didi**, ensuring equitable benefits reach **rural, tribal, and underserved regions**.
- **Incentivize Green Certification for the Hospitality Industry**: Launch national program to encourage **hotels, resorts, and homestays** adopting sustainable practices like **water conservation, waste reduction**, and **renewable energy use**. Provide marketing support to **"Green Key" certified properties** to attract environmentally conscious travelers.

Examine the major challenges confronting the Indian tourism sector. Suggest a comprehensive framework for sustainable tourism development in India.

Drishti Mains Question

International Relations

BRICS STI Cooperation

India assumed **BRICS Presidency (2026)** with theme "***Building for Resilience, Innovation, Cooperation and Sustainability***", prioritising **STI**, amid **BRICS+ expansion** and **2025 BRICS Rio de Janeiro Declaration** focus on **deep-tech, governance, tech transfer**.

Evolution of STI cooperation within BRICS

- **Sanya Declaration (3rd BRICS Summit, 2011):** Formalised **S&T cooperation** in BRICS agenda
- **MoU on STI Cooperation (2015):** Framework for **science, technology & innovation cooperation**; **Young Scientist Forum (YSF)** established
- **BRICS Action Plan for Innovation Cooperation (2017-2020):** Shift to innovation, entrepreneurship & tech transfer
  - **Technology Transfer Centre (TTC):** Links **science parks, incubators, startups** for commercialization
- **BRICS S&T Ministers Meeting:** Annual; priorities set; **CSIR & DBT (India)** coordinate
- **Innovation Action Plan (2021–24):** Led by India; **BRICS Remote Sensing Satellite Constellation** data-sharing
- **Deep-Tech Shift: AI** as central governance pillar; focus on **frontier technologies**
- **BRICS+ Expansion: Kazan & Rio Declarations** marked a major shift towards frontier technologies. Broader **capital & tech capacity**
  - **India Chair (2026):** Focus on **DPI & Global South tech collaboration**

- **BRICS+:** Expanded grouping includes original members **Brazil, Russia, India, China, South Africa** and new members **Egypt, UAE, Ethiopia, Indonesia, Iran** (**and Saudi Arabia**).
  - The bloc represents ~49.5% of the global population, 40% of global GDP, and 26% of global trade.

India as a Key Driver of STI Cooperation within BRICS

- **Leverage DPI:** Use **Aadhaar, UPI, Digital India** as scalable models; propose **open-source DPI repository** for BRICS
- **Mega-Science Projects:** Push **BRICS Mega-Science Consortium** (based on **LIGO-India, SKA experience**)
- **Climate Tech:** Use **ISA, GBA**; propose **BRICS Clean Energy R&D Consortium** (green hydrogen, batteries, agri-biotech)
- **Paired Linkages:** Introduce a mentorship or **"paired collaboration" model** linking advanced R&D nations with newer members
- **Healthcare Innovation:** Use **CoWIN, ABDM**; propose **BRICS Digital Health Grid** (interoperable records, telemedicine)
- **AI Governance:** Joint group for **ethical norms, data sovereignty, cybersecurity standards**

Challenges Limiting BRICS STI Cooperation	❍ **Capacity Asymmetry: China dominates R&D** (**GERD**); others lag → risk of **one-way tech transfer & dependence** ❍ **BRICS+ Diversity: Heterogeneous members** → difficult consensus on **mega projects** ❍ **Geopolitical Trust Deficit: India–China tensions** limit cooperation in **AI, 5G/6G, semiconductors** ❍ **Institutional Gaps:** No **permanent STI Secretariat** (unlike EU); rotating presidency → poor continuity ❍ **Weak Funding: Decentralised & limited funds**; **NDB** focuses on infrastructure, not deep-tech ❍ **Low Private Participation:** Dominated by **government agencies**; weak role of **startups, VC, tech firms**
Reforms Needed to Strengthen BRICS STI Cooperation	❍ **Institutional Strengthening:** Create **permanent STI Secretariat**; form **BRICS Technological Alliance** ❍ **Mega-Science Joint Missions:** Invest in **flagship joint projects** (satellites, public health research) ❍ **Proactive Tech Governance:** Common standards for **AI, data governance**; stronger **IP frameworks** ❍ **Private Sector Integration:** Involve **startups, venture capital, industry** via **iBRICS, B2B corridors** ❍ **Dedicated R&D Funding:** Create **BRICS STI Innovation Fund** for **cross-border R&D, deep-tech, commercialization**

BRICS is emerging as a platform for techno-multipolarity. Discuss its significance and limitations.

Drishti Mains Question

Geoeconomic Fallout of the US-Israel-Iran Conflict on India

The **US–Israel conflict with Iran** has disrupted global supply chains and exposed **India's vulnerabilities in energy, trade, and inflation**, threatening its **"Goldilocks" balance of high growth and low inflation**. It also creates a **foreign policy dilemma for India's strategic autonomy**, as it maintains ties with **the US, Israel, and Iran**.

Implications of US-Israel conflict with Iran on India

- **Energy Security Under Severe Threat:** India imports over 85% of its crude oil and a significant portion of its **Liquefied Natural Gas (LNG)**, with the lion's share originating from **Saudi Arabia, Iraq, the UAE, and Qatar**.

- The disruption of the **Strait of Hormuz** has paralyzed the outward flow of oil, and LNG from these Gulf nations.
- The crisis exposes **India's critically low shock-absorption capacity.** While China has aggressively stockpiled 110–140 days of import cover, India's **Strategic Petroleum Reserves (SPR)** hold a mere 5.33 million metric tonnes, providing only a few days of consumption cover.
- Surging **crude prices (up by 15%) drive "imported inflation"** and widen the **Current Account Deficit which can** derail India's expected 7%+ economic growth.

- **India's LPG Vulnerability**: India is the **second-largest LPG consumer in the world**, largely due to the expansion of clean cooking access under the **Pradhan Mantri Ujjwala Yojana.**
  - Around **60% of India's LPG demand is met through imports**, as domestic production remains limited.
  - Major imports come from **UAE, Qatar, Saudi Arabia and Kuwait**, and most LPG shipments pass through the **Strait of Hormuz**, making supply highly vulnerable to regional conflict or blockade.
  - India's **underground LPG storage is about 1.4 lakh tonnes**, enough for **less than two days of consumption**, while daily demand is around **80, 000 tonnes**, with **over 85% used by households**.
  - After invoking the **Essential Commodities Act, 1955,** the government directed refineries to **maximize LPG production by diverting propane and butane streams**, increasing domestic output by **about 25%**, with the supply **prioritized for household consumption** and gas supplies being restricted for commercial users.
    - ❖ As a result, commercial users like hotels and restaurants in major cities face shortages, higher prices, and waiting periods of up to **25 days** for new LPG bookings.
- **Essential Commodities Act, 1955:** India consumes around **195 Million Metric Standard Cubic Meters per Day (MMSCMD) of natural gas**, with nearly **half imported**, making supply vulnerable to disruptions in Hormuz.
  - India has invoked the Essential Commodities Act, 1955 to prioritise natural gas supply after disruptions in LNG shipments.
  - Under the new allocation plan, **domestic Piped Natural Gas (PNG), Compressed Natural Gas (CNG) and LPG production will receive 100% supply,** fertilizer plants **70%**, and industries **80%**, while refineries may receive about **65%** of previous consumption.
- **Fertilizer Threat:** India lacks mineable reserves for complex **fertilizers**. It relies heavily on **Oman, Saudi Arabia, and Qatar** for merchant ammonia; **Oman, the UAE, Qatar, Kuwait, and Saudi Arabia** for sulphur; and **Jordan** for phosphoric acid and rock phosphate (crucial for **Diammonium Phosphate (DAP)**).
  - Furthermore, domestic urea plants rely on LNG imported from **Qatar and the UAE**.
  - Currently, India has a comfortable stockpile (e.g., 5.5 million tonnes of urea as of late February 2026) as the *Rabi* season concludes and the *Kharif* season is still months away (June to October).
  - If the blockade outlasts this buffer window, the government will be forced to strictly divert natural gas away from industrial/power **sectors to prioritize domestic fertilizer production and city gas distribution**, which is crucial to sustain agricultural output and national food security.
- **Food and Farm Exports:** According to the **Global Trade Research Initiative (GTRI)**, nearly USD 11.8 billion worth of Indian food and farm exports to the west Asia are at risk.
  - Countries like **Saudi Arabia, Iraq, the UAE, and Iran** are the primary buyers of **Indian Basmati rice**. Currently, over 3, 000 shipping containers are stranded at domestic ports (like Kandla and Mundra) or stuck in transit.
  - India exported about USD 11.8 billion worth of agricultural and food products to West Asia in 2025, accounting for over one-fifth (around 21–22%) of India's total agri exports.
    - ❖ Major export items include cereals, fruits, vegetables, spices, dairy products, and processed food.
    - ❖ Export disruptions could **impact farmers and food processors across states such as Punjab, Haryana, Uttar Pradesh, Andhra Pradesh, Telangana, and Maharashtra**.
  - Exporters are facing pressure from **rising marine fuel oil prices, higher freight costs, and mounting demurrage charges**, and are urging the government to declare **Force Majeure** to avoid penalties for shipment delays caused by the crisis.
- **Core Industrial Sectors:**
  - **Construction & Cement:** India sources 68.5% of its imported limestone and 62.1% of its imported gypsum from nations like **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE**.
    - ❖ Supply shocks here will directly inflate domestic cement prices and stall infrastructure projects.
  - **Steel Production:** A significant portion of India's steel industry utilizes the **Direct Reduced Iron (DRI) route,** which runs on natural gas.
    - ❖ Disruptions in LNG shipments from **Qatar and the UAE** will curtail domestic steel output.

- **Manufacturing & Gems:** India imports over **50% of its copper wire** (vital for power transmission) from the Gulf region.
  - ❖ Additionally, India's diamond processing hub in Surat faces raw material shortages, as over 40% of its rough diamonds are imported from **the UAE and Israel**.

- **Rupee Depreciation:** The **Indian Rupee** has weakened to **record lows**, prompting the **Reserve Bank of India** to intervene by deploying **USD 15–20 billion from its USD 730 billion foreign exchange reserves** to stabilize the currency.
- **Safety of Indian Nationals in West Asia**: India has a large diaspora of about 1 crore people in GCC countries sending over USD 51 billion annually in remittances, whose **safety remains a priority for India.**
  - Indian nationals were affected by attacks on merchant ships. Stranded tourists and transit passengers were assisted to return via flights from Muscat, Riyadh, and Jeddah.

Measures that India can take to Mitigate the Impacts of the West Asia Conflict

- **Accelerated Diversification:** While India has diversified its crude basket by importing from Russia, it must further expand long-term contracts with suppliers in **Latin America (Brazil, Guyana), West Africa, and the United States** to reduce over-reliance on the Strait of Hormuz.
- **Expand Strategic Petroleum Reserves (SPR):** India can increase Strategic Petroleum Reserves to meet the global benchmark of 90 days of oil imports, as current combined reserves cover roughly 70–75 days.
  - Larger underground storage facilities would provide a buffer during geopolitical disruptions or supply blockages.
- **Fast-tracking the Green Transition:** Aggressively scaling up the **National Green Hydrogen Mission** and expanding domestic renewable capacity will structurally reduce the baseline demand for imported fossil fuels.
  - Since India has already achieved key renewable capacity milestones, the focus should shift to **removing regulatory, grid, and storage bottlenecks** and ensuring **full utilisation of existing renewable energy resources**
- **Expand Domestic Gas Production:** Accelerate exploration under policies like **Hydrocarbon Exploration and Licensing Policy (HELP)** to increase domestic natural gas output.
- **Scaling Alternative Fertilizers:** To drastically cut dependence on imported ammonia and LNG from the Gulf, the government must aggressively promote the domestic production and nationwide adoption of **Nano Urea and Nano DAP**.
  - The **PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth (PM PRANAM)** must be utilized to financially incentivize states to reduce their overall consumption of imported chemical fertilizers and shift towards **bio-fertilizers** and **organic farming.**
- **Invoking Force Majeure:** The Ministry of Commerce must officially recognize the conflict and subsequent port congestions as a **Force Majeure** event.
  - This legal protection will shield Indian exporters from severe financial penalties and contract cancellations by foreign buyers.
- **Create an ECGC 'War-Risk' Insurance Pool:** The skyrocketing marine insurance premiums for the Red Sea and Strait of Hormuz are bankrupting MSME exporters. The Export Credit Guarantee Corporation (ECGC) must immediately establish a sovereign-backed "War-Risk Insurance Pool" to subsidize these premiums and keep Indian exports competitive.
- **Pivot to the Eastern Maritime Corridor (EMC):** To bypass the volatile Middle Eastern chokepoints entirely, India must aggressively operationalize the **Chennai-Vladivostok Eastern Maritime Corridor**.
  - This route can safely secure Russian crude oil, coal, and fertilizers via the relatively stable Indo-Pacific and South China Sea waters.

"The escalating geopolitical tensions in West Asia expose India's structural vulnerabilities across both energy and agricultural supply chains. " Discuss.

Drishti Mains Question

Xiaokang Villages and India's Border Security

India's military warned that **China's construction of 628 "Xiaokang" villages along the LAC**, especially near **Arunachal Pradesh**, aims to **strengthen territorial claims through civilian settlements**, functioning as **dual-use fortified outposts** and posing **long-term security challenges for India**.

LAC: A **notional, de facto boundary** separating **Indian-and Chinese-controlled territories**, largely based on **post-1962 war positions** without a **formally delineated international border**.

Xiaokang Border Defence Villages

- **About:** Chinese **"Xiaokang" villages** are **border settlements built/upgraded in Tibet Autonomous Region (TAR)** along **disputed frontiers**; *Xiaokang* means **"moderately prosperous"** or "well-off" in English.
- **Scale & Investment:** Launched **around 2017** across **628 villages in 21 border counties** with **~30 billion yuan investment**.

- **Dual-Use Role:** Though presented as **rural development**, they function as **strategic infrastructure**, capable of **housing PLA personnel and enabling rapid military mobilization**.
- **Legal Basis:** Backed by **China's Land Border Law (2022)** promoting **border defence with socio-economic development**.
  - Functions as a **"Great Wall of Villages"**, strengthening **de facto territorial control through grey-zone tactics**.
- **Demographic Engineering:** Enhances **Chinese Communist Party control, border monitoring, and Sinicization in Tibet** by settling populations in **sensitive border areas**.
- **Infrastructure:** Equipped with **roads, electricity, water supply, and communications**, confirmed through **satellite imagery**.

Threat Posed by Xiaokang Border Defence Villages to India	Steps that India Needs to Take to Strengthen its Border Infrastructure
❍ **Territorial Assertion:** Establishing civilian settlements in disputed areas strengthens **China's claims under the Land Border Law (2022)** using **"salami-slicing" tactics**.	❍ **Strategic Connectivity:** Accelerate **India-China Border Roads (ICBR) Phase III** and projects like the 1, 840 km Arunachal Frontier Highway for all-weather troop movement and logistics.
❍ **Breach of Bilateral Agreements:** Seen as violating the **2005 India–China Agreement on Political Parameters and Guiding Principles** related to border peace and security.	❍ **Civilian-Led Defence:** Expand **Vibrant Villages Programme (Phase II)** to develop 1, 954 border villages, reducing out-migration and strengthening civilian monitoring along the LAC.
❍ **Dual-Use Infrastructure:** Villages such as **Zhuangnan & Majiduncun** act as forward bases with logistics, communications, and housing for rapid PLA mobilization.	❍ **High-Altitude Infrastructure:** Build **strategic tunnels (Zojila, Sela)** and all-weather rail links for faster movement of troops and heavy weapons.
❍ **Military–Civil Fusion:** Residents act as **civilian border defence units**, providing **surveillance, early warning, and intelligence on Indian activities**.	❍ **Aerial & Multimodal Readiness:** Upgrade **Advanced Landing Grounds (e. g., Nyoma airbase)** and expand helipad networks for heavy-lift operations and aerial reconnaissance.
❍ **Strategic Pressure Points:** Villages near **Tawang and the Siliguri Corridor (Chicken's Neck)** increase geostrategic pressure on India's northeastern connectivity.	❍ **Technological Surveillance:** Deploy **multi-layered ISR systems** using 150+ satellites, AI analytics, and drones for continuous situational awareness.
❍ **Psychological Warfare: Modern Chinese border villages** create perceived development disparity, pressuring Indian border communities and reinforcing China's governance narrative.	❍ **Energy & Institutional Synergy:** Use renewable energy micro-grids for forward posts and leverage **PM GatiShakti** for faster **BRO project clearances**.
	❍ **Diplomatic Deterrence:** Continue engagement through the **Working Mechanism for Consultation and Coordination (WMCC)** to manage tensions and avoid escalation.

Analyze the strategic implications of China's "Xiaokang" border villages on India's national security and territorial sovereignty.

Drishti Mains Question

Weapons in the US–Israel–Iran Conflict

US–Israel–Iran conflict has highlighted a **new era of warfare**, featuring one of the **most technologically complex drone and missile battles in modern military history**.

Major Weapons and Defence Systems Used in the US–Israel–Iran Conflict

Iran's Arsenal

- **Shahed-136 & Shahed-131 drones: Low-cost loitering ("kamikaze") drones** used in **swarm tactics** to overwhelm air defences.
- **Shahab-3: Medium-range ballistic missile (~2, 000 km)** forming the **core of Iran's long-range deterrence**.
- **Fattah missile: Hypersonic missile (up to Mach 15)** with **~1, 400 km range** and maneuverability to evade missile shields.
- **Khorramshahr: High-payload ballistic missile** used in attacks on **military installations**.
- **Bavar-373:** Long-range air defence system for aircraft and ballistic missile interception.
- **Sevom-e-Khordad: Mobile air defence system** targeting **aircraft and cruise missiles**.
- **Tor-M1: Short-range air defence** against **drones, cruise missiles, and precision munitions**.
- **Majid & Azarakhsh:** Counter-drone and low-altitude air defence systems for critical infrastructure protection.
- **Paveh cruise missile:** Land-attack cruise missile (~1, 650 km range) capable of mid-flight course changes.
- **Sejjil & Emad: Sejjil: Solid-fuel MRBM**, enabling **faster launch than Shahab-3**.
  - **Emad:** Precision-guided long-range ballistic missile with **maneuverable re-entry vehicle (MaRV)**.

US Arsenal

- **B-2 Spirit Stealth Bomber:** Low-radar stealth aircraft with flying-wing design for penetrating heavily defended airspace.

- **GBU-57 MOP (Massive Ordnance Penetrator):** 30, 000-lb bunker-buster bomb delivered only by B-2, used to destroy deep underground facilities (Fordow, Natanz).
- **Tomahawk Cruise Missile: Subsonic precision missile** using **GPS, INS, TERCOM, DSMAC** for low-altitude radar-evading strikes.
- **LUCAS Drone: Low-cost one-way attack drone** designed to counter **Iran's Shahed swarms**; launchable from **runways, vehicles, ships**.
- **PrSM (Precision Strike Missile)** Short-range ballistic missile (~400 km) launched from M-142 HIMARS.
- **THAAD: High-altitude anti-ballistic missile system** using **hit-to-kill kinetic interception**; **mobile and rapidly deployable**.
- **Patriot (PAC-3): Air defence system** intercepting **cruise missiles and drones** at **lower altitudes**.
- **APKWS (Advanced Precision Kill Weapon System):** Converts Hydra rockets into $25, 000 laser-guided weapons for low-cost drone interception.
- **Coyote Anti-Drone:** Jet-powered interceptor drone that tracks and collides with enemy drones.
- **SM-3 & SM-6:** Naval interceptors—SM-3 (midcourse ballistic missile interception), SM-6 (terminal-phase missiles, aircraft, drones).
- **Indirect Fire Protection Capability (IFPC):** Uses **AIM-9X interceptors** to defend **bases from drones and rockets**.
- **MQ-9 Reaper: Long-endurance UAV** for **surveillance and Hellfire missile strikes**.
- **Boeing P-8I:** Long-range maritime patrol aircraft for Anti-Submarine Warfare (ASW), Anti-Surface Warfare, Intelligence, Surveillance and Reconnaissance (ISR), maritime surveillance, and SAR

Israel Arsenal

- **Blue Sparrow missile: Air-launched quasi-ballistic missile (~2, 000 km range)**, launched from F-15 jets, follows exo-atmospheric trajectory making interception difficult.
- **Jericho missile family:**
  - **Jericho-2:** medium-range ballistic missile (MRBM) (1, 500–3, 000 km range).
  - **Jericho-3:** Intermediate-range ballistic missile (IRBM) (4, 800–6, 500 km range) forming core of Israel's strategic deterrence.
- **Arrow-2 & Arrow-3:** Long-range ballistic missile defence; Arrow-3 intercepts exo-atmospheric missiles, Arrow-2 operates within atmosphere.
- **David's Sling:** Intercepts medium/long-range rockets, cruise missiles, and tactical ballistic missiles.
- **Iron Dome:** Short-range defence system against rockets, artillery shells, and drones.
- **Iron Beam: Directed-energy laser system** to destroy **drones and small projectiles at low cost**, reducing reliance on costly interceptors.
- **C-Dome: Naval version of Iron Dome** deployed on **Sa'ar 6-class corvettes** to protect **offshore gas rigs and maritime borders** from **drone attacks**.
- **F-35I "Adir":** Fifth-generation stealth fighter used for deep strikes while evading air-defence systems **(e.g., Bavar-373)**.

India Opts Out of IEA-led Oil Release from SPRs

India has declined to participate in the **International Energy Agency's (IEA)** proposed coordinated release of **Strategic Petroleum Reserves (SPRs)** aimed at stabilizing global oil markets amid the escalating Middle East conflict.

- **Background:** Crude oil prices crossed USD 119/barrel due to producer supply cuts and fears of **shipping disruptions from the U. S. –Israeli war on Iran**.
- **Rationale:** Under an **"India First" policy**, SPRs are reserved for domestic supply disruptions, not for stabilizing global price volatility.
- **IEA Membership status: India is an associate member**, not a **full member**, so it has **no binding obligation** to release reserves.
- **Previous participation:** In **2021**, India released **~5 million barrels from SPRs** under a **US-led initiative** to stabilize global markets.

Strategic Petroleum Reserves

- **About: Emergency crude oil stockpiles** maintained to **manage supply disruptions**; IEA members are required to hold **oil stock levels** equivalent to no less than **90 days of net imports**.
  - Managed by **Indian Strategic Petroleum Reserves Limited (ISPRL)** under Ministry of Petroleum and Natural Gas.
- **Current SPR capacity:** ~5.33 million tonnes (MT), ~80% full; India is the **3rd-largest oil importer & consumer**.
  - **Operational sites: Visakhapatnam –** 1.33 MMT; **Mangaluru –** 1.5 MMT; **Padur –** 2.5 MMT. Provide **~9.5 days of crude oil coverage**.
  - **Expansion plans: 2.5 MMT at Padur (Karnataka)** and **4 MMT at Chandikhole (Odisha)**; future sites under consideration at Bikaner, Mangaluru, Rajkot, & Bina (MP).
- **Total energy buffer:** SPRs + commercial inventories (refineries, ports, floating storage) together provide **~74 days of crude oil and petroleum product reserves for India**.

India-Finland Relations

Alexander Stubb, President of **Finland**, visited **India** as the **Chief Guest at the 11th Raisina Dialogue**, where **India–Finland relations were upgraded to a Strategic Partnership**

in Digitalization and Sustainability and environmental cooperation agreements were renewed.

Key Outcomes of the Visit

- **Elevation of Bilateral Relations:** Upgraded to **Strategic Partnership in Digitalization and Sustainability**.
  - **Consular Dialogue:** India & Finland agreed to establish a **dedicated Consular Dialogue b/w Foreign Ministries** for mobility, consular issues, and citizen welfare.
- **Key MoUs & Agreements Signed:**
  - **Migration & Mobility Partnership:** Framework to facilitate movement of skilled Indian professionals to Finland.
  - **Environmental Cooperation (Renewal):** Covers bioenergy, waste-to-energy, power storage, green hydrogen, and renewable energy (wind, solar, small hydro).
  - **Cooperation in Statistics:** Exchange of best practices and collaboration in official government statistics.
- **Digitalization, Technology, and Innovation**
  - **Joint Task Force on 6G:** Collaboration b/w University of Oulu & Bharat 6G Alliance for advanced 6G research.
  - **Joint Working Group on Digitalization:** Cooperation in HPC, 5G, 6G, Quantum communications/computing, and AI.
  - **Joint Research Calls:** Arrangement b/w **DST (India)** & **Business Finland** for **research collaboration**.
  - **Indo-Finland Startup Corridor:** Participation of **Indian startups in Slush (Finland)** and **Finnish startups in Startup Mahakumbh (India)**.
- **Trade & Multilateral Cooperation**
  - **Bilateral trade target:** Double India–Finland trade by 2030, leveraging the **India-EU FTA**.
  - **World Circular Economy Forum (WCEF):** MoEFCC & SITRA (Finland) to co-host WCEF in India in 2026.

India-Finland Relations

- **Trade & Economic Relations (2023–24): India exports:** USD 582.65 million; **India imports:** USD 913.48 million; **Trade deficit:** USD 330.83 million for India.
  - **India's exports:** Medicinal & pharmaceutical products, textiles & apparel, metal manufactures, electrical machinery/components.
  - **India's imports:** Specialised industrial machinery, electrical equipment, paper & paperboard, metalliferous ores, metal scrap.
  - **Heterocyclic compounds:** Share in exports rose from **1% (2022) to 28% (2025)**, becoming the **largest export category**.
- **FDI: Finland ranked 40th investor in India (2023)**; actual investment higher due to long-standing presence of Finnish firms like **Nokia** since the **1990s**.
- **Digital cooperation: Joint Declaration of Intent on Digitalization (2019)**; collaboration in 5G, 6G, cybersecurity, digital infrastructure, and startup ecosystems.
  - **Infrastructure projects**: Finland architects supported construction of the Chenab railway bridge and the **bamboo-to-bioethanol refinery at Numaligarh (Assam)**.
- **Indian diaspora: ~20, 000 Indians in Finland**, contributing to **economy and cultural diversity** (Finland population **~5.6 million**).

Key Challenges in India-Finland Relations

- **Trade deficit:** Trade balance **favours Finland**; India exports traditional goods while imports high-value technology and electronics.
- Weak logistical connectivity: Limited direct conn**ectivity with Helsinki** increases **freight costs and transit time**, discouraging **B2B exchanges and supply chain integration**.
- **Russia factor: Finland joined NATO & supports sanctions on Russia**, while India maintains strategic autonomy and ties with Moscow, causing differences in strategic outlook.

Steps to Strengthen India-Finland Relations

- **Leverage EU–India FTA:** Expand textiles, pharmaceuticals, and IT services exports to Finland to achieve the **2030 bilateral trade doubling target**.
- **Skilling ecosystems:** Align **Skill India Mission vocational training** with **European standards** to utilize the Migration and Mobility MoU.
- **Lead green transition:** Use **WCEF 2026 co-hosting** to promote circular economy, waste management, and sustainable development.
- **Global peacemaker role:** Leverage ties with **Western nations and the Global South** to act as a **mediator in international forums** amid global conflicts.

Raisina Dialogue 2026

11th Raisina Dialogue (2026) concluded in **New Delhi**, marking the launch of the **Raisina Science Diplomacy Initiative (SDI)** to integrate **technological innovation with global foreign policy**.

Major Takeaways

- **SDI:** Framework to integrate **science and technology into foreign policy**, focusing on **AI governance, semiconductor supply chains**, and **India's Digital Public Infrastructure for developing nations**.
- **Shift to Multipolar World:** Recognition of a **multipolar global order** with the **Global South playing a major role**.

- **Global Governance Trends:** Growth of **South–South partnerships** and **flexible plurilateral groupings**.
- **India's Strategic Engagement:** Through **BRICS**, **India–Middle East–Europe Economic Corridor (IMEC)**, and **India–France–UAE (UFI) Trilateral**, positioning India as a **key Global South voice and partnership builder**.

- **Reformed Multilateralism:** Calls for **UNSC reform** to reflect **current geopolitical realities**, with **growing support for India's permanent membership**.
- **Maritime Security:** Focus on securing **global supply chains, undersea communication cables, and maritime routes** amid tensions in the **Indian Ocean, Red Sea, and Indo-Pacific**.

Raisina Dialogue

- **Launched: 2016** by **Ministry of External Affairs (MEA)**; organized with **Observer Research Foundation (ORF)**.
  - Named after **Raisina Hills, New Delhi**.
  - India's **premier geopolitics and geo-economics conference**; comparable to **Munich Security Conference** and **Shangri-La Dialogue**.
  - Brings together **global leaders, policymakers, academics, industry experts, and journalists**.
- **Theme 2026:** "*Samskara – Assertion, Accommodation, Advancement.*"

Conflict Zones in the US-Israel-Iran War

US and Israel conducted **coordinated strikes on Iran**, followed by **Iranian retaliatory attacks on economic targets in GCC states**.

- Rising tensions in the **Persian Gulf** prompted **India's Ministry of Ports, Shipping and Waterways** to **enhance monitoring for Indian ships and seafarers**, while **Hezbollah intensified clashes with Israel from Lebanon**.

Key Actors Associated with the US-Israel-Iran Conflict

State Actors

- **US & Israel:** Aim to **dismantle Iran's nuclear capabilities and proxy networks** to reshape the regional balance of power; US also seeks to encourage regime change in Iran.
- **Iran:** Focused on regime survival while **using regional proxy networks** to deter further strikes and raise the cost of war for the US and allies by expanding the conflict regionally.
- **GCC Nations (UAE, Saudi Arabia, Qatar, Bahrain, Kuwait, Oman):** Located around the **Persian Gulf** and caught in the conflict; host major **US military bases** such as **Al Udeid Air Base (Qatar), US Fifth Fleet HQ – Naval Support Activity Bahrain, Al Dhafra Air Base (UAE), Duqm Port (Oman)**.
  - **Iran's Strategy:** Target **economic & civilian infrastructure** (airports, oil facilities) and **US embassies/military installations** in GCC states to pressure the global economy and trigger international intervention.

Non-State Actors (The "Axis of Resistance")

- **Hezbollah (Lebanon): Iran-aligned**, engaging **Israel on the northern border**, creating a **two-front conflict**.
- **Houthis (Yemen):** Support **Iran and the Axis of Resistance**; attack **commercial ships in the Red Sea and Gulf of Aden**, disrupting **global trade** and pressuring **US and Israel**.
- **Popular Mobilization Forces (PMF – Iraq):** Conduct **solidarity strikes on US bases and Israeli interests** from **Iraq & Syria**.
- **Kurdish Militias:** Some groups **supported by the US and Israel** against **Iran**.
  - **Kurds: Largest stateless ethnic group (25–35 million)** spread across **Turkey, Iraq, Syria, Iran, and parts of Armenia**; historically **supported by the US**, especially in **Iraq & Syria**, as **military allies**.

Places in News (PIN) Associated with the Conflict

Critical Waterways and Maritime Chokepoints

- **The Strait of Hormuz: Narrow chokepoint (55–95 km wide)** b/w **Iran (north)** and **Oman & UAE (south)**.
  - Connects the **Persian Gulf** with the **Gulf of Oman and Arabian Sea**.
  - **Only sea passage** from the **Persian Gulf to the open ocean**.
- **The Persian Gulf: Marginal sea of the Indian Ocean** in **West Asia**; extension of the **Gulf of Oman**.
  - Lies b/w the **Arabian Peninsula (southwest)** and **Iran (northeast)**.
  - **Bordered by** Iran, Oman, UAE, Qatar, Saudi Arabia, Bahrain, Kuwait, Iraq.
    - **Shatt al-Arab delta** (confluence of **Euphrates and Tigris**) empties into the gulf.
  - **Coastline:** ~5, 117 km; Iran has the longest stretch.
  - Contains major **crude oil reserves**, including **Al-Safaniya Oil Field (largest offshore oil field)**.
- **Gulf of Oman:** Also called **Gulf of Makran**; western extension of the Arabian Sea and maritime gateway to the Persian Gulf.
  - Connects the **Arabian Sea** to the **Strait of Hormuz**.
  - Bordered by **Iran & Pakistan (north), Oman (south), UAE (west)**.
  - **Major ports:** Sohar, Al Khaburah, Muscat, Sur (Oman); Jask, Chabahar (Iran).
- **The Red Sea:** Seawater inlet b/w Africa and Asia.
  - Bordered by **Egypt, Saudi Arabia, Yemen, Sudan, Eritrea, Djibouti**.
  - Connects to the **Indian Ocean** via **Bab el-Mandeb Strait and Gulf of Aden**.
  - In the **north**, splits into **Gulf of Aqaba** and **Gulf of Suez** (leading to **Suez Canal**).

- Geologically part of the **Great Rift Valley (Afro-Arabian Rift system)**.

- **Mediterranean Sea:** Intercontinental sea bordered by **Europe (north), Asia (east), Africa (south)**.
  - Connects to the **Atlantic Ocean (Strait of Gibraltar)**, **Black Sea (Dardanelles – Sea of Marmara – Bosporus)**, and **Red Sea (Suez Canal)**.
  - Bordered by **~22 countries and Gibraltar**, including Turkey, Syria, Lebanon, Israel, Cyprus
- **Indian Ocean:** Region where India is strengthening naval posture to secure **Sea Lines of Communication (SLOCs)** and maritime trade routes.
  - **US submarine sank Iranian frigate IRIS Dena** about 40 nautical miles off Sri Lanka's southern coast near Galle, bringing the US–Israel–Iran conflict closer to the Indian Ocean Region (IOR).

The Iranian Plateau

- **Tehran & Karaj:** Capital and adjacent suburb; targeted for leadership compounds and IRGC military command centers.
- **Isfahan & Natanz:** Central Iran; Isfahan hosts airbases and missile production facilities, Natanz is the fortified underground uranium enrichment center.
- **Bandar Imam Khomeini & Abadan:** In Khuzestan (near Persian Gulf); major petrochemical complexes and refineries supporting Iran's export economy.
- **Shahroud Space Center:** Located in Semnan Province; key facility for ballistic missile production and testing.

The Levant

- **Lebanon:**
  - **Beirut: Capital**; southern suburbs are the main Hezbollah stronghold and command center.
  - **Litani River:** B/w Mount Lebanon and Anti-Lebanon ranges; flows south then west into the Mediterranean Sea north of Tyre.
  - **UNSC Resolution 1701 (post-2006 Lebanon War):** Area b/w Blue Line (Israel border) and Litani River to be free of armed personnel except Lebanese Armed Forces and UNIFIL.
- **Israel:**
  - **Haifa:** Major deep-water port and naval base, near Lebanese border.
  - **Tel Aviv:** Technological & financial capital of Israel.
  - **Ashkelon:** Coastal city near Gaza Strip, frequently within range of short-range projectiles.
  - **Dimona:** Nuclear site threatened by Iran.
  - **Geographical** Alignment: Haifa, Tel Aviv, Ashkelon located on the Levantine Basin of the Mediterranean Sea.
- **The Golan Heights (Syria):**
  - **Location: Strategic basaltic plateau** in **southwestern Syria**.
  - **Boundaries:**
    - **Mount Hermon (north)** – separates from **Lebanon**
    - **Yarmouk River (south)** – separates from **Jordan**
    - **Jordan River & Sea of Galilee (west)**
    - **Wadi al-Ruqqad (east)**
  - **Topographical Advantage:** Overlooks Jordan Rift Valley and northern Israel (west) and Damascus (east).
  - **Historical Context:**
    - Captured by **Israel from Syria – Six-Day War (1967)**
    - **Syria failed to recapture – Yom Kippur War (1973)**
    - **Israel–Syria Disengagement Agreement (1974)** created ceasefire and UNDOF monitoring
    - **Israel annexed the territory (1981)** – not internationally recognised; US recognised Israeli sovereignty (2019)
    - Area divided by UN-monitored demilitarised zone (Area of Separation); **Syria continues to demand its return**.
- **Jordan:** Intercepted Iranian ballistic missiles and drones.
  - Located **b/w Israel and Iran/Iraq**; aims to **protect territorial integrity and prevent its airspace from becoming a war zone**.
- **Cyprus:** Strikes reported from Iran or Hezbollah.
  - **Eurasian island** in the **northeast Mediterranean Sea**, at the **crossroads of Europe, Asia, and Africa**.

The Arabian Peninsula and Allied Bases

- **Dubai & Abu Dhabi (UAE):** Global aviation and economic hubs targeted by **Iranian retaliatory strikes** to disrupt **transit and trade**.
- **Manama (Bahrain): Capital** hosting the **US Navy's Fifth Fleet**, a key Western naval power projection base.
- **Erbil (Iraq): Capital of Kurdistan Region**; **US military base at Erbil International Airport**, frequently targeted by Iranian ballistic missiles.
- **Akrotiri & Dhekelia (Cyprus**): UK Sovereign Base Areas used for **reconnaissance flights and intercepting regional projectiles**.
- **Turkey:** NATO air defence systems intercepted **an Iranian ballistic missile; debris fell in Hatay province near Incirlik US air base.**

The US–Israel–Iran conflict has transformed West Asia into a multi-front geopolitical theatre. " Examine the role of state and non-state actors in shaping this conflict.

Drishti Mains Question

US Torpedo Sinks Iranian Warship in Indian Ocean

A US submarine torpedoed and sank the **Iranian frigate IRIS Dena near Galle (Sri Lanka)** in the Indian Ocean, the first US torpedo sinking of an enemy ship since World War II. Sri Lanka deployed naval vessels for rescue under the SAR Convention.

International Convention on Maritime Search and Rescue (SAR)

- **About:** A**dopted in 1979 under IMO** to ensure **prompt rescue of persons in distress at sea**.
- **Key Features:**
  - **Global SAR system:** Oceans divided into **Search and Rescue regions**, each coordinated by **coastal states**.
  - **Obligation to rescue: Ships and states must assist persons in distress**, regardless of **nationality or status**.
  - **Coordination:** Establishes **Rescue Coordination Centres (RCCs)** to manage operations.
  - **International cooperation:** Promotes **coordination among neighbouring countries** for rescue and evacuation.
- **India & SAR:** Signatory to **SAR Convention (1979)**; **ratified in 2001**.
  - **Authority: Indian Coast Guard (ICG)** coordinates operations in **Indian Search and Rescue Region (ISRR)**; **DG ICG** serves as **National Maritime Search and Rescue Coordinating Authority (NMSARCA)**.
  - **INDSAR:** Voluntary ship reporting system for tracking vessels and responding to maritime distress.
- **Significance:** Ensures **humanitarian assistance at sea**, strengthens **maritime safety and international cooperation**.
  - **Related conventions: SOLAS (1974)** and **UNCLOS (1982)**.

- The *IRIS Dena* was attacked while returning from the **International Fleet Review (IFR) 2026** in Visakhapatnam.
- The **IFR is hosted by the Indian Navy to build trust, interoperability, and "Bridges of Friendship"** among global navies.

Torpedo

- **About: Self-propelled underwater missile** used to destroy **ships or submarines**; tracks targets & detonates **beneath the hull** for maximum damage.
- **Torpedo Technology in India:**
  - **Varunastra:** Indigenous heavyweight anti-submarine torpedo; launched from surface ships and submarines.
  - **Shyena / TAL:** Indigenous lightweight anti-submarine torpedo; launched from ships, submarines, and helicopters.
  - **Maareech:** Advanced Torpedo Defence System (ATDS) that detects, diverts, and destroys incoming torpedoes using towed decoys.

India–Canada Strategic Reset

Canadian PM visited India, **marking a strategic reset in bilateral relations after the 2023–24 diplomatic tensions**, with focus on economic cooperation, defence dialogue, and strengthening the partnership.

Key Outcomes of the Visit

- **CEPA negotiations relaunched: Terms of Reference (ToR)** signed to resume CEPA talks; target to double bilateral trade to USD 50 billion by 2030.
- **Landmark Civil nuclear deal**: Department of Atomic Energy signed USD 2.6 billion contract with Cameco (Canada) for **Uranium Ore Concentrates supply**; supports **100 GW nuclear power capacity by 2047** under **Viksit Bharat vision**.
- **Critical minerals & clean energy cooperation:**
  - **MoU** to develop **secure critical mineral supply chains** aligned with **G7 Critical Minerals Action Plan**.
  - Canada to join **ISA & Global Biofuels Alliance (GBA)**.
  - MoU on capacity building and best practices in energy storage, solar, wind, and biomass/bio-energy.
- **Defence & security:** Establishment of the **first India–Canada Defence Dialogue** for **strategic security discussions**.
- **Political & diplomatic ties:** Creation of the **India–Canada Parliament Friendship Group**; India supports Canada's entry into IORA as a Dialogue Partner.
- **Private sector Engagement: India–Canada CEO Forum reconstituted** to strengthen private-sector collaboration across priority industries.
- **Innovation & Talent: India–Canada–Australia Trilateral MoU** under **ACITI Partnership** for cooperation in emerging technologies and innovation.
  - **Research internships: MoU b/w AICTE & Mitacs (Canada)** to provide 300 fully funded research internships for Indian students.
  - **Food & nutrition research:** Declaration of Intent to establish **Joint Pulse Protein Centre of Excellence at NIFTEM-K, Kundli** focusing on protein extraction and fortified food products to address micronutrient deficiencies.

Significance of India-Canada Relations

- **Strategic partnership: 75+ years of diplomatic ties**; upgraded to **Strategic Partnership in 2018**.
- **Economic complementarity:**
  - **Canada:** advanced technology, capital, and resources (**potash, uranium, critical minerals**).

- **India: large market** and **skilled talent pool**; Canada seeks to reduce dependence on the US market.
- **Investments:** Canadian pension funds invested over USD 75 billion in India.
- **Trade:** India was **Canada's 7th largest trading partner in 2024**; bilateral trade USD 30.9 billion, with India's goods trade surplus.

- **Key exports:**
  - **Canada → India:** Vegetables, mineral fuels & oils, wood pulp, fertilisers, paper & paperboard.
  - **India→Canada:** Pharmaceuticals, machinery, electronics, precious stones & metals, iron & steel products.
- **Geopolitical alignment:** Both democracies support a rules-based, free, open Indo-Pacific; **Canada's Indo-Pacific Strategy** identifies **India as a key partner**.
- **Diaspora & soft power: Indian diaspora ~1.8 million (≈4% of Canada's population)**; India is the largest source of international students in Canada.
- **Multilateral cooperation:** Collaboration in **UN, WTO, and ICAO** on global issues.
- **Security cooperation:** Joint Working Group on Counter Terrorism (1997); Framework for Cooperation on Countering Terrorism (2018); Extradition Treaty (1987); Mutual Legal Assistance Treaty (1994).

Challenges in India-Canada Relations	Suggestions
❍ **Khalistani extremism:** India concerned over **anti-India separatist activities in Canada** and **attacks on Indian consulates and diaspora members**.	❍ **Security cooperation:** Implement **NSA action plan** to address **violent extremism & organised crime** and rebuild trust.
❍ **Trade barriers:** Disputes over **India's agricultural tariffs, Canada's sanitary standards, IPR issues**, and **mobility of professionals**.	❍ **Early harvest trade deal:** Pursue an **interim trade agreement** to expand trade in **less contentious sectors** while **CEPA negotiations continue**.
❍ **Visa & consular delays: 2023–24 diplomatic tensions** led to **reduced diplomatic staff**, causing **visa backlogs** for **students, tourists, and business professionals**.	❍ **Cultural & educational cooperation:** Expand **cultural & academic programmes** and streamline **visa & consular processes**.

Examine the strategic significance of the recent India–Canada diplomatic reset in the context of Indo-Pacific geopolitics.

Drishti Mains Question

Self-Defence, IHL and UNCLOS in US–Israel–Iran Conflict

Recent **US and Israeli strikes on Iran**, including the **bombing of a girls' school in Minab (Iran)**, justified as **"pre-emptive" self-defence**, raise questions on the **legality of use of force under Article 51 of the UN Charter**.

- The **torpedoing of the Iranian warship IRIS Dena off the coast of Sri Lanka** also raises concerns regarding **freedom of navigation under UNCLOS**.

International Law on the Use of Force	
Doctrine of Self-defence	**International Humanitarian Law (IHL)**
❍ **Core Prohibition: Article 2(4) of the UN Charter** prohibits **threat or use of force** against the **territorial integrity or political independence** of another state. • **Exceptions:** Use of force is lawful only when: ❖ Authorised by UNSC, or ❖ Exercised as self-defence under Article 51.	❍ **Scope:** While the **UN Charter** governs legality of starting war (**jus ad bellum**), **IHL** regulates **conduct of war** (**jus in bello**).
❍ **Strict Interpretation of Article 51:** Self-defence applies only in response to an "**actual armed attack.**" Since **Iran had not recently attacked either state**, the **strikes do not meet this criterion**.	❍ **Core Principles:** Distinction, Proportionality, Military Necessity, Precaution.
❍ **US and Israel justification:** Based on **anticipatory self-defence**, though many scholars argue **international law does not recognise self-defence against a future attack**. • **Conditions** (**even under this doctrine**): Iran had decided to attack ❖ Iran had the capability to attack; ❖ It was the "last window of opportunity" to prevent the attack • **Context: US–Iran nuclear negotiations**, mediated by **Oman**, were **ongoing in Geneva** when **joint US–Israel strikes were launched**.	❍ **Principle of Distinction:** Requires separation b/w **combatants/military targets** and **civilians/civilian objects** (schools, hospitals, places of worship). If doubt exists, the target must be **presumed civilian**. ❍ **Exception: Civilian objects** lose protection if **used for military purposes**. • **No evidence** that the **Minab school** (**Iran**) targeted in the **US–Israel airstrike** was used for **military purposes**. ❍ **Legal Protections for Children: Convention on the Rights of the Child, 1989** (**Article 38(4)**) requires states to **protect children affected by armed conflict**. **Rome Statute, 1998: Intentional targeting of civilians and educational buildings** is a **war crime**. ❍ **Doctrine of Collateral Damage:** If the **school was incidentally hit** during an attack on a **nearby military target**, legality depends on **proportionality and precaution**. **Incidental civilian harm** is lawful only if **not excessive relative to the "concrete and direct military advantage"** anticipated.

UNCLOS and its Role in Naval Warfare

UNCLOS and Naval Warfare

- **Scope: UNCLOS (1982)** governs **peacetime maritime activities**; no explicit rules for **armed conflict**; **USA not a signatory**
- **Maritime Zones:**
  - **Territorial Sea:** Up to **12 nautical miles**
  - **EEZ:** Up to **200 nautical miles**
  - **High Seas:** Beyond **200 nautical miles**
  - **Focus:** Peaceful use, navigation rights, resource management, marine protection

Law of Naval Warfare

- During **armed conflicts**, it operates alongside **UNCLOS** during conflicts
- **Warships** of belligerent navy (e.g., IRIS Dena) are **legitimate military targets**
- Use of force on high seas is **presumptively unlawful** unless **self-defence (Article 51)** or active conflict
  - **IRIS Dena:** Sanctioned by **US (2023)**; sanctions ≠ legal basis for attack; was on **peaceful passage (Exercise MILAN 2026)**

Durand Line Dispute

The **Durand Line dispute** has seen **frequent clashes b/w Afghan Taliban forces and Pakistani troops** over **border fencing, TTP presence, and deportation of Afghan refugees**, escalating to **Pakistan's cross-border operation "Ghazab Lil Haq."**

Durand Line

- **Background:** 2, 640 km porous border b/w Pakistan & Afghanistan.
  - Extends from the **Karakoram Range (near China)** to the **Registan Desert (near Iran)**; passes through **Khyber Pass** and **Spīn Ghar (White Mountains)**.
- **Origin:** Established **1893** through agreement b/w **Sir Mortimer Durand** and **Abdur Rahman Khan (Emir of Afghanistan)**.
- **Purpose:** To demarcate spheres of influence b/w British India and Afghanistan and act as a buffer against the Russian Empire during the **"Great Game."**
- **Anglo-Afghan Wars:**
  - **First Anglo-Afghan War (1839–42):** British invaded Afghanistan but were defeated and forced to withdraw.
  - **Second Anglo-Afghan War (1878–80):** British victory; Treaty of Gandamak (1879) gave Britain control over Afghanistan's foreign policy.
  - **Durand Line Agreement (1893):** Signed between **Sir Henry Mortimer Durand** and **Emir Abdur Rahman Khan**;
    - **Divided Pashtun tribal areas**
    - Placed **Balochistan under British India**
    - Created the **Wakhan Corridor** as a **buffer between Russia and Britain**.
  - **Third Anglo-Afghan War (1919):** Treaty of Rawalpindi restored Afghanistan's control over foreign affairs and reaffirmed the Durand Line.
- **Post-1947 Inheritance:** Pakistan inherited the Durand Line, but Afghanistan does not recognise it as an international boundary.

Core Reasons for the Disputes Around Durand Line	❍ **Non-Recognition & Pashtun Issue:** Border **divides Pashtun and Baloch tribes**; Afghanistan has promoted the idea of **"Pashtunistan."** ❍ **Pakistan's Border Fencing (2017):** Built to curb **terrorism, smuggling, and illegal movement**; **Afghan Taliban oppose it**, often **removing fences**, causing **skirmishes**. ❍ **TTP Factor:** Pakistan accuses **Afghan Taliban of sheltering Tehrik-i-Taliban Pakistan (TTP)**, responsible for **attacks in Pakistan**; Kabul reluctant to act. ❍ **Trade & Transit Chokepoints:** Pakistan's closure of **Torkham and Chaman–Spin Boldak crossings** pressures **landlocked Afghanistan**, worsening relations.
Implications of the Durand Line Dispute for India	❍ **Collapse of Pakistan's Strategic Depth Doctrine:** Rising **Pakistan–Afghanistan tensions** weaken Pakistan's strategy of using the **Afghan Taliban as a buffer against India**. ❍ **Two-Front Challenge for Pakistan:** Militarization along the Durand Line forces Pakistan to divert military and intelligence resources to its western border. ❍ **Greater Diplomatic Space for India:** Strained **Pakistan–Taliban relations** create opportunities for India's diplomatic outreach and humanitarian engagement with Afghanistan. ❍ **Rise of Transnational Terrorism: Border instability** could strengthen groups like **ISKP and TTP**, increasing **regional terrorism risks**.

The Durand Line remains one of the most contested colonial borders in South Asia. Examine the historical roots and contemporary implications of this dispute.

Drishti Mains Question

US-Israel Attack on Iran

US & Israel launched coordinated strikes on **Iran**, reportedly killing **Ayatollah Ali Khamenei** and targeting strategic facilities under **Operation Epic Fury** (US) and **Operation Lion's Roar** (Israel), escalating regional tensions.

- Iran retaliated with **Operation True Promise 4**, launching missile attacks on Israel and nearby Gulf states, amid ongoing US–Iran nuclear talks, raising fears of a wider West Asian conflict.

Reason of US-Israel Attack on Iran

- **US & Israel Attack on Iran:** Cited Iran's continuing **nuclear ambitions** and threat from its **ballistic missiles and kamikaze drones** to US forces and regional allies.
  - Unlike 2025 deterrence strikes, **Feb 2026 attacks aimed at decapitation**.
  - Reported killing of **Ayatollah Ali Khamenei**; Washington assessed his removal could fracture the **Islamic Revolutionary Guard Corps (IRGC)**.
  - Driven by nuclear concerns, regime change ambitions, domestic pressure, deterrence logic, and escalating strategic commitments.

Historical Background

- **1979 Rupture:** Post-Iranian Revolution, Iran severed ties with Israel; adopted anti-West ideology; termed US "Great Satan" and Israel "Little Satan. "
- **Nuclear Revelation (2000s):** Discovery of Iran's secret nuclear program escalated tensions.
- **Regional Expansion:** Post-overthrow of Iraq's **Saddam Hussein** (a major regional rival of Tehran), Iran built **Axis of Resistance** (Hezbollah, Hamas, Houthis) to counter US–Israel influence.
- **Joint Comprehensive Plan of Action (JCPOA) Agreement (2015):** Signed b/w **P5+1** (China, France, Germany, Russia, UK & US)**, EU, Iran**; sanctions relief in exchange for limits on uranium enrichment.
- **US Withdrawal (2018):** Exited **JCPOA**, citing flaws (missile program, Axis of Resistance); Iran increased uranium enrichment near weapons-grade.
- **Collapse of Axis of Resistance (2023–24):** Post-Oct 2023 Hamas attack, Israel weakened **Hamas**, decapitated **Hezbollah** leadership, and fall of **Syria's Bashar al-Assad** reduced Iran's regional buffers.
- **Operation Midnight Hammer (June 2025):** Israel struck **Natanz, Isfahan**; US joined with **B-2 bombers** targeting **Fordow**; aimed to delay Iran's nuclear programme by damaging key facilities.

Implications of the US and Israel-Iran War

Global

- **Global Energy Security Threat:** Strait of Hormuz handles **~20 mbpd oil (20% global use)** and **20–30% LNG**; blockade/ mining could spike crude prices.
- **Geopolitical Polarization:** Risk of Russia–China aligning with Iran; US consolidating Western & Arab allies.
- **Global Supply Chain Disruption:** Militarization of West Asian routes raises freight & insurance costs.
- **Commodity & Market Volatility:** Energy shipment suspensions increase "war premium"; gold prices surge; Dubai & Abu Dhabi markets halted trading.

India

- **Energy Security and Economy:**
  - **High Import Dependence:** 3rd-largest crude consumer; imports **85–88%+** of oil.
  - **Strait of Hormuz Exposure: 2.5–2.7 mbpd** from Iraq, Saudi Arabia, UAE, Kuwait via Hormuz; **80–85% LPG** and **~60% LNG** transit through strait.
  - **Limited Gas Reserves:** Crude needs covered (SPR, diversified imports incl. Russia); limited reserves for **LPG/LNG**; spot supply constrained.
  - **Economic Impact:** Prolonged disruption may push oil **>USD 100/barrel**; higher import bill, CAD widening, inflationary pressure.
- **Safety of the Indian Diaspora: ~9 million Indians** in West Asia; risk may require evacuation (e.g., **Operation Rahat/ Ajay**).
- **Diplomatic Tightrope:** Balancing ties with **US & Israel** and longstanding relations with **Iran**; avoid partisan stance while advocating peace.
- **Connectivity Corridors Disruption:** Threat to **Chabahar Port** operations and viability of **IMEC** due to Gulf militarization.

Measures that India Can Take

- **Activate Strategic Buffers:** Use **Strategic Petroleum Reserves (SPR)**; diversify LPG/LNG sourcing (e.g., US, Australia).
- **Evacuation Preparedness:** Frame SOPs with **MoCA** and **Indian Navy**; keep **IAF/Air India** ready for airlifts (like Operation Ganga).
  - Expand **Indian Navy** deployment in Arabian Sea/Gulf of Oman; strengthen missions like **Operation Sankalp** to protect merchant vessels.
- **Strategic Autonomy:** Balance ties with US–Israel and Iran; back-channel with **Tehran & Muscat** to secure safe passage for Indian vessels and de-militarize shipping lanes.
- **Subsidies/Tax Relief:** Reduce **excise duty & Value Added Tax (VAT)** on petrol/diesel to absorb war premium impact.
- **Advocating for De-escalation at the UN:** Call for de-escalation; condemn civilian casualties; avoid partisan stance; push for dialogue and restoration of supply chains.

> The West Asian crisis is not just a regional conflict, but a direct threat to India's macroeconomic stability and strategic autonomy. " Analyze the multifaceted impact of the US-Israel-Iran conflict on India
>
> **Drishti Mains Question**

Missile Defence in the US-Israel–Iran Conflict

US–Israel–Iran conflict underscores the critical role of **missile defence & interceptor systems**, as missile and drone waves test multi-layered air defence networks in high-intensity warfare.

Missile Defence System

- **About:** Military architecture to detect, track, and destroy incoming enemy projectiles before impact.
- **Key Components**
  - **Sensors:** Satellites and ground radars to detect and track threats.
  - **Command Centres:** Process data, identify targets, decide response.
  - **Interceptors:** Missiles launched to neutralize incoming threats.
- **Strategic Value:** Protects lives/infrastructure; enhances deterrence by reducing effectiveness of enemy missiles and buying decision-making time.

Working of a Missile Interceptor

- **Detection & Tracking:** Ground radar scans sky; computer estimates speed, altitude, trajectory.
- **Achieving a "Lock":** Radar focuses on target, continuously updating position.
- **Launch Command:** Engagement Control Station calculates path; interceptor rocket ignited.
- **Mid-Air Guidance:** Radar tracks both target and interceptor; sends guidance commands.
- **Terminal Phase:** Onboard seeker locks target; destruction via
  - **Proximity fuse** (warhead blast), or
  - **Hit-to-kill** (direct kinetic impact).

Key Defence Systems Deployed in the US–Israel–Iran Conflict

US	Israel
❍ **THAAD:** Intercepts short/intermediate-range ballistic missiles in terminal phase at high altitude (hit-to-kill). ❍ **Patriot Missile System:** Last-line defence against ballistic/cruise missiles and aircraft; protects critical infrastructure. ❍ **SM-3 & SM-6 (US Navy):** • **SM-3:** Midcourse ballistic missile interception. • **SM-6:** Terminal-phase defence against missiles, aircraft, drones. ❍ **Indirect Fire Protection Capability (IFPC):** Uses **AIM-9X** to counter drones and rockets; conserves Patriot missiles.	❍ **Arrow-2 & Arrow-3:** Long-range ballistic missile defence; **Arrow-3** (exo-atmospheric), **Arrow-2** (endo-atmospheric). ❍ **David's Sling:** Intercepts medium/long-range rockets, cruise missiles, tactical ballistic missiles. ❍ **Iron Dome:** Short-range defence against rockets, artillery, drones; high success against low-speed threats. ❍ **Iron Beam:** Laser-based system to destroy drones/small projectiles at low cost.

UAE
❍ **Cheongung II:** South Korean medium-range air defence system; 360° radar, vertical launch; counters low-flying cruise missiles & tactical ballistic threats.
Iran
❍ **Bavar-373:** Long-range air defence system; intercepts aircraft and ballistic missiles. ❍ **Sevom-e-Khordad:** Mobile air defence; targets aircraft & cruise missiles. ❍ **Tor-M1:** Short-range; counters precision-guided munitions, drones, low-flying cruise missiles. ❍ **Majid & Azarakhsh:** Designed to counter drones and low-altitude aerial threats.

India-Israel Relations

During his **State visit to Israel**, the **PM elevated India–Israel ties** to a **"Special Strategic Partnership for Peace, Innovation & Prosperity."**

- The **first round of India–Israel FTA negotiations** was concluded in **New Delhi**.

Outcomes of the PM's Visit to Israel

- **Technology & Strategic Cooperation:**
  - **Indo-Israel Cyber CoE: LoI to establish Cyber Centre of Excellence in India for digital resilience & tech collaboration.**
  - **AI Cooperation:** MoU on ethical AI & civilian applications; MoU on AI-enabled education (human-centred learning, AI/data literacy).
  - **Horizon Scanning:** DoI on AI-driven strategic foresight & risk assessment.
  - **Geophysical Exploration:** MoU for AI-based mineral exploration & data sharing.
  - **Critical & Emerging Technologies:** Joint Commission on S&T (JCM) elevated to Ministerial level. New initiative led by NSAs.
- **Economic & Financial Integration**
  - **UPI Integration:** MoU enabling cross-border remittances via UPI.
  - **Financial Services:** MoU between IFSCA (India) & Israel Securities Authority (ISA) on fintech/regtech cooperation.
  - **Commercial Arbitration:** Agreement between ICA (India) & IICA (Israel) for ADR strengthening.
- **Labour Mobility:** 3 Implementation Protocols for regulated Indian workforce in Israel:
  - Commerce & Services (retail, logistics, hospitality, warehousing)

- Manufacturing (textiles, electronics, chemicals, metals, food processing)
- Restaurants & food sector

- **Agriculture & Allied Sectors:** India–Israel Innovation Centre for Agriculture (IINCA) (ICAR–MASHAV MoU):
  - Focus: **Precision farming, irrigation, pest management, capacity building**.
  - Launch of **"Villages of Excellence"** initiative.
  - **Fisheries & Aquaculture CoE**: Disease management, mariculture, seaweed R&D.
- **Culture & Academic Cooperation:**
  - **National Maritime Heritage Complex (Lothal)**: Israel to collaborate on development.
  - MoU between **Nalanda University** & **Hebrew University of Jerusalem (HUJI)** for academic exchange.
- **Speaker of the Knesset Medal:** PM Narendra Modi received the **Speaker of the Knesset Medal, the highest honour of the Israeli Parliament,** becoming the first global leader to receive it.
  - In 2018, he received the **Grand Collar of the State of Palestine,** the highest Palestinian honour for foreign leaders.

Significance of India-Israel Relations

For India

- **Defence Preparedness:** Access to advanced systems — **Phalcon AWACS**, **Heron, Searcher-II, Harop drones**, **Spyder QRSAM**, electronic warfare tools — bridging capability gaps.
- **Defence Indigenisation:** Joint development (e.g., **Barak-8 missile system**) → shift from buyer to co-developer; supports **Atmanirbhar Bharat**.
- **Water Security:** Israeli expertise in **desalination, drip irrigation, wastewater recycling** benefits water-stressed regions.
- **West Asia Balancing:** Maintains ties with **Israel, Gulf countries & Iran** → strategic autonomy & multi-alignment.
- **Connectivity & Geo-economics:** Participation in **IMEC & I2U2** enhances access to European markets and trade corridors.
- **Energy & Diaspora Security:** Stability in West Asia linked to India's **energy security & diaspora welfare**.

For Israel

- **Strategic Outreach in Asia:** Strengthens engagement with **Global South** via India.
- **Defence Industry Stability:** India as major defence partner ensures reliable market & co-production opportunities.
- **Labour Support:** Indian workforce supports **construction, caregiving & services sectors**.

Challenges in India–Israel Relations

- **Iran Dilemma:** Israel views **Iran** as an existential threat, while India sees Iran as vital for **energy security & connectivity** (notably **Chabahar Port** for access to Afghanistan & Central Asia bypassing Pakistan).
- **Palestine Issue:** India officially supports a **two-state solution**; sustaining **de-hyphenation policy** becomes difficult during Middle East escalations.
- **China Factor:** China is Israel's **largest Asian trading partner**; Chinese investments in Israeli tech & infrastructure raise **security sensitivities** for India, especially in defence cooperation.
- **IPR Concerns:** Israeli firms wary of India's relatively **lenient IPR regime**; reluctance to transfer **source codes & deep tech know-how** affects **Make in India defence indigenisation**.
- **Risk to Connectivity Megaprojects:** Projects like **IMEC** (using Israeli infrastructure such as **Haifa Port**) face threats from regional conflicts, impacting economic viability & security.

Measures to Strengthen India–Israel Relations

- **Institutionalise Minilateral Platforms:**
  - Strengthen **I2U2** for renewable energy & food corridors.
  - Develop **maritime security framework** with joint naval exercises to secure **IMEC & Haifa Port**.
- **Defence Co-Production Model:**
  - Shift to **joint R&D & co-owned defence IP** (UAVs, electronic warfare).
  - Use India's manufacturing scale to export jointly produced systems to **Africa & SE Asia**.
- **Operationalise Innovation & Labour Agreements:** Fast-track **UPI linkage** for remittance & trade facilitation.
  - Activate **Cyber Centre of Excellence** for digital security capacity building.
- **Diversify Trade & Technology:** Conclude **FTA** to broaden trade beyond diamonds & chemicals.
  - Encourage Israeli participation in **semiconductors & green tech** in India.
- **Strengthen Academic & People-to-People Ties:**
  - Expand university collaborations in **AI, desalination, arid agriculture**.
  - Promote **Track 1.5 & Track 2 diplomacy** for sustained engagement.

"India–Israel relations have evolved from transactional defence ties to a comprehensive strategic partnership. " Examine this transformation.

Drishti Mains Question

Agreements on Reciprocal Trade

The US is pushing **Agreements on Reciprocal Trade (ARTs)** with developing countries under threat of punitive tariffs, signalling a shift from **WTO-based multilateralism** to **power-driven bilateral trade deals**.

Traditional Multilateral Trade Framework

- **The Interwar Context:** Following the destructive protectionist policies (like high tariffs) of the 1930s that exacerbated the **Great Depression,** the international community recognized the need for a cooperative economic system.
- **GATT (1947):** The **General Agreement on Tariffs and Trade (GATT)** was established after World War II.
  - It acted as a provisional legal agreement to minimize barriers to international trade by eliminating or reducing quotas, tariffs, and subsidies.
- **The WTO (1995):** The GATT was ultimately replaced by the World Trade Organization (WTO) following the **Uruguay Round of negotiations (1986-94).**
  - While GATT was essentially a set of rules, the WTO provided a permanent, robust institutional framework that expanded global trade rules **beyond goods to include services (GATS) and intellectual property (TRIPS).**
- **Core Principles of the Multilateral Framework:**
  - **Most-Favoured-Nation (MFN) Rule:** This is the bedrock of the WTO. It dictates that a **country cannot normally discriminate between its trading partners.**
    - ❖ If a nation grants someone a special favor (such as a lower customs duty rate for one of their products), it must extend it to all other WTO members.
  - **National Treatment:** Imported and locally-produced goods should be treated equally once the foreign goods have entered the market.
    - ❖ The same principle applies to foreign and domestic services, as well as to foreign and local **trademarks, copyrights, and patents**.
  - **One-Country, One-Vote:** Unlike the **International Monetary Fund (IMF)** or **World Bank** where voting power is weighted by financial contribution, the **WTO operates by consensus**. Every member country, regardless of its economic size, has an equal say.
- **Allowed Exceptions:** While the WTO is based on non-discrimination, GATT Article XXIV permits preferential deals like **Free Trade Areas and Customs Unions (CUs) on a non-MFN basis.**
  - A Free Trade Area must cover *substantially all trade* among members, while a Customs Union (CU) must also adopt a common external trade policy toward non-members. These conditions ensure regional trade blocs strengthen, rather than undermine, multilateral trade.
- **WTO-Plus Obligations:** Many modern **free trade agreements (FTAs)** (like the **Regional Comprehensive Economic Partnership (RCEP) agreement**) go beyond standard WTO mandates to include **rules on labor, the environment, and foreign investment.**
- **Mandatory Scrutiny:** Crucially, standard **FTAs must be legally notified to the WTO.** This allows countries that might be adversely affected by the agreement to question and scrutinize its terms.

Significance for Developing Countries

- **Collective Bargaining:** The consensus-based approach gives developing nations the agency to form coalitions (like the **African Union**) to bargain effectively against developed economic powers.
- **Protection against Coercion:** A rules-based system protects smaller economies from **unilateral, strong-arm tactics of larger economies** thereby ensuring disputes are settled legally rather than through economic might.
  - The **Doha Declaration on TRIPS and Public Health (2011)** which allowed countries like India to bypass patents (Compulsory Licensing) during health emergencies to ensure affordable medicines.
- **Special and Differential Treatment (S&DT):** The framework officially recognizes that **developed and developing countries are on different playing fields.**
  - S&DT provisions allow developing countries longer time periods to implement agreements and commitments, along with measures to increase their trading opportunities.
  - However, Since December 2019, the **WTO Appellate Body has been non-functional because** the US has blocked the appointment of new judges. This has led to a shift from a **"Rules-based system" back to a "Power-based system."**

Agreements on Reciprocal Trade (ARTs)

- **Not under GATT Article XXIV** → distinct from traditional FTAs.
- **Outside WTO framework** → no mandatory notification or multilateral scrutiny.
- Reflect **"America First" unilateralism**.
- Allow US to retain selective/inconsistent tariffs while pressuring partners to sharply reduce theirs.

How ARTs Threaten Multilateralism & Collective Bargaining

- **Bypass WTO framework** → weakens *one-country–one-vote* protection; developing nations lose collective bargaining shield.

- **No impartial dispute settlement** → absence of third-party mechanism; vulnerable to unilateral US interpretation.
- **Undermine MFN principle** → fragment global trade into US-centric bilateral hubs; reduce predictability of supply chains.
- **Coercive negotiations** → threat of high punitive tariffs (up to **50%**) forces sweeping market access for US goods; harms local farmers & **MSMEs**.
- **Geopolitical "Poison Pill" clauses** → restrict trade ties with "non-market economies" (e.g., limiting China-linked integration).
- **Ban on digital taxes (WTO-plus provisions)** → restrict customs duties on electronic transmissions; revenue loss for developing economies (e.g., equalisation levies).
- **Mandate unrestricted cross-border data flows** → weakens data localisation policies; affects privacy, digital sovereignty, domestic tech growth.

India's Trade Strategy in a Multipolar World

- **From Cautious to Proactive Engagement:**
  - Historically hesitant (as seen by its exit from RCEP in 2019), India is now concluding comprehensive FTAs with advanced, high-value economies (**EU**, **UK**, **UAE**).
  - India's FTA network is projected to cover **71% of its export basket by 2026**, up from just 22% in 2019.
  - While developed countries utilise **70–80%** of their FTAs, India's utilisation rate remains low at around **25%**, mainly due to complex **rules of origin** and limited awareness among **MSMEs**.
    - ❖ To address this, India is reviewing its FTAs and Double Taxation Avoidance Agreements (DTAAs) to simplify procedures, improve compliance, and enhance export competitiveness.
- **Ambitious Export Targets:**
  - The **Foreign Trade Policy of 2023** sets a definitive goal to elevate India's total exports to **two trillion dollars by the year 2030**.
  - Total exports (merchandise and services) hit an all-time high of USD 825.25 billion in 2024–25, reflecting a robust 6.05% annual growth.
- **Capitalizing on the "China Plus One" Strategy:** India is leveraging geopolitical rifts to embed itself into **Global Value Chains (GVCs).**
  - Agreements like the **pax silica framework** prioritize collaboration in critical sectors like **rare earths, semiconductors, and high-tech electronics**, reinforcing India as a reliable alternative manufacturing hub.
- **Strategic Autonomy and Market Diversification:** By diversifying export destinations across Europe, the Middle East, and the Americas, India is aggressively hedging against **policy volatility, single-market overdependence, and global supply chain shocks.**
- **Leveraging Services and Digital Strength:** New-generation FTAs include specific provisions for **cross-border digital trade, professional mobility, and mutual recognition of qualifications,** allowing India to capitalize on its massive **IT and skilled manpower dividend.**
- **Diplomatic and Strategic Autonomy:** Engaging with multiple global powers across different continents allows India to **diversify its export destinations, avoid overdependence on any single geography**, and enhance its influence in shaping global trade norms.
- **Synergy with Domestic Policy:** India's external integration is deeply calibrated with domestic structural capacity building, leveraging initiatives like **production-linked incentives and infrastructure expansion** to achieve the vision of a developed nation.

Measures to Safeguard Multilateralism amid Rise of ARTs

- **Recommit to WTO-Centric Order:** Restore **WTO dispute settlement & Appellate Body**. Ensure all FTAs comply with **WTO notification norms**.
  - Build Global South coalitions to defend multilateral rules.
- **Calibrated Bilateral Engagement:** Enter selective agreements preserving: **Tariff policy space, Digital taxation, Data governance.** Avoid commitments harming strategic sectors (AI, semiconductors, clean energy).
- **Protect Digital Sovereignty:** Retain right to impose **digital taxes**. Enforce **data localisation** for privacy & domestic innovation. Advocate balanced global rules on cross-border data flows.
- **Strengthen Domestic Resilience:** Boost **MSMEs**, agricultural safeguards, **PLI schemes**. Build supply chain resilience; leverage *China+1* without overdependence.
- **Promote Development-Oriented Trade Norms:** Reform rules reflecting developmental asymmetries & climate equity. Integrate labour & environment standards without protectionist misuse.
- **Advance South–South Cooperation:** Deepen ties within **BRICS**, African Union, ASEAN. Promote equitable regional corridors (e. g. , IMEC).

"In a multipolar world, trade agreements have evolved from mere economic pacts into crucial instruments of strategic statecraft. " Discuss.

Drishti Mains Question

Environment & Ecology

World Water Day 2026

Ministry of Jal Shakti convened the **World Water Day Conclave 2026** on the occasion of **World Water Day** 2026**.**

- **Theme:** "Industry for Water"; **Focus:** shift to circular water economy

Key Highlights of the Conclave

- **Circular Water Economy**: Shift from **"take-use-discard"** → Reduce, Reuse, Recycle
  - **Wastewater as resource**, focus on **climate resilience**
- **Data Initiatives Launched**: 7th Minor Irrigation Census; 2nd Census of Water Bodies; 1st Census of Springs & Major/ Medium Irrigation Projects; National Water Data Policy 2026
- **Joint Industry Declaration**: **Water audits by 2027** (Leading industry associations– FICCI, ASSOCHAM, CII)
  - Zero Liquid Discharge (ZLD) by 2030
  - 50% reduction in water footprint by 2030
- **Cryosphere Monitoring**: NRSC–ISRO collaboration
  - Focus on **glacial monitoring & Glacial Lake Outburst Flood (GLOF) risk reduction**
  - Use of **Bhuvan platform**
- **Technology Use**: Adoption of **AI & IoT** for **precision water governance**

World Water Day

- **Date**: 22nd March (UN)
- **Coordinated by**: UN-Water
- **Aim**: Highlight **freshwater importance**
  - Promote **sustainable management**
- **Theme 2026**: **"Water and Gender"**
  - **Slogan: "Where water flows, equality grows"**
- **Origin**: Proposed at **Rio Earth Summit (1992)** (UN Conference on Environment and Development)
  - **First observed: 1993**
- **SDG Link**: Supports **SDG 6 (Clean Water & Sanitation)**

Key Water-Related Challenges Globally and in India

- **Lack of Safe Water & Sanitation**: **~2.2 billion** lack safe drinking water (UN)
  - **~1.4 million deaths/year** (water-related)
  - Diseases: **cholera, etc.**
- **Climate Change Impact**: Disrupts **water cycle** → **droughts & floods**
  - Drought losses > $300 billion/year
- **Transboundary Conflicts**: **>60% freshwater** in shared basins
  - Leads to **geopolitical tensions** (e.g., **Indus system**)
- **Regional Vulnerability**: **Gulf region** depends on **desalination**
  - Risks to **water infrastructure** due to conflicts
- **Water Pollution**: Industrial discharge, sewage, agricultural runoff
  - Causes **eutrophication & waterborne diseases**
- **Groundwater & Ecosystem Decline**: >50% large lakes declining (since 1990s)
  - ~35% wetlands lost (since 1970)
  - **~70% aquifers declining**
  - Leads to **land subsidence (2 billion people)**
  - **>50% irrigated cropland** under **high water stress**
- **Gender Inequality**: Women spend **~250 million hours/day** collecting water
  - Impacts **education, livelihood, safety**
  - **Underrepresentation** in water governance

Specific Concerns in India

- **Groundwater Depletion**: Largest global consumer
  - Over-extraction (agriculture, power subsidies)
  - Critical decline: **Punjab, Haryana, Rajasthan**
  - Per capita availability:
    - **5200 m^3 (1950) → 1400–1500 m^3 (2024)**
    - Projected **1191 m^3 (2050)** (~water scarcity threshold)
- **Inter-State Disputes**: Issues in **river water sharing**
  - Examples: **Cauvery (Karnataka–Tamil Nadu), Krishna dispute**
- **Water Quality & Contamination:**
  - **Geogenic Contamination**: Arsenic, Fluoride in groundwater
    - Affects **Indo-Gangetic plain & central India**
    - **~90 million** exposed to arsenic
  - **"Cancer Train" (Punjab–Rajasthan)**: Linked to **groundwater contamination**
    - **Pollutants:** Uranium, Arsenic, Fluoride, DDT
- **Bacteriological Pollution**: ~70% surface water is contaminated due to **untreated sewage**
- **Himalayan Crisis**: Glacier melt threatens **Ganga, Indus, Brahmaputra**
  - Risk to **perennial river flow**

- **Urban Water Stress**:
  - Unplanned urbanisation
  - **"Day Zero" risk** (Bengaluru, Chennai)
  - Encroachment of lakes/wetlands

Steps Needed for Sustainable Water Conservation

- **Agricultural Transformation**: Target **~80% water use**
  - Promote **drip/sprinkler, micro-irrigation**
  - **Crop diversification** (millets over rice-wheat)
  - Reduce **water-intensive rice practices**
- **Industrial & Urban Circularity**: Use **decentralised Sewerage Treatment Plant (STP)**
  - **Dual-piping systems** for reuse (flushing, gardening)
- **Ecological Restoration**: Revive **Ahar-Pynes, Johads, Stepwells (Baolis)**
  - Protect **floodplains & lakes (urban sponges)**
  - Promote **Ramsar Sites**
- **Governance Reforms**: Proactively implement ***"Jan Bhagidari se Jal Sanchay"*** → ***Jan Andolan.*** Reduce link b/w **free power & groundwater overuse**
- **Economic Measures**: **Tiered water pricing.** Introduce **Water Credits** system

Nor'westers and Local Winds of India

A severe **Nor'wester storm** caused widespread damage in **Mayurbhanj district, Odisha**, uprooting **trees, electricity poles**, and damaging **thatched houses**.

Nor'westers

- **About:** Intense, short-lived convective thunderstorms occurring in **pre-monsoon months (April–June)** over **eastern and northeastern India**.
- **Geographical Extent:** Affect West Bengal, Odisha, Bihar, Jharkhand, Assam, Tripura, and also Bangladesh, southern Nepal, Bhutan; most prominent in **Gangetic West Bengal and eastern Gangetic plains**.
- **Local Names:**
  - **Kalbaisakhi (Bengali):** "Calamity of Baisakh (mid-April–mid-May)".
  - **Bordoisila/Bardoli Cheerha (Assamese):** Named after a **fierce, speedy goddess**.
- **Formation & Dynamics:** Intense **daytime heating over Chota Nagpur Plateau** creates **low pressure**, drawing **warm moist air from Bay of Bengal** that interacts with cooler dry air from the northwest, causing **high Convective Available Potential Energy (CAPE),** strong wind shear, and rapid formation of Cumulonimbus clouds.
- **Key Characteristics:**
  - **Timing:** Late **afternoon/evening**.
  - **Direction:** Move **northwest → southeast**.
  - **Intensity: Gale winds (>100 km/h),** heavy rain, lightning, thunder, hail, sometimes tornadoes.
  - **Duration: Short-lived (1–2 hours)** at a location but **travel long distances**.

Significance	Impacts
❍ **Relief from Heat:** Cause **sharp temperature drop**, providing **brief relief from pre-monsoon heat & humidity**.	❍ **Structural Damage: Gale winds uproot trees**, damage **power lines**, and destroy **kutcha houses & infrastructure**.
❍ **Agricultural & Water Benefits: Heavy rainfall replenishes ponds and wells** and supports **crops like tea & paddy**.	❍ **Loss of Life & Property: Lightning, falling trees, and collapsing structures** cause **casualties & property loss**.
❍ **Cultural Importance:** Prominent in **Bengali literature & Rabindra Sangeet**, symbolizing **nature's fury and the new year**.	❍ **Crop Damage: Hailstorms & strong winds** damage **orchards (mango) and ready-to-harvest crops**.
❍ **Monsoon Indicator:** Acts as a **precursor to the Southwest Monsoon**, marking a **key agricultural transition period**.	❍ **Disruption:** Causes **transport disruptions (flights, trains, roads), power outages**, and **urban waterlogging**.

Various Local Winds of India and their Socio-economic Influence

Local Wind	Characteristics	Region(s) Affected	Season/Period	Socio-Economic Influence
Loo	**Hot, dry, dusty**, strong afternoon wind	**Northern India** (Indo-Gangetic plains, Rajasthan, Punjab, Haryana, UP)	Summer (April–June)	Cause **heatstroke, dehydration, reduced labour productivity, 10–15% crop losses (e. g. , wheat), occasional deaths**; also **aid grain winnowing and reduce mosquitoes**.
Mango Showers	**Pre-monsoon** showers, often with thunderstorms	Southern India (Kerala, **coastal Karnataka**, TN)	Late April–June	Aid mango ripening, **support horticulture**, signal monsoon onset, improve soil moisture.

Contd...

Various Local Winds of India and their Socio-economic Influence				
Local Wind	**Characteristics**	**Region(s) Affected**	**Season/Period**	**Socio-Economic Influence**
Blossom Showers (Coffee/ Cherry Blossom Showers)	**Light to moderate** pre-monsoon rainfall, sometimes with thunderstorms	Southern India (Kerala, and nearby areas)	March–May (pre-monsoon)	**Trigger coffee flowering**, support **early agricultural activity**, improve **soil moisture & horticulture**.
Aandhi	Violent dust storms/squalls	**Northwestern and Central India** (Rajasthan, Punjab, Haryana, UP)	Pre-monsoon (May–June)	**Reduce visibility, disrupt transport**, damage **crops and property**, cause **soil erosion in arid regions**.
Sea Breeze	Cool, moist wind from sea to land	**Coastal regions** (Mumbai, Chennai, Kolkata, Goa)	Daytime, year-round (stronger in summer)	**Moderates heat in coastal cities**, improves **thermal comfort**, supports **tourism**, minimal negative impacts.
Land Breeze	Cool wind from land to sea	Coastal regions	Night time, year-round	**Cooling in coastal areas**, supports **fishing & marine activities**.
Mountain/ Valley Breeze	Upslope winds (day) and downslope winds (night)	Himalayan and other **hilly regions** (Uttarakhand, Himachal Pradesh, Northeast hills)	Diurnal cycle	Influence **agriculture & settlements**, may cause **valley frost**, help **pollution dispersion**.
Elephanta	**Moist winds** blowing from sea toward the land.	**Malabar Coast** (Kerala/ Maharashtra)	End of monsoon	Support **final Kharif crop stages** and provide **post-monsoon cooling**.

Hybrid Electric Vehicles

Delhi's upcoming EV policy proposes extending **road tax and registration fee exemptions**, currently for **battery BEVs**, to **hybrid electric vehicles (HEVs)** as well.

HEVs

- **About:** Vehicles combining an **internal combustion engine (ICE)** with an **electric motor** for **better fuel efficiency and lower emissions**, operating **without external charging**.
- **Operation: Switches or combines engine and electric motor** to optimize efficiency—**engine for range** and **motor for acceleration and quieter driving**.
- **Self-charging capability:** Hybrid batteries **recharge automatically** through **regenerative braking** and sometimes via the **gasoline engine acting as a generator**, so **no plug-in charging is required**.
  - During braking, the **electric motor acts as a generator**, converting **kinetic energy into electricity** to **recharge the battery**.
- **Types of Hybrid Configurations:**
  - **Parallel Hybrid: Engine and electric motor both connected to wheels**; can operate **independently or together**, with the **motor mainly assisting the engine**.
  - **Series-Parallel (Power-Split) Hybrid:** Can **switch b/w electric-only,** engine-generated electricity (series mode), or combined engine–motor drive (parallel mode).
  - **Plug-in Hybrid EV: Externally rechargeable battery** plus engine and regenerative braking charging; allows **electric commuting with hybrid range for long trips**.
- **Advantages: High fuel efficiency** (esp. in **city driving**) and **lower emissions** through **regenerative braking**.
  - **No range anxiety** compared to pure EVs. **Reduced brake wear** and possible **government incentives (tax credits)**.
- **Disadvantages: Higher upfront cost** due to complex technology. High battery replacement cost. Fuel efficiency benefits mainly in city driving, less on highways.

State of the World's Migratory Species

An **interim update** to the **UN State of the World's Migratory Species Report 2024** warns that **49% of migratory species populations** protected under the **Convention on the Conservation of Migratory Species of Wild Animals (CMS)** are **declining**.

Key Findings

- **Population Decline:** Share of **CMS-listed species with declining populations** rose from **44% to 49% in 2 years**.
- **Population Trends: Increasing or stable species** reduced to **38%**; **species facing extinction** increased to **24% (from 22%)**.
- **Deteriorating Conservation Status:**
  - Of **386 reassessed CMS species**, **34 (9%)** moved to a **different IUCN Red List category.**
  - **26 species** shifted to a **more threatened category**.

- **Migratory Shorebirds: 69% of affected species** are migratory shorebirds, declining due to habitat loss and degradation at stopover and non-breeding sites.
- **Emergence of New and Existing Threats:**
  - **Avian Flu: HPAI H5N1** causing **mass mortality** in **penguins, pelicans, cranes**, and aquatic mammals like **fur seals & sea lions**.
  - **Habitat Loss & Fragmentation: Linear infrastructure** (roads, railways, fences) reducing mobility (e. g. , **Mongolian Gazelle**); **land-use change** caused **75% decline in Mara-Loita Blue Wildebeest since late 1970s**.
  - **Overexploitation & Bycatch:**
    - **Sharks and rays:** threatened by **overfishing and bycatch**.
    - **Raptors (Africa & Eurasia):** affected by **illegal taking, poisoning, and collisions with energy infrastructure**.
- **Regional Success Stories & Recoveries:**
  - **Scimitar-horned Oryx: Extinct in the Wild → Endangered** after **reintroduction in Chad**.
  - **Saiga Antelope: Endangered → Near Threatened** after recovery in **Kazakhstan**.
  - **Mediterranean Monk Seal: Endangered → Vulnerable** due to **population growth**.

Migratory Species	Steps Needed for Conservation of Migratory Species
❍ **Definition:** Wild animals (**aquatic, avian, terrestrial**) whose populations **cyclically & predictably move b/w geographical areas**. • Depend on different **breeding, feeding, and stopover sites; loss of any critical site** can threaten the **entire population**. ❍ **Taxonomic Scope:** Migratory species include • **Birds:** Bar-tailed Godwit, Arctic Tern • **Mammals:** Terrestrial mammals– **Wildebeest**, Saiga Antelope, etc. ; Marine mammals– **Humpback Whale**, Gray Whale, etc. • **Fish:** Salmon, European Eel, etc • **Reptiles:** Leatherback Turtle, **Olive Ridley Turtle**, etc. • **Insects: Monarch Butterfly**, Globe Skimmer dragonfly. ❍ **Protection of Migratory Species:** Protected under **CMS, 1979** (**Bonn Convention**). • **India:** Party since **1983**. ❍ **India's Geographic Importance**: Located along major **global flyways**, esp. the **Central Asian Flyway** (**CAF**) supporting many **migratory bird populations**. • Also hosts **migration routes for marine turtles, mammals, and other taxa**. ❖ **Birds** (**CAF**): Siberian Crane, Amur Falcon, Bar-headed Goose, Black-necked Crane. ❖ **Mammals:** Asian Elephant, Snow Leopard, Great Indian Bustard, Pallas's Cat. ❖ **Marine Species:** Olive Ridley Turtle, Leatherback Sea Turtle, Hawksbill Sea Turtle.	❍ **Protect, Connect & Restore Habitats:** Expand **protected areas** to **key biodiversity sites** and integrate **species priorities into National Biodiversity Strategy and Action Plan** (**NBSAP**) with adequate resources. • **Regular monitoring** with standardized protocols. • **Restore 30% of degraded ecosystems by 2030** (**KMGBF Target 2**). • Improve **ecological connectivity** (currently **<10%**). • Minimize **infrastructure impacts** through **EIA and SEA compliance**, following **CMS guidance** on **renewable energy, linear infrastructure, and pollution**. ❍ **Tackle Overexploitation:** Strengthen **international cooperation** to reduce overfishing, bycatch, and illegal killing. Enhance fisheries monitoring, CMS engagement with fisheries bodies, and **ratify the BBNJ Treaty**. • Ensure **national laws protect CMS Appendix I species** from "**take**" (**hunting, fishing, capturing**) with strictly regulated exceptions. ❍ **Reduce the Damaging Impacts of Environmental Pollution:** Mitigate **light pollution** using **CMS guidelines**. Restrict **underwater noise** in sensitive areas with **quieting technologies**. • Accelerate **phase-out of toxic lead ammunition**. Reduce **pesticide use near critical habitats**. Tackle **plastic pollution**. ❍ **Address Impacts of Climate Change:** Use **ecosystem restoration** to improve **habitat quality & connectivity** and reduce **extreme weather impacts**. • Implement **dynamic management** for **climate-driven migration shifts**. • Ensure **renewable energy expansion** follows **CMS Energy Task Force guidance** to avoid harm to migratory species.

Air Pollution in India

An analysis by the **Centre for Research on Energy and Clean Air (CREA)** found that **204 of 238 Indian cities** failed to meet **national air quality standards** during **winter 2025–26**. The study used **Central Pollution Control Board (CPCB)** data from **Continuous Ambient Air Quality Monitoring Stations (CAAQMS)**, highlighting the severity of winter air pollution across India.

Key Findings

- **Widespread National Non-Compliance:** 204 of 238 cities recorded average **PM2. 5 levels above the NAAQS limit of 40 µg/m³** during **winter 2025–26**.
  - **No city** met the **WHO PM2. 5 safe standard of 5 µg/m³**.

- **Most Polluted Cities: Ghaziabad** (172 µg/m³), **Noida** (166 µg/m³), **Delhi** (163 µg/m³).
  - Major economic hubs also exceeded national standards: **Delhi (163 µg/m³)**, **Kolkata** (78 µg/m³), **Mumbai** (48 µg/m³), **Chennai** (44 µg/m³).
- **Cleanest city:** Chamarajanagar **(Karnataka) – 19 µg/m³** average PM2. 5.
  - **Bengaluru** was the **only megacity** below the **NAAQS limit**, with **39 µg/m³**.
- **Top-performing regions:** Southern and Central/ Northeastern India.
- **Ten cleanest cities:** 8 from Karnataka, 1 from MP, 1 from Meghalaya.

Monitoring & Measurement

- **AQI:** Color-coded tool to communicate air quality; **National AQI** based on **8 pollutants** — PM10, PM2. 5, NO_2, SO_2, CO, O_3, NH_3, Pb.
- **NAAQS (National Ambient Air Quality Standards):** Prescribed by **CPCB**; covers **12 pollutants** — the 8 AQI pollutants + Benzene, Benzo(a)Pyrene, Arsenic, Nickel.
- **SAFAR (System of Air Quality and Weather Forecasting and Research):** Initiative of **MoES** providing **location-specific real-time air quality data** and **1–3 day forecasts**.
- **CAAQMS: Automated stations** that continuously measure pollutants and **transmit real-time data** (used to calculate **daily AQI**).

Governance & Action Frameworks

- **GRAP (Graded Response Action Plan):** Emergency **anti-pollution measures in Delhi-NCR**, implemented **incrementally as AQI worsens** (from **"Poor" to "Severe+"**).
- **Bharat Stage (BS) Emission Standards: Vehicle emission norms** regulating pollutants from **internal combustion engines and motor vehicles**; India currently follows **BS-VI**.
- **NCAP (National Clean Air Programme): MoEFCC** strategy to tackle air pollution nationwide; targets **40% reduction in particulate matter by 2026** (earlier **20–30% by 2024**).

India Submits 7th National Report to the CBD

India submitted its **7th National Report** to **CBD,** assessing progress on **23 National Biodiversity Targets (NBT)** and **142 indicators** aligned with the **Kunming-Montreal Global Biodiversity Framework (KMGBF)**.

- Only **2 of the 23 targets** are **on track**; the report lists policies for others but lacks **quantitative evidence and clear 2030 projections**.

Key Facts Regarding the Report

- **About: First full assessment** after adoption of the **KMGBF, 2022**; evaluates progress toward **halting biodiversity loss by 2030**.
- **Prepared by: MoEFCC** with inputs from **33 central ministries**, **Wildlife Institute of India**, **National Biodiversity Authority**, and **UNDP** support.
- **Significance:** India is a **megadiverse country**, making its performance crucial for **global biodiversity outcomes**.
  - Data contributes to global monitoring of **KMGBF's 23 targets**, including the **"30×30" goal** (**30% land and sea conservation by 2030**).
- **Targets On Track:** Progress tracked through **142 national indicators** via the **NR7 digital data portal**.
  - **NBT1 (Biodiversity-inclusive planning): Forest & tree cover:** 25. 17% (827, 357 sq km); increase of **1, 445. 81 sq km (2021–23)**.
    - ❖ **Wetland inventories completed**, **PARIVESH 2. 0** streamlined environmental approvals, **eco-sensitive zones notified**.
  - **NBT2 (Ecosystem Restoration): 24. 1 million hectares** restored/under restoration against **26 million ha Bonn Challenge pledge**.
    - ❖ **Forest carbon stock:** increased by **~81. 5 million tonnes** to **7, 285. 5 million tonnes**.
    - ❖ **Mangrove cover** increased modestly; **bamboo area** expanded by **1, 540 sq km**.
    - ❖ **Marine protected areas expanded**; identification of **Other Effective Area-Based Conservation Measures (OECMs)** underway.
- **Critical Challenges & Concerns:**
  - **Land Degradation: 29. 77% (97 million ha)** of India's area degraded; **new degradation may outpace restoration**.
  - **Conservation Coverage (30×30 Goal):** Only **slightly over 5%** of India's area under **formal protected areas**; report **unclear on achieving 30% target by 2030**.
  - **Species Recovery Bias:** Success mainly for **flagship species** (tigers – 3, 167; Asiatic lions; rhinos; snow leopard assessment); **limited data on lesser-known species**.
  - **Data Gaps & Monitoring: Fragmented biodiversity data**, **no uniform indicator methods**, varying **collection intervals**, and **rapid tech changes** hinder long-term comparisons.
  - **Financial & Technical Constraints:** Limited funding and technical capacity, plus climate change impacts (**floods, droughts, forest fires**).
  - **Agriculture & Invasive Species: Agroforestry covers 8. 65%** of India; limited quantitative analysis on pesticide reduction, nutrient runoff, and invasive species control.

Kunming-Montreal Global Biodiversity Framework

- **About:** KMGBF is a landmark international agreement adopted at COP15 to the **UN CBD** in Dec 2022.
  - Its goal is to **halt and reverse** biodiversity loss by **2030** and achieve living in harmony with nature by **2050**. It replaces the earlier **Aichi Biodiversity Targets** (**2011-2020**).
- **Structure of the Framework:** It is built around **four long-term goals for 2050** (vision for living in harmony with nature) and **23 action-oriented targets for 2030** (the "global milestones"), covering critical areas like ecosystem conservation, sustainable use, and benefit-sharing.
- **The "30x30" Target (Target 3):** It aims to ensure that at least **30%** of the world's terrestrial, inland water, and coastal and marine areas are **effectively conserved and managed** through **protected areas** and **Other Effective Area-based Conservation Measures** (**OECMs**) by **2030**. This is a significant increase from the current global coverage of around 16%.
- **Implementation Mechanism:** All parties to the CBD, including India, are required to **set and implement national targets** aligned with the **GBF**, update their **National Biodiversity Strategies and Action Plans** (**NBSAPs**), and establish robust monitoring systems to track progress.

Convention on Biological Diversity

- **About:** Landmark international treaty originating from the **1992 Rio Earth Summit** that provides the primary global framework for conserving and sustainably using biological resources.
- **Three Core Objectives:**
  - Conservation of **biological diversity**,
  - **Sustainable use** of its components, and
  - **Fair and equitable sharing** of benefits arising from genetic resources.
- **Comprehensive Scope:** The **Convention** covers **biodiversity at all levels** i.e., diversity within species (genetic), between species, and of ecosystems. It applies to **terrestrial**, **marine**, and **other aquatic ecosystems.**
- **Key Supplementary Protocols:**
  - **Cartagena Protocol on Biosafety** (**2000**): Focuses on the **safe handling**, **transport**, and **use of Living Modified Organisms** (**LMOs**) resulting from **modern biotechnology**.
  - **Nagoya Protocol on Access and Benefit-Sharing** (**2010**): Provides a legal framework for the **fair and equitable sharing of benefits** arising from the **utilization of genetic resources**, thereby operationalizing the third objective of the CBD.

Carbon Capture and Utilisation (CCU) Technologies

CCU is an emerging **climate mitigation technology** that captures industrial CO_2 emissions and can help power India's journey toward net-zero by 2070.

CCU

- **About**: Captures **CO_2** from industrial sources/direct air and converts it into **fuels, chemicals, building materials**.
- Differs from **CCS**:
  - **CCS** → Permanent underground storage
  - **CCU** → Converts CO_2 into economically useful products
- **Relevance for India: 3rd-largest CO_2 emitter** (after China, US).
- Major emitting sectors: **Power, Cement, Steel, Chemicals**.
- Essential for **hard-to-abate sectors** where RE substitution is limited.
- **Current Status:**
  - **Union Budget 2026–27:** ₹20, 000 crore for CCUS deployment in key industries over 5 years
  - **DST:** Dedicated R&D roadmap for CCU
  - **Ministry of Petroleum & Natural Gas:** Draft 2030 CCUS roadmap
  - **Private Sector Projects:**
  - **Ambuja Cements + IIT Bombay:** Indo-Swedish pilot converting CO_2 into fuels & materials
  - **JK Cement:** CCU testbed for lightweight concrete blocks, olefins
  - **Organic Recycling Systems Ltd (ORSL):** India's first pilot-scale Bio-CCU platform converting CO_2 from biogas into bio-alcohols & specialty chemicals
- **Global Best Practices:**
  - **EU:** Bioeconomy Strategy & Circular Economy Action Plan integrate CCU with circularity goals
  - **Belgium:** CO_2-to-carbon monoxide for steel & chemicals
  - **US:** Tax credits + funding support to scale CCU
  - **UAE:** Al Reyadah project; CO_2-to-chemicals hubs using green hydrogen
- **Key Challenges for India:**
  - **Cost Competitiveness**: Energy-intensive & expensive.
    - ❖ Fossil-based products cheaper without incentives.
  - **Infrastructure Gaps**: Need for **industrial clusters**, CO_2 transport & storage networks.
  - **Policy & Standards Gap**: Lack of **certification, standards, market signals**. Investor uncertainty.

CCU Technologies

- **Capture Phase**
  - **Post-Combustion Capture:** CO_2 separated from flue gases after combustion using amine-based solvents. Most commercially deployed.
  - **Pre-Combustion Capture:** Fuel converted into syngas ($CO + H_2$); CO_2 separated before combustion. Suitable for IGCC, industrial plants.

- **Oxy-Fuel Combustion:** Fuel burnt in pure oxygen → CO_2-rich exhaust. Easier separation.
- **Direct Air Capture (DAC):** CO_2 captured directly from ambient air using sorbents/solvents. Energy-intensive due to low CO_2 concentration.

■ **Utilisation Phase**

- **Direct Use (Non-Conversion):** CO_2 used for its **physical properties** (no chemical change).
  - ❖ **Enhanced Oil Recovery (EOR):** CO_2 injected into oil fields; mature tech; controversial (supports fossil extraction)
  - ❖ **Food & Beverage:** Carbonation, modified atmosphere packaging
  - ❖ **Greenhouses & Algae Cultivation:** CO_2 as fertiliser for plant/algae growth
  - ❖ **Refrigerants & Dry Ice:** Industrial & transport cooling
- **Conversion into Chemicals and Fuels:**
  - ❖ **Synthetic Fuels (E-fuels):** CO_2 + **Green Hydrogen** → Methanol, gasoline, jet fuel. "Drop-in ready" fuels. Energy-intensive; CO_2 re-released on combustion.
  - ❖ **Chemicals Production:** CO_2 → **Polymers, plastics, urea** (fertiliser).
- **Mineralisation (CO_2 to Minerals):** CO_2 reacts with **alkaline minerals/industrial waste**. Forms **stable solid carbonates**. Ensures **permanent carbon locking**.

State of India's Environment (SOE) 2026

SOE 2026 (CSE & Down To Earth) warns that human activities are breaching multiple planetary boundaries, with ecological degradation intensifying human–tiger conflicts in India.

Highlights of the SOE 2026

■ **Planetary Boundaries Crisis:** 7 of 9 planetary boundaries breached.
- **Breached:** Climate change, Biosphere integrity, Land system change, Freshwater depletion, Biogeochemical flows, Novel entities, Ocean acidification.
- **Ocean acidification**: Acidity increased **30–40% since industrial era**.

■ **Climate Crisis Escalation:** Near breach of **1. 5°C warming limit**. Early climate disruptions pushing **coral reefs & Amazon** towards **tipping points**.

■ **Biodiversity & Forest Decline: Global forest cover: 59%** (safe limit: **75%**).
- **Extinction rate: >100 per million species years** (10× safe limit).
- Accelerating **habitat degradation & ecosystem imbalance**.

■ **Freshwater & Pollution Stress:** Severe **freshwater depletion** due to overuse & climate change.
- Rising **plastics, synthetic chemicals (novel entities)** → long-term ecological & health risks.

■ **Rising Human–Tiger Conflict:** Causes: **Habitat loss, prey depletion, human encroachment**.
- **Lantana camara** spread to **~50% forest/scrublands** → suppresses grasses → prey decline → tigers attack cattle → conflict rise.

Recommendations

■ **Institutional Integrity:** Strengthen **NGT** & environmental clearances; prioritise **ecological substance over procedure**.

■ **Sovereign Climate Action:** Integrate **planetary boundaries into national accounting**.
- Adopt **technology-led, full-stack decarbonisation**.

■ **Coexistence Models:** Promote **landscape-scale governance**.
- Treat **local communities as key stakeholders** in conservation.

Planetary Boundaries

❍ Proposed in 2009 by Johan Rockström.

❍ Defines safe operating limits for humanity to avoid destabilising Earth systems.

❍ Covers 9 Earth system processes; interconnected in nature.

❍ Crossing limits → risk of abrupt & irreversible changes.

❍ **Status of the 9 Planetary Boundaries (Boundary: Status; Key Concern)**
- **Climate Change:** Transgressed; Rising GHGs, CO_2-driven warming
- **Biosphere Integrity:** Transgressed; High extinction rates, ecosystem collapse
- **Land System Change:** Transgressed; Deforestation, forest loss
- **Freshwater Change:** Transgressed; River & soil moisture disruption
- **Biogeochemical Flows:** Transgressed; Excess N & P → eutrophication
- **Novel Entities:** Transgressed; Plastics, synthetic chemicals, GMOs
- **Ocean Acidification:** Transgressed (recent); 30–40% acidity rise since industrial era
- **Atmospheric Aerosol Loading:** Within limits (risk-prone); Regional climate/monsoon impacts
- **Stratospheric Ozone Depletion:** Within safe limits; Recovery due to Montreal Protocol.

Discuss the concept of Planetary Boundaries framework as a tool for environmental governance.

Drishti Mains Question

Science & Technology

NavIC Navigation System

ISRO announced that the **atomic clock onboard the Indian Regional Navigation Satellite System (IRNSS)-1F satellite** of India's regional navigation system stopped functioning.

- This comes amid other technical setbacks in India's navigation constellation, including the **NVS-02 satellite's failure to reach its final orbit**, raising concerns about the reliability of **NavIC (Navigation with Indian Constellation)**.

IRNSS or NavIC

- **About:** The **Indian Regional Navigation Satellite System (IRNSS)**, operationally known as **Navigation with Indian Constellation (NavIC),** is India's indigenous satellite navigation system.
  - It was designed to provide accurate positioning information to users in **India and up to 1500 km beyond its borders**, which constitutes the **Primary Service Area**.
  - In addition, an **Extended Service Area** covers the region between the primary area and the rectangle bounded by **30° South to 50° North latitude and 30° East to 130° East longitude**.
- **Need for NavIC:** The project was initiated to ensure **strategic autonomy in navigation services**.
  - During the **1999 Kargil conflict**, the US **denied India access to GPS data**, highlighting the risks of relying on foreign systems. To address this vulnerability, **India approved the NavIC project in 2006**.
- **NavIC Services:**
  - **Standard Positioning Service (SPS)** is available to all civilian users and offers positioning information for general navigation purposes.
  - **Restricted Service (RS)** is an encrypted service available only to **authorised users, primarily for strategic and defence applications.**
    - The system is designed to deliver **position accuracy better than 20 metres within the primary service area**.
- **Key Features:** NavIC's **Standard Positioning Service provides accuracy of about 5–10 metres across India**.
  - Accuracy around **20 metres is expected in regions up to 1, 500 km beyond India**.
  - Unlike GPS, NavIC uses **dual frequencies (L and S bands)**, allowing better correction of atmospheric errors and potentially **higher accuracy**.
    - Works better than global systems in **difficult terrains such as valleys, forests, and urban areas** where GPS signals **may weaken.**
- **Applications of NavIC:** Supports **terrestrial, aerial, and marine navigation**, disaster management, and **vehicle tracking and fleet management**.
  - Enables **integration with mobile phones and smart devices**, provides **precise timing services**, and supports **mapping, geodetic data collection, and navigation assistance for drivers, hikers, and travellers**.
- **NavIC Satellite Constellation Performance:** The NavIC constellation has been built through a series of satellite launches using the **Polar Satellite Launch Vehicle (PSLV)**.
  - **First Generation (IRNSS Series):** The first generation of NavIC satellites includes the **IRNSS-1 series**, launched between **2013 and 2018**.
    - Key satellites include **IRNSS-1A, 1B, 1C, 1D, 1E, 1F, 1G**, and the replacement satellite **IRNSS-1I**.
    - **IRNSS-1H (2017)**, intended to replace IRNSS-1A, **failed to reach orbit due to heat shield separation failure**.
    - The IRNSS-1I was launched in 2018 as a replacement after the 2017 IRNSS-1H mission failed.
    - Several satellites in this series have **experienced atomic clock failures or are nearing the end of their mission life**, affecting navigation services.
  - **Second Generation (NVS Series):** The **NVS series** represents the **second generation of NavIC satellites**, developed to improve reliability and expand capabilities.
    - It includes **NVS-01, NVS-02,** and the planned **(NVS-03, NVS-04, and NVS-05)**.
    - **NVS-01 (2023)** is operational and **hosts an indigenously developed rubidium (atomic) clock and L1 band signals**.
    - **NVS-02 (2025)** faced issues in reaching its **final operational orbit** due to an onboard technical problem.
    - The newer satellites boast a mission life of **12 years, an upgrade from the 10-year lifespan** of the previous generation.
    - In addition to the L5 and S frequency signals, the new satellites transmit in a third frequency, L1.
- The **L1 frequency improves interoperability** with other global positioning systems like GPS and allows NavIC data to be used in low-power wearable devices, such as smartwatches.

- **Active Satellites:** Following the loss of the IRNSS-1F's atomic clock, only four satellites are currently capable of providing positioning data: **IRNSS-1B, 1C, 1I,** and the new-generation **NVS-01.**

- **Technological Developments in NavIC**:
  - **Indigenous Atomic Clocks:** ISRO developed **Indian rubidium atomic clocks** to reduce dependence on imported frequency standards. These clocks will power the **next generation of satellites (NVS series)**.
  - **NavIC-Compatible Chips: Qualcomm chipsets** began supporting NavIC signals in **2020**.
    - ❖ Future devices will support **L1 band signals**, improving compatibility with smartphones and IoT devices.
  - **Indigenous Microprocessor:** The **AJIT microprocessor** (the first ever microprocessor to be conceptualised, designed, developed and manufactured in India), developed by **IIT Bombay**, is planned for integration into NavIC receivers.
- **Policy and Regulatory Developments:**
  - NavIC-based vehicle tracking systems became mandatory for commercial vehicles in India in 2019.
  - In 2019, the US recognised NavIC as an allied navigation system under the National Defense Authorization Act, 2020.
  - NavIC will also serve as the reference time provider for **India's National Physical Laboratory** from 2025.

Other Countries Having Satellite Navigation Systems

- **Global Navigation Satellite Systems (GNSS)**
  - **United States:** Global Positioning System (**GPS**)
  - **Russia: GLONASS** (GLObalnaya NAvigatsionnaya Sputnikovaya Sistema)
  - **European Union: Galileo**
  - **China: BeiDou**
- **Regional Navigation Systems**
  - **India: NavIC (IRNSS)**
  - **Japan: Quasi-Zenith Satellite System (QZSS)**, which augments GPS signals over Japan.
- **Key Differences in Satellite Constellations**
  - **GPS, GLONASS, and Galileo:** Operate with over **20 satellites** in **Medium Earth Orbit** (~**20, 000 km**).
  - **BeiDou:** Uses over **40 satellites** in a combination of **Medium Earth Orbit and Geosynchronous Orbit** (~**35, 000 km**).
  - **NavIC and QZSS:** Have **fewer satellites** and mainly operate in **higher geosynchronous orbits**, focusing on **regional coverage** rather than global navigation.

Atomic Clock

- **About:** An **atomic clock** is an extremely precise timekeeping device that measures time using the **natural vibration frequency of atoms (frequency is essentially the inverse of time)**.
  - Unlike ordinary clocks that rely on mechanical movement or quartz crystals, atomic clocks use the **stable energy transitions of atoms**, making them the most accurate clocks ever created.
- **Working Principle:** Atomic clocks work by measuring the **specific frequency of microwaves required to cause electrons in an atom to change energy levels**.
  - This frequency is constant for each type of atom and acts as a **natural reference for measuring time**.
- **Accuracy:** Atomic clocks are extraordinarily accurate and stable. Some advanced atomic clocks may **lose or gain less than a second over millions of years**, making them ideal for applications requiring extremely precise timing.
- **Use in Navigation:** Atomic clocks are widely used in **satellite navigation systems such as GPS and NavIC**, where they measure the exact time taken by signals to travel between satellites and receivers to determine precise location.
- **Importance:** Highly precise atomic clocks also help **track spacecraft, calculate trajectories, and enable autonomous navigation for deep-space missions**.

Discovery of the Xi-cc-plus Baryon at CERN

Large Hadron Collider beauty (LHCb) experiment at CERN's LHC discovered **Xi-cc-plus**, a **heavy baryon** which will help study how the **strong force binds protons, neutrons & composite particles**.

Xi-cc-plus Particle

- **Composition: 2 charm quarks + 1 down quark**, making it a heavy sibling of the **proton**
- **Production & Nature:** Produced via **high-energy proton collisions (LHC)**.
  - **Unstable**, decays rapidly.
  - First particle discovered after **2023 LHCb detector upgrades**.
  - Total hadrons discovered by LHC: **80**.
- **Physical Properties: ~4× heavier than proton**. **Very short lifetime**.
- **Rare Find:** Only **2nd baryon with two heavy quarks**.
  - First similar particle discovered in **2017 (LHCb)**.
- **Scientific Significance:** Helps test **Quantum Chromodynamics (QCD)** → theory of **strong force binding quarks into hadrons** (mesons & baryons).

- Enables study of **exotic hadrons** (tetraquarks, pentaquarks).
- Supports future research at **High-Luminosity LHC**.

- **QCD:** Describes **strong nuclear force,** one of the **four fundamental forces** of nature.
  - Explains interaction of **quarks & gluons** forming **protons, neutrons, mesons**.

Large Hadron Collider (LHC)

- **World's largest particle accelerator** at **CERN** (**Geneva**).
- Accelerates **protons to near light speed** In two high-energy beams traveling in opposite directions.
- Collisions at **4 points** → detected by **massive detectors** (like ATLAS, CMS, and LHCb) **record the resulting "subatomic debris."**

Key Terms

- **Baryon:** Composite particle of **3 quarks**. Bound by **strong nuclear force**. Part of **hadrons** (along with mesons)
- **Quark:** Quarks are elementary particles and fundamental building blocks of matter. They carry a **fractional electric charge** (either +2/3 or-1/3).
- **Elementary particles**, building blocks of matter. Carry a fractional electric charge: **+2/3 or -1/3**.
- **Antiquark:** Antiparticle of a **quark**.
  - Same **mass**, but **opposite physical charges**.
  - Example: **charm quark** (**+2/3**) → **charm antiquark** (**-2/3**).
  - Opposite **colour charge** (e.g., blue → anti-blue).

Alternative Heating Technologies Amid Global Gas Supply Risks

The **US–Israel conflict with Iran** has increased risks in the **Strait of Hormuz**, a key global oil and gas transit route. As India imports nearly half of its natural gas, reduced gas supplies to industries have highlighted the need for **alternative heating technologies such as electrified heat and concentrated solar thermal systems**.

Key Heating Technologies for Industrial Applications

Concentrated Solar Thermal (CST) Technology

- **Mechanism:** Unlike Solar Photovoltaic (PV) panels that use semiconductors to convert sunlight into electricity (electrons), **CST systems use mirrors or reflective surfaces** to concentrate sunlight onto a receiver.
  - The receiver **captures heat and stores it in a Thermal Energy Storage (TES) medium** such as **oil, molten salt, or phase-change materials**.
  - The stored heat can be used **directly for industrial processes**, helping decarbonise sectors requiring thermal energy.
- **Heat Generation:** It heats a fluid (such as water, thermal oil, or molten salt) to **extreme temperatures (up to 400°C)**, generating raw, intense heat.
- **Industrial Application:** It is highly suitable for industries like textiles, where processes such as scouring and bleaching require steam at temperatures between 100°C and 180°C.
- **Grid Independence:** CST can generate thermal energy on-site and store it in insulated tanks.
  - This thermal storage is significantly cheaper than **lithium-ion batteries** and allows factories to operate 24/7 without drawing power from the national grid.
- **India's Potential:** According to the Ministry of New and Renewable Energy (MNRE), India has a CST potential of 6. 4 GW.

Electromagnetic Induction Heating

- Traditional industrial boilers burn **fuel to heat an intermediary medium** (like air or steam), which then heats the product. This leads to massive thermal losses. **Induction heating eliminates the intermediary, generating heat directly *inside* the target material.**
- **Mechanism:**
  - **Electromagnetic Field:** An alternating electric current (AC) is passed through a copper coil, creating a rapidly fluctuating **magnetic field**.
  - **Eddy Currents:** When a conductive metal is placed inside this magnetic field, it induces small, localized electrical currents within the metal, known as **Eddy Currents**.
  - **Joule Heating:** As these eddy currents flow, they face the natural electrical resistance of the metal. This resistance converts the electrical energy directly into heat from the inside out (a process known as **Joule Heating**).
- **Key Advantages for Industry:**
  - **Unmatched Efficiency:** Because no heat is lost to the surrounding air or exhaust flues, thermal efficiency can exceed **90%**.
  - **Rapid and Precise:** It heats materials almost instantly and allows for highly localized heating (useful in automotive and metal forging industries).
  - **Zero Direct Emissions:** When powered by renewable energy, it completely eliminates the carbon footprint of the heating process.

Plasma Torches

- While induction is excellent for metals, heavy industries like ceramics and cement require sustained, ultra-high temperatures (often exceeding 1, 000°C) that standard electric heaters cannot achieve.

- Plasma arc technology provides a clean alternative to gas flames for these extreme thermal needs.
- **Mechanism:**
  - **Electric Arc Generation:** The process begins by striking a high-voltage electric arc between two electrodes inside the torch.
  - **Ionization of Gas:** A working gas (like argon or nitrogen) is forced through this intense electric arc.
    - ❖ The extreme energy strips electrons from the gas atoms, transforming the gas into **Plasma** (widely known as the **fourth state of matter)**.
    - ❖ **Thermal Energy Release:** As this highly energized plasma jet exits the torch, it releases massive amounts of thermal energy onto the target material.
- **Key Advantages for Industry:**
  - **Ultra-High Temperatures:** Plasma torches can easily generate core temperatures ranging from **5, 000°C to over 10, 000°C** (hotter than the surface of the sun), making them ideal for smelting and advanced ceramics.
  - **Controlled Chemical Environments:** By using specific inert or reactive gases to create the plasma, industries can control the chemical atmosphere, preventing materials from oxidizing (rusting) during the heating process.
  - **Fuel Substitution:** It provides a **direct, electrified replacement** for highly polluting coal or natural gas furnaces in heavy manufacturing.

Global Best Practices in Solar-Based Industrial Heating

- **Oman – Miraah Project:** Integrates a large **concentrated solar thermal** (**CST**) plant with gas-fired operations, reducing gas use by nearly **80**% through daytime solar steam generation.
- **Spain – Solar Heat for Industrial Processes:** Developed **plug-and-play solar thermal units** that can be easily installed and connected to existing industrial steam systems.
- **Denmark – Heat Purchase Agreements:** Industries **buy heat from external providers** operating CST or induction systems, supported by **large-scale thermal storage** to store excess heat.

India's HPV Vaccination Drive

India is set to roll out nationwide **HPV vaccination** to eliminate cervical cancer.

HPV Vaccination Drive

- **Target Group:**
  - Girls aged 14 years; voluntary & free at govt. facilities (Ayushman Arogya Mandirs, District Hospitals).
  - **Effectiveness:** Reduces cervical cancer risk by **85%+**; 93–100% effective against key HPV types.
- **Vaccine Used:**
  - **Gardasil (quadrivalent)** – protects against HPV 16, 18 (cancer) & 6, 11.
  - **Single-dose regimen** (WHO-recommended); optional second dose after 3–5 years.
  - Indigenous **Cervavac** not yet WHO-approved for programme.
- **Safety:** Non-live vaccine; 500+ million doses globally since 2006.
- **Implementation:**
  - Supported by **GAVI**; approved by CDSCO
  - Recommended by NTAGI; backed in Union Budget 2024.
  - Special campaign (not routine UIP); tracked via **U-WIN** platform.

Human Papillomavirus (HPV)

- **About:** Group of 200+ double-stranded DNA viruses (Papillomaviridae); infect skin & mucosal epithelial cells.
- **Natural Course:** Mostly asymptomatic; ~90% clear naturally within 1–2 years.
- **Types**
  - **Low-risk (HPV 6, 11):** Cause genital/skin warts.
  - **High-risk (HPV 16, 18):** Oncogenic; major cause of cervical cancer.
- **Disease Burden (India):** Cervical cancer: 2nd most common cancer in women.
  - ~80, 000 new cases & 42, 000+ deaths annually.
  - 85% linked to persistent HPV; types 16 & 18 cause 80%+ cases.
- **Transmission:** Intimate skin-to-skin contact; mainly sexual activity.
  - Most common STI globally.
- **Prevention**
  - **Vaccination (best strategy):** Girls 9–14 years (1–2 doses).
  - Other: Condoms, male circumcision, smoking cessation.
- **WHO 2030 Targets (90-70-90):** 90% girls vaccinated by 15.
  - 70% women screened by 35 & 45; 90% treated for cervical disease.

LIGO-India's 1st Gravitational Wave Observatory

India's **Laser Interferometer Gravitational Wave Observatory (LIGO) project in Hingoli (Maharashtra)** is facing **significant implementation delays**, raising **timeline concerns despite assurances of completion by 2030**.

LIGO-India Project	Gravitational waves
❍ **About:** India's **first gravitational-wave observatory**, part of the **global gravitational-wave detection network**. ● Will be the **5th node**, alongside **LIGO** (**Hanford & Livingston – US**), **Virgo** (**Italy**), **and KAGRA** (**Japan**). ❍ **Lead agencies: Department of Atomic Energy** (**DAE**) and **DST** with **US LIGO Laboratory** and institutions like **IUCAA, Pune**. ❍ **Scientific objectives:** Improve **sky coverage, source localisation** (**especially southern hemisphere**), **and detection sensitivity** of the global network. ❍ **Technical features:** ● **Two 4-km arms at 90°**, functioning as **vacuum chambers with mirrors at their ends**. ● **Laser beams reflected b/w mirrors** detect **gravitational waves**. ● **First gravitational wave detected in 2015** from **merger of two black holes ~1.3 billion light-years away**.	❍ **About: Ripples in spacetime** caused by **acceleration of massive objects**, predicted by **Einstein's General Theory of Relativity** (**1915**). ● Enable observation of **cosmic events not detectable by traditional telescopes**. ❍ **Propagation Characteristics:** Travel at the **speed of light**, **carry energy from their sources**, and **stretch & squeeze spacetime in a quadrupolar pattern** (two pushes and two pulls simultaneously, at right angles to each other). ❍ **Different from electromagnetic waves: Gravitational waves** arise from **changes in gravitational fields**, not **oscillating charges**, and are **not part of the electromagnetic spectrum**. ❍ **Primary sources:** Merging binary black holes or neutron stars; Core-collapse supernovae; Events from the early universe ❍ **Detection challenge:** Extremely weak by the time they reach Earth, causing **fractional length changes ~10^{-21} over kilometre scales**, requiring **ultra-sensitive detectors like LIGO**.

Training of Large Language Models

At the **India-AI Impact Summit 2026**, **Sarvam AI** unveiled **two indigenous LLMs** designed to be **compute-and power-efficient**, with enhanced performance in **Indian languages**.

Training of Large Language Models (LLMs)

- **LLM:** AI system based on **Transformer architecture**. Trained on **massive text datasets** using **deep learning**.
  - Performance depends on **data quality + fine-tuning**.

Stages of Training

- **Data Collection & Pre-processing**
  - Sources: **Internet, books, Wikipedia, code repositories**. Text converted into **tokens**.
  - Data cleaned (remove **spam, bias, harmful content, duplicates**).
- **Pre-training (Self-Supervised Learning):** Learns via **next-token prediction**.
  - Uses **self-attention mechanism**. Produces a **base model** (understands grammar, facts, reasoning).
  - Cannot yet effectively follow instructions.
- **Supervised Fine-Tuning (Instruction Tuning):** Trained on **human-curated prompt–response pairs**.
  - Enables **question answering, summarisation, translation**. Learns conversational structure.
- **Alignment (RLHF – Reinforcement Learning from Human Feedback):** Humans rank multiple model responses.
  - A **reward model** learns preferences. Optimizes for **safety, helpfulness, reduced bias**.
- **Limitations in India: Scarcity of high-quality Indian language datasets**.
  - Higher token usage due to **translation into English**.
  - **High capital requirement** for training.
  - Limited immediate **commercial use cases** restricting investment.

NOTE: Early LLMs with hundreds of billions of parameters activated all parameters during inference, making them highly compute-and resource-intensive.

❍ New models use **Mixture of Experts** (**MoE**) architecture, where only a **small subset of parameters** ("**experts**") is activated per query, improving **speed, cost efficiency, and compute efficiency**.

❍ Indian models such as **Sarvam's 105B parameter LLM** and **BharatGen's multilingual 17B model** adopt **efficiency-focused designs** to support **Indian languages and sectors like education and healthcare**.

IndiaAI Mission
❍ **Launched:** March 2024	**Outlay:** ₹10, 372 cr	Aim: Build full-stack **AI ecosystem**. ❍ **Compute:** 36, 000+ GPUs commissioned + 20, 000 added; **Target: 1 lakh+ GPUs by 2026**. ❍ **Startup Support:** Subsidised compute; **Sarvam AI – 4, 096 GPUs** (~**₹100 cr subsidy**). ❍ **Talent & R&D:** 13, 500+ students; **India Data & AI Labs**. ❍ **Sovereign AI:** Support for **foundational models on Indian datasets**, funding for compute & open-source innovation.

Shaheed Diwas

Shaheed Diwas is observed annually on **23rd March.** Honours **Bhagat Singh, Shivaram Rajguru, Sukhdev Thapar–** hanged to death by the British colonial government on this day in 1931 in the Lahore Central Jail

India observes Martyrs' Day on 30th Jan to mark the assassination of Mahatma Gandhi.

History behind Shaheed Diwas

- **1928**: **Lala Lajpat Rai** injured in **lathi charge** during the protest against **Simon Commission**
- **Hindustan Socialist Republican Association (HSRA) Response**:
  - **Bhagat Singh, Rajguru, Sukhdev** planned to kill **James A. Scott**
  - Mistakenly killed **J.P. Saunders** (**Lahore Conspiracy Case, 1929**)
- **Execution (1931)**: Executed on **23rd March 1931**
  - Cremated at **Hussainiwala National Martyrs Memorial (Punjab)**

Bhagat Singh (1907-1931)

- **Bhagat Singh** born on **28th September 1907 in Banga, Punjab (now in Pakistan)**, came from a **revolutionary Sikh family**, with his father **Kishan Singh** and uncle **Ajit Singh** actively involved in the freedom struggle.
  - Deeply influenced by the **Jallianwala Bagh massacre**, which he witnessed at a young age, and his education at **National College, Lahore (founded by Lala Lajpat Rai)**, he developed strong nationalist and revolutionary ideals.
  - He joined the **Hindustan Republican Association (HRA)** in 1924, later reorganized as the **Hindustan Socialist Republican Association (HSRA)** in 1928, and founded the **Naujawan Bharat Sabha (1926)** to mobilize youth.
  - In **1929**, along with **Batukeshwar Dutt**, he threw **low-intensity bombs in the Central Legislative Assembly** to protest the **Public Safety Bill and Trade Dispute Bill**, aiming to "make the deaf hear."
  - His writings, such as **"Why I Am an Atheist",** reflect his belief in **rationalism, equality, and social justice**.
    - ❖ Writing under pseudonyms like **Balwant, Ranjit, and Vidhrohi**, he contributed to journals like **Kirti**.
  - Revered as **"Shaheed-e-Azam"**, he popularized the slogan **"Inquilab Zindabad".**

Sukhdev Thapar (1907-1931)

A core member of the **HSRA**, he was instrumental in organizing revolutionary networks and mobilizing youth in the **Punjab region**. He was a key strategist and participant in the **Lahore Conspiracy Case**.

Shivaram Rajguru (1908–1931)

Hailing from **Maharashtra**, he was a **staunch advocate of armed resistance** and a prominent member of the **HSRA**. He was **highly respected as a skilled gunman** among revolutionaries and played a crucial role in the **freedom struggle**.

Mahad Satyagraha

The historic **Mahad Satyagraha** marks its 99th anniversary and the beginning of its centenary year on **20th March 2026.** This day is also officially observed across India as **Social Empowerment Day** to commemorate this landmark movement led by **Dr. B. R. Ambedkar in 1927**.

- The Mahad Satyagraha serves as a critical reminder of India's foundational struggle for human dignity, equality, and social justice against the oppressive caste system.

Key Facts About Mahad Satyagraha

- **Background:** In 1923, social reformer **S. K. Bole** passed a resolution in the Bombay Legislative Council mandating that public water sources, wells, and dharamshalas be opened to the Depressed Classes.
  - The **Mahad Municipal Council** adopted this resolution in 1924, but severe resistance from **dominant-caste Hindus prevented the Depressed Classes from actually accessing the town's Chavdar Tale (Chowder Tank).**
  - In response, the **Mahad Satyagraha** was launched under **Dr. B. R. Ambedkar** to assert the **legal and moral right of Dalits to access the Chavdar Tank**.
- **Events of the Mahad Satyagraha (1927):**
  - **March for Dignity (1927):** On **20th March 1927**, Dr. B. R. Ambedkar led a peaceful march to the **Chavdar Tank** and drank water from it, breaking a centuries-old caste taboo and asserting equality.
  - **Violent Backlash:** Upper-caste groups attacked protestors amid rumours of temple entry. The tank was **symbolically "purified"** with cow dung and urine, reflecting caste prejudice.

- **Burning of Manusmriti**:
  - Dr. Ambedkar planned a second Satyagraha in December 1927 but was blocked by a **court injunction** filed by upper-caste Hindus claiming the **tank was private property.**
  - Ambedkar did not access the tank again but burned the Manusmriti, rejecting caste ideology.
- **Legal Victory (1937):** After a decade-long struggle, the Bombay High Court ruled in favor of Dr. Ambedkar, legally **opening the tank to all communities.**

Significance and Legacy for Modern India

- **Shift to Direct Action:** Mahad marked a paradigm shift in Dalit politics moving from submitting petitions and memorials to the British government, to taking direct, **mass-mobilized civic action.**
- **Feminist Underpinnings:**
  - During the Satyagraha, Ambedkar specifically addressed **Dalit women.**
  - He urged them to abandon the sartorial markers of untouchability and drape their saris fully, just like dominant-caste women.
  - The women immediately complied**, making Mahad an early site of intersectional feminist assertion.**
- **Constitutional Precursor:**
  - The ideological battles fought at the Chavdar Tale laid the direct moral groundwork for the drafting of the Indian Constitution, specifically **Article 15** (prohibition of discrimination on grounds of religion, race, caste, sex, or place of birth) and **Article 17** (abolition of untouchability).

Mahad and Salt Satyagraha

The phrase "Before salt, there was water" draws a powerful, necessary parallel between two of India's greatest non-violent movements: Ambedkar's Mahad Satyagraha (1927) and Gandhi's Dandi March (1930).

- **Nature of the Oppressor:** While Gandhi used salt to mobilize the masses against an **external colonizer** (British Imperialism), Ambedkar used water to fight an **internal colonizer** (Social Imperialism and the caste system).
- **Symbolism of Resources:** Both leaders utilized the most basic elements of human survival.
  - Gandhi demonstrated that taxing salt was a denial of a natural right.
  - Ambedkar demonstrated that denying water was a denial of humanity itself.
- **The Concept of Swaraj:** For Ambedkar, the water march proved that political freedom (*Swaraj*) from the British was meaningless if it was not preceded by social freedom and equality for India's most marginalized citizens.
- **Depth of Reform:** Mahad demanded a **fundamental change in social attitudes and the caste system**, while the Salt Satyagraha focused on **challenging specific colonial laws like the salt tax**.
- **Legacy:** Mahad laid the foundation for **constitutional values of equality and human rights**, whereas the Salt Satyagraha strengthened the **broader freedom movement against British rule**.

India's Tribal Paintings

Tribes Art Fest 2026 (Ministry of Tribal Affairs) featured **75+ tribal artists** showcasing **30+ tribal art traditions** (especially paintings).

Various Tribal Paintings	State	Key Features	Technique/Style	Themes
Warli Painting (GI tag in 2014)	Maharashtra (Sahyadri Range)	**One of the oldest tribal art forms**, known for simple geometric figures representing sun/moon, mountains, and humans.	Painted on **red ochre mud walls** using white rice-flour paste mixed with water.	Depicts social life such as **hunting, fishing, farming**, and the **Tarpa dance**, rather than mythological themes.
Gond Paintings (GI tag in 2023)	Madhya Pradesh	Known for **intricate dots & lines** that create movement and detailed patterns.	Traditionally used **charcoal, colored soil, and plant sap**; modern versions use vibrant colors.	Focuses on nature, including the **Tree of Life**, animals, plants, and **spirits** from Gond mythology.
Pithora Paintings (GI tag in 2021)	Gujarat & Madhya Pradesh	Ritualistic painting tradition practiced by **Rathwa & Bhil tribes**; **horses** are mandatory, esp. the horse of Baba Pithora.	Traditionally painted by men called **Lakhara**, often accompanied by songs & chants during the ritual.	More of a **ritual** than an art form. Created to **thank deities/fulfill wishes.**

Contd...

Various Tribal Paintings	State	Key Features	Technique/Style	Themes
Saura Paintings (GI tag in 2024)	Odisha	Geometric human figures **similar to Warli** but **more elongated**.	Saura wall paintings are called **italons/ikons**. Practised by the **Saura tribe**.	Dedicated to **Idital** (**main deity**); depicts **village life, sun, moon, animals**, and rituals.
Sohrai Paintings (GI tag in 2020)	Jharkhand	Colorful **mural art** practiced mainly by tribal women.	Uses **natural earth colors** painted on walls.	Celebrates **harvest, cattle**, and agricultural prosperity, featuring animal motifs.
Khobar Paintings (GI tag in 2020)	Jharkhand	**Matrimonial mural art** used to decorate the **bridal chamber**.	Uses a **comb-cut technique** where layers of colored earth are applied and scraped to reveal patterns.	Associated with marriage rituals & **fertility symbolism**.
Bhil Art	MP & Rajasthan	Recognized by **large, uneven dots**, with each artist having a unique dot pattern.	Created using **bright colors** & **dotted patterns** to form images.	Depicts tribal myths, legends, and storytelling landscapes (Galo).
Mandana Paintings	Rajasthan & MP	Ritualistic folk art practiced by the **Meena community**, esp. during festivals & religious occasions.	Women prepare a **base of red clay and cow dung** on walls/floors and paint symmetrical designs with **white lime** (**Kharia**) using date-twig or cotton brushes.	Features geometric patterns, **peacocks, nature motifs**, and the footprints of **Goddess Lakshmi** (**Paglya**).

Dandi March

The Vice President paid homage to **Mahatma Gandhi** and all the freedom fighters who participated in the **Dandi March** (1930), noting that the march's spirit of self-reliance guides India's journey towards an **Atmanirbhar** and **Viksit Bharat**.

Dandi March

- **About:**
  - The **Dandi March (1930)** was an important event in India's freedom struggle. It was led by **Mahatma Gandhi** to oppose the **British salt tax** through a **peaceful act of civil disobedience**, challenging British economic control over India.
  - **Mahatma Gandhi** deliberately chose **salt** because it was a **daily necessity**, making the **injustice universally relatable**.
- **Timeline and Key Events:**
  - The march started on **12th March 1930** and concluded on **6th April 1930**, covering **240 miles** from the **Sabarmati Ashram** to **Dandi village** (present-day Gujarat). Mahatma Gandhi was accompanied by **78 initial followers**, a number that swelled into a mass movement along the route.
  - The protest targeted the **British salt monopoly** and the **salt tax**, enforced by laws like the **1882 Salt Act**. This tax forced **all Indians**, especially the **poor,** to buy **expensive, taxed salt** (often imported) instead of using the readily available **coastal salt**.
  - On **6th April 1930**, **Mahatma Gandhi** broke the **salt laws** by picking up a **handful of natural salt** from the **seashore at Dandi**. This single act served as a **signal for millions of Indians** to begin their own acts of **civil disobedience across the country**.
    - ❖ E.g., **C. Rajagopalachari** broke salt law in the coastal town of **Vedaranyam** in the **Tanjore coast** (Madras Presidency). In the **Malabar region** (present-day Kerala), **K. Kelappan** (Kerala Gandhi) organized salt marches from **Calicut to Payyanur**.
- **Repression:**
  - The **British** responded with **mass arrests**, including **Gandhi's arrest on 5th May 1930**, and **violent crackdowns** on peaceful protesters, most notably at the **Dharasana Salt Works**.
  - In Gujarat, after Mahatma Gandhi's arrest, **Sarojini Naidu** led a nonviolent raid on the **Dharasana Salt Works** on **21st May 1930**, where American journalist **Webb Miller** reported a **brutal police lathi-charge** on peaceful protesters.
- **Long-Term Significance:** It garnered significant **international attention**, exposing the **moral bankruptcy** of British rule and inspiring future global leaders of nonviolent movements, such as **Martin Luther King Jr.**

Social Issues

World Tuberculosis Day 2026

Observed on **24th March annually,** aim is to raise awareness on **health, social, economic impact of TB**

Significance of World TB Day

- **Historical Context (1882)**:
  - **Robert Koch** discovered ***Mycobacterium tuberculosis***
- **Theme 2026 (WHO)**: **"Yes! We can End TB!"**
  - **Focus:** local action, leadership, innovation, community mobilisation
- **Economic Aspect**: $1 investment → up to $43 returns
- **India's Initiatives (2026)**:
  - TB Mukt Bharat Abhiyaan (100 Days)
  - TB Mukt Bharat App
  - TB Mukt Urban Ward Initiative

Status of TB in India

- **Global Share**: ~**25% of TB cases**, ~**28% of TB deaths** (WHO 2025)
- **Progress**:
  - **Treatment coverage**: 53% (2015) → 92% (2024)
  - **Mortality rate**: 28 → 21 per lakh (2015–2024)
  - **Treatment success**: 90% (2024) (> global average of 88%)
- **Gaps**: ~1 lakh "missing" cases. **8.8% global detection gap** (2nd after Indonesia)
- **Target**: **National TB Elimination Programme (NTEP) (2020)** → TB elimination by **202**5 (not achieved)

Major Challenges in Meeting the TB Elimination Target

- **Drug-Resistant TB (MDR/XDR)**:
  - **India:** 32% of global MDR/RR-TB cases
  - **Treatment:** toxic, expensive, long
  - **Success rate:** ~90% (drug-sensitive) → ~77% (MDR-TB)
- **Co-morbidities & Malnutrition**: **Malnutrition** linked to **~35% cases**
  - High **anaemia, stunting** (Bihar, Jharkhand, UP)
  - **Diabetes (~3.2 lakh TB cases in 2024)** & **HIV** increase risk
- **Diagnostic Gaps**:
  - **Stigma** → under-reporting, treatment dropouts
  - **>1 lakh "missing" cases/year**
  - Uneven access to **Truenat, CBNAAT** → reliance on **sputum microscopy**
- **Supply Chain Issues**:
  - **Drug stockouts** (first & second-line)
  - Leads to **treatment interruption & drug resistance**
- **Socio-Economic Factors & Migration**: Linked to **poverty, overcrowding, poor ventilation**
  - **Migration** disrupts **Directly Observed Treatment (DOTS) tracking & treatment continuity**
- **Funding & R&D Gaps**: Insufficient funding for **adult TB vaccines (**current BCG vaccine is only effective in severe childhood TB**).** Lack of **affordable point-of-care diagnostics**

Measures to Strengthen TB Elimination Efforts in India

- **Target Asymptomatic Cases**: **~50% cases subclinical** (National TB Prevalence Survey). Use **AI-enabled portable Chest X-rays (CXR), tongue/nasal swabs**
- **Address Drug Resistance**: **Rapid testing** for **rifampicin resistance.** Avoid delay & ineffective **first-line drug treatment**
- **Tribal-Focused Financing**: TB prevalence **~50% higher (STs).** Use **District Mineral Foundation (DMF) funds** for **diagnostics & nutrition**
- **Digital Tracking**: **TB Mukt Bharat App** for **real-time tracking & adherence**
- **Tackle Undernutrition**: Link **Ni-kshay Poshan Yojana** with **PDS.** Expand **Ni-kshay Mitra initiative**
- **TB Preventive Treatment (TPT)**: Provide therapy to **household contacts** to break transmission

Despite aggressive programmatic interventions, India has missed its ambitious target of eliminating Tuberculosis by 2025. Critically analyze the major clinical and socio-economic bottlenecks hindering India's TB elimination efforts.

Drishti Mains Question

UN IGME 2025 Report on Child Mortality

UN Inter-agency Group for Child Mortality Estimation (UN IGME) released its **Report 2025** titled *'Levels and Trends in Child Mortality'*. **Global trend**– slowdown in child survival progress since **2015**

- **India**: Recognized as a **leading exemplar** for sustained reduction in **child mortality rates**

Key Highlights of the Report

- **Global Burden (2024)**:
  - **4.9 million** (estimated) under-five deaths (incl. **2.3 million newborns**)

- **2.1 million** deaths in **5–24 years** age group
- **Regional Concentration**: **Sub-Saharan Africa** – 58%; **Southern Asia** – 25%

- **Deceleration in Progress**: Under-five mortality reduced by **>50% since 2000**
  - Pace slowed by **>60% since 2015**
  - **Reasons for Slowdown**: **Reduced funding** for child health
    - ❖ **Unequal healthcare access**
    - ❖ **Socio-economic disparities** affecting **nutrition & vaccination**
- **First-time data on Malnutrition**: **Severe Acute Malnutrition (SAM)** caused **>100,000 deaths (~5%)** in **1–59 months**
  - Indirect impact higher due to **weakened immunity**
- **Primary Causes of Death**:
  - **Newborns (0–28 days)**: **Preterm birth complications** – 36%
    - ❖ **Labour & delivery complications** – 21%
  - **Post- neonatal (1–59 months)**: Pneumonia, diarrhoea, malaria

India's Performance: A Global Exemplar

- **U5MR**: Decline: **79%**
  - **127 (1990) → 27 (2024)** per **1,000 live births**
- **NMR**: Decline: **70%**
  - **57 (**per 1,000 live births in 1990**) → 17 (2024)**
- **IMR (2024)**: ~23.3 per 1,000 live births

Mortality Indicators– Factsheet (NFHS-5)

- **Neonatal Mortality Rate (NMR): 24.9** per 1,000 live births. *(down from 29.5 in NFHS-4).*
- **Infant Mortality Rate (IMR): 35.2** per 1,000 live births. *(down from 40.7 in NFHS-4).*
- **Under-Five Mortality Rate (U5MR): 41.9** per 1,000 live births. *(down from 49.7 in NFHS-4).*
- **Maternal Mortality Ratio (MMR):** Registrar General of India's Sample Registration System (SRS)- 130 (2014–16) → **97 (2018–20)** per **lakh live births.** India within **SDG target (<70 by 2030)**

Major Challenges Driving Child Mortality in India

- **Persistent Neonatal Mortality Burden**: Majority deaths in **first month**
  - Causes: **prematurity, birth asphyxia, infections**
- **Malnutrition & Maternal Anaemia**:
  - Leads to **low immunity & low-birth-weight**
  - **NFHS-5 (2019–21)**: **57% women (15–49 years)** anaemic. **52.2% pregnant women** anaemic
- **Regional Inequalities**:
  - **Better outcomes:** Kerala, Tamil Nadu
  - **Higher burden:** UP, Bihar, MP
  - **Drivers:** maternal education, poverty, caste disadvantage, low social capital
- **Healthcare Access Issues**: Lack of **specialised neonatal care units (SNCUs) & pediatric ICU** in remote areas. **"Golden hour" delay** in emergencies
  - **Infrastructure Gaps**: Limited **specialised neonatal care.** Delayed **emergency care**
  - **Post-neonatal Causes**: **Pneumonia, diarrhoea.** Linked to **Water, Sanitation, and Hygiene (WASH) deficits**
  - **Quality of Care Deficit**: Poor **intrapartum care.** Lack of **skilled personnel** despite high institutional deliveries
  - **SDG Pressure (Target 2030)**: **U5MR < 25**, **NMR < 12** (per 1,000 live births). Requires **faster, targeted interventions**

Measures Needed to Further Reduce Child Mortality

- **Targeting the First 28 Days**: Improve **intrapartum care.** Ensure **newborn screening** (asphyxia, prematurity)
- **Strengthen Newborn Survival**: Promote **Kangaroo Mother Care (KMC)**
  - Implement **Early Essential Newborn Care (EENC)** (immediate breastfeeding, Breast Milk Banks, proper birth practices)
- **Improve Quality of Delivery Care**: Enforce **LaQshya** standards. Train staff in **neonatal resuscitation** (golden minute)
- **Break Malnutrition Cycle (First 1,000 Days)**: Strengthen **POSHAN Abhiyaan 2.0**, **Anaemia Mukt Bharat.** Focus on **nutritional quality & micronutrients**
- **Target High-Burden Areas**: Focus on **high-mortality states & Aspirational Districts.** Use **tribal health strategies** (mobile units, local workers)
- **Data-Based Action**: Expand **U-WIN** for immunisation tracking
- **Strengthen Frontline Workers**: Support **ASHA & Anganwadi workers** with tools, training, incentives

Women in Indian Politics

Women's political participation in India highlights a major democratic paradox. The rise in **electoral participation has not translated into proportional political representation** or decision-making power. This gap continues to draw attention to structural barriers and the need for meaningful reforms.

Current Status of Women in Indian Politics

- **As Voters:** Gender gap declined from **11.2% (1967)** to **~1.5% (2014)**.

- **2019 & 2024 LS elections**: turnout nearly equal (**~66%** each).
- In several **State elections**, **female turnout > male turnout**.

- **Political Campaigns:** Participation increased but gap persists:
  - **Meetings/rallies**: 9% → ~16% (2009–2024).
  - **Processions/door-to-door canvassing**: 5–6% → ~11%.
  - **Men's participation ≈ double**.
- As Representatives:
  - **Low Representation: 18th Lok Sabha**: **74 women MPs (13.6% of the 543 seats)** ↓ from **78 (14.4%)** in 17th LS.
    - Below **global average (~26%)**.
  - **Women representation:** ~9–10%.
    - **>44% women** in **local self-government (PRIs)** due to **reservation**.

Barriers that Limit Women's Political Participation

- **Institutional & Structural Barriers:** Parties deny tickets citing **"winnability"**.
  - **Male-dominated networks** control candidate selection & leadership.
  - Women often given **"soft ministries"** (WCD, Culture), not key portfolios.
- **Economic Barriers:**
  - **Capital-intensive elections** disadvantage women.
  - Limited access to **property, wealth, funding & donor networks**.
- **Socio-Cultural & Patriarchal:** Norms restrict women to **private sphere**.
  - **Unpaid care work** limits political engagement.
  - **Proxy representation** (e.g., **Sarpanch Pati** phenomenon).
- **Hostile Political Environment:** Presence of violence, intimidation, criminalisation.
  - Women face gendered attacks, online harassment, threats & abuse.
- **Capacity & Pipeline Deficit:** Exclusion from **student unions & activist networks**.
  - Lack of **mentorship & leadership training** leads to dependence on male relatives.
- **Electoral System & Incumbency: First-Past-The-Post (FPTP) system** favours **"safe" male incumbents**. Incumbency advantage limits entry of women candidates.

India's Initiatives to Promote Women's Political Participation

- **73rd and 74th Constitutional Amendments (1992)** mandated **33% reservation for women** in **PRIs** and **Urban Local Bodies (ULBs)**.
  - India now has **1.4 million+ elected women representatives** at the local level.
- **Nari Shakti Vandan Adhiniyam, 2023:** Implementation will begin **after the Census 2027 and delimitation**, and the provision will operate for **15 years**.
- **ECI Initiatives: SVEEP (Systematic Voters' Education and Electoral Participation)**
  - Introduction of **"Sakhi" or Pink polling booths**
  - **Special voter registration drives** focus on first-time female voters & women who migrate after marriage.
- **Ministry of Panchayati Raj and National Commission for Women (NCW)** conduct training programmes for elected women representatives.
- **Political Party-Level Initiatives:** Some parties have voluntarily increased women's representation in candidatures.
  - **Trinamool Congress (TMC)** and **Biju Janata Dal (BJD)** have allocated **33% or more tickets to women** in elections.

Measures to Strengthen Women's Political Participation

- **Legal Amendments (RPA, 1951):** Make party registration conditional on **inner-party quota for women**.
  - Ensure **≥33% women** in **organizational posts** (Parliamentary Boards, CECs).
  - Expand **corrupt practices** to include:
    - **Character assassination**, **gendered deepfakes**, **digital misogyny**.
    - Penalty: **immediate disqualification**.
- **Revive Dual-Member Constituencies:** Each constituency elects **one male + one female** (India used dual-member constituencies in the 1952 & 1957 elections).
  - Ensures **female representation across regions** without displacing male incumbents.
- **Precision Financial Engineering: ECI** to modify **expenditure caps** based on gender.
  - **Electoral trusts/corporates** get tax incentives for funding women candidates/capacity building.
- **Curb Proxy Representation: Aadhaar-linked biometric authorization** for **Gram Panchayat funds**. Ensures only **elected woman** controls finances (ends **Sarpanch Pati** practice).
- **Formalising Shadow Cabinets:** Institutionalise "**Shadow Cabinet" system** (common in UK). Ensure women in **key portfolios (finance, defence)** to build **credibility & visibility**.

Women in India vote in equal or higher numbers than men, yet remain underrepresented in legislatures. Examine the reasons behind this paradox.

Drishti Mains Question

Transgender Persons Amendment Bill 2026

President Droupadi Murmu has given her assent to the Transgender Persons (Protection of Rights) Amendment Bill 2026, that proposes major changes to the **Transgender Persons (Protection of Rights) Act, 2019**.

- Transgender activists **fear** the amendments aim to rewrite the legal framework for transgender rights in India, overriding the **Supreme Court**'s landmark ***National Legal Services Authority v. Union of India, 2014*** judgment.

Key Changes Proposed in the Bill

- **Abolition of Self-Identification:** The **2026 Bill** removes **Section 4(2)** of the **2019 Act**, which enshrined the **right to self-identify** as a **transgender person**. The government argues the original definition was "**vague**" and made it difficult to identify the "**genuinely oppressed**" beneficiaries.
  - The government is also of the view that the existing definition renders numerous criminal, civil, and personal laws **"unworkable"** and is **"not compatible"** with various statutory provisions. The legislation's intended purpose was never to protect **every class of persons** with diverse **gender identities**, self-perceived sex/gender identities, or **gender fluidities**.
  - **Narrower Definition:** The **definition** of a **'transgender person'** is significantly **narrowed**. It primarily recognizes those with specific socio-cultural identities (like **kinner**, **hijra, aravani and jogta**) or persons with a specified, **medicalised list** of **congenital biological variations** (chromosomal patterns, gonadal development, etc).
- **Name Change:** It proposes that transgender persons can **change** their **first names** on birth certificates and ID documents. However, for this, individuals must meet the **newly proposed statutory definition** of a "transgender person"**.**
- **Introduction of Medical Certification:** It replaces the administrative process for identity cards with a **Medical Board** (headed by a **Chief Medical Officer**). This board's **recommendation** is now **mandatory** for the **District Magistrate** to consider before issuing a certificate of identity.
- **Increased Oversight:** Representatives on the **National Council for Transgender Persons** from States/UTs must now hold a minimum rank of **Director** in the relevant Ministry or Department, indicating a push for higher-level **bureaucratic oversight.**
- **New Criminal Category for Forced Identity:** The Bill introduces a **distinct category** to address the "coerced" assumption of transgender identity. It penalizes the act of compelling a person (through **force, deceit, or allurement**) to undergo procedures like **emasculation** or **hormonal changes** to assume a transgender identity.
- **Increased Punishments:** The **bill** introduces **stringent penalties:**
  - **Kidnapping an adult** to force a transgender identity can lead to **minimum 10 years of rigorous imprisonment (RI)**, extendable to **life**. The same offence against a **child** mandates **RI for life** and a minimum fine of **Rs 5 lakh**.
  - Forcing an adult into **begging** or **bonded labour** as a transgender person invites 5-10 years RI. The same offence against a **child** attracts **10-14 years RI**.

Transgender Persons (Protection of Rights) Act, 2019

The Transgender Persons (Protection of Rights) Act, 2019, enacted following the NALSA v. Union of India (2014) judgment, provides legal recognition and rights to transgender persons in India.

- **Definition of Transgender:** Defines a transgender person as one whose **gender** does not match the gender **assigned at birth**, inclusively covering **trans men**, **trans women**, **intersex persons**, and socio-cultural identities like kinner and hijra, regardless of medical interventions.
  - According to **Census 2011**, India's transgender population stands at approximately **4.88 lakh**, with **Uttar Pradesh**, Andhra Pradesh, and Maharashtra being the top three states.
- **Right to Self-Identification:** Grants the **right to self-perceived gender identity**. A **certificate of identity** is issued by the District Magistrate through a purely administrative process, without any medical examination.
- **Prohibition of Discrimination:** Forbids **discrimination** in education, employment, healthcare, and public facilities.
- **Institutional Mechanism:** Establishes a **National Council for Transgender Persons** to **advise the government** on welfare policies, monitor implementation, and coordinate inter-ministerial efforts.
- **Offences & Penalties:** Prescribes **punishment** (**6 months to 2 years imprisonment and fine**) for offences like forced labour and abuse.

Fears Associated with the Bill

- **Rejection of Self-Identification Principle:** By removing Section 4(2) of the 2019 Act, the bill directly **contradicts** the core principle of the **NALSA verdict**, which recognized the **Right to Self-Determination** and held that it **does not need** to be proven through external, especially **medical, means**.
- **Clinical Gatekeeping:** By requiring a board headed by a Chief Medical Officer to "recommend" a person's gender to the District Magistrate, the Bill **returns** to a model where transgender identity is treated as a **medical condition** rather than a social or personal identity.
  - For a transgender person, navigating a system with **deep-rooted transphobia** and proving their identity to a board of doctors would be extremely **difficult, humiliating**, and **regressive**.

- **Exclusion of Gender Fluidity:** By explicitly stating that the law is not for those with "self-perceived" or "gender fluid" identities, it **ignores** a vast section of the community that does **not fit into rigid biological categories**. Critics argue that this arbitrarily decides who is **"oppressed enough"** to deserve rights.
- **Threat to those outside "Socio-Cultural" groups:** While the Bill recognizes groups like *Hijras* or *Kinner*, it potentially **delegitimizes trans persons** who exist independently of these traditional systems (the *guru-chela* system), leaving them **without legal standing.**
- **Reversal of Progress and Statistical Impact:** With 32, 424 transgender certificates and identity cards already issued under the 2019 Act, the amendment creates **uncertainty**. If the definition changes, it is unclear if these individuals will have to **"re-prove" their identity** under the new, stricter medical criteria.
- **Concerns over "Forced Identity" Clauses:** There are concerns that these clauses could be misused to target trans-led communities or families who support a minor's gender transition, labelling it as **"allurement" or "inducement"** under the new, stricter definitions.

Steps India Should Take to Empower Transgender Persons in the Future

- **Restoring Self-Identification:** Align national laws with the **NALSA (2014) judgment** to ensure that gender identity remains a matter of **personal autonomy** rather than medical certification.
  - Train District Magistrates, police personnel, and medical boards to interact with the community **without prejudice** or "**gatekeeping**" behavior.
- **Holistic Healthcare Access:** Standardize **Gender Reassignment Surgery (GRS)** and hormone therapy in government hospitals to make it **affordable** and **safe**.
  - Explicitly include **transition-related healthcare** in public schemes like **Ayushman Bharat** and establish **dedicated helplines** and community-led counseling centers to address **mental health challenges**.
- **Livelihood Opportunities:** Efforts must scale up successful models like **Karnataka's 1% job reservation** in government services and Tata Steel's corporate **diversity hiring**. A **World Bank report (2021)** estimates that integrating transgender persons into the workforce could boost **India's GDP by 1.7%**.
- **Social Awareness & Cultural Change:** Sustained public awareness campaigns like "**I Am Also Human**" and respectful media representation are essential to challenge stigma. This must be supported by amplifying cultural advocacy such as the **Koovagam Festival (Tamil Nadu)** and inclusive platforms like sports, exemplified by the **Ya_All Sports Club (Manipur)** all-transgender football team.

Discuss the key changes introduced by the Transgender Persons (Amendment) Bill, 2026. How do these changes impact the legal and social recognition of transgender persons in India?

Drishti Mains Question

Menstrual Leave in India

SC cautioned that **mandatory menstrual leave** may **negatively impact women's employment prospects**.

- Petition sought **uniform national policy**, citing **Article 21 (right to dignity)**, **Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)**, and absence in **Maternity Benefit Act, 1961**.

SC's Observations

- **Menstrual leave**: Time off during menstruation (**paid/unpaid/rest breaks**).
  - **>50%** experience pain; **15–25%** face **moderate–severe pain. This can affect daily productivity.**
- **SC observations**: Mandatory leave may cause **workplace discrimination**
  - May **discourage hiring of women**
  - Risk of **denial of promotions/leadership roles**
  - Favours **voluntary policies** over **compulsory mandate**.
  - Issue should be decided by **executive & legislature** after **stakeholder consultation**.

Judicial Pronouncements Regarding Menstruation

- **Shailendra Mani Tripathi v. Union of India (2023)**: SC **refused mandatory menstrual leave policy**
  - Advised approach to **Ministry of Women & Child Development**
  - Highlighted **FLFP rise** (**23.3% (2017-18) → 41.7% (2023-24)**)
  - Suggested **flexible leave + free sanitary products**
- **Dr Jaya Thakur v. Union of India (2026)**: SC recognised **Menstrual Health & Hygiene (MHH)** as **fundamental right under Article 21**.

Arguments in Favour of Menstrual Leave

- **Substantive equality**: Recognises **biological realities (dysmenorrhea– menstrual pain)** affecting productivity.
- **Constitutional basis**:
  - **Article 15(3)** (special provisions for women & children)
  - **Article 21** (dignity)
  - **Article 42 (DPSP)** (humane working conditions & protection of health)
- **Breaks stigma**: Helps **normalise menstruation**.
- **Health & productivity**: Rest reduces **stress, health issues**, improve output.

- **Gender-sensitive workplaces**: Promote **inclusive labour policies**.
- **Reduces presenteeism**: Avoids **working while unwell** → better efficiency.

Current Status of Menstrual Leave in India and Globally

- **India**: No **central law**.
  - **States**:
    - **Bihar**: **2 days/month** (govt employees, since 1992)
    - **Kerala**: leave + **attendance relaxation** (students)
  - **Private sector**: **Zomato, Swiggy, Byju's** → voluntary policies
  - **Proposed** Private Members' Bills: **Menstruation Benefits Bill (2017), Right of Women to Menstrual Leave and Free Access to Menstrual Health Products Bill, 2022—** not enacted
- **Global**: **Europe**: **Spain, Sweden** → state-funded paid leave
  - **Asia**: **Japan, South Korea, Vietnam, Philippines, Taiwan, Indonesia** → laws exist
  - **Utilisation low (<1%)** due to **stigma & career concerns** (esp. in Japan & South Korea)

Measures to Strengthen Menstrual Health Support Without Undermining Workplace Equality

- **Adopt a "Health Leave" Framework**: **Gender-neutral leave (2 days/month)** for conditions like **dysmenorrhea, migraines, endometriosis**.
- **Workplace Accommodation**: Flexible hours, remote work, rest rooms, lighter work.
- **Menstrual Health in Occupational Safety Standards**: Include in **OSH Code, 2020** and labour welfare guidelines.
- **Evidence-based Policy Making**: Conduct **national studies** on health, productivity, discrimination.
- **Targeted Support in Education sector**: Attendance relaxation + optional leave (Kerala model).
- **Corporate ESG Incentives**: Promote **menstrual policies** under **ESG standards**.

Prison Health Crisis in India

Herpes Simplex Virus (HSV) outbreak in **Jalpaiguri Central Correctional Home** highlights **prison health crisis**: overcrowding, poor healthcare, staff shortages.

Major Concerns Plaguing Indian Prisons

- **Overcrowding**: **120.8% (Prison Statistics India 2023– NCRB 2023)**; some jails 200–300%, Kandi Sub-Jail >400%.
  - Driven by high **undertrial population**.
  - Issues: **human rights violations**, poor living conditions.
  - Gaps: Poor **legal aid (Article 39A)**; inability to **afford bail/legal support**.
- **Prison Health Crisis: TB**: **5× higher risk** (Lancet, 2023).
  - **Skin diseases**: **~30% inmates (Kerala)**.
  - Higher **HIV prevalence** (India Justice Report 2025).
  - Spread of **fungal infections, scabies** due to poor hygiene.
  - **Women inmates (~4%)** lack **gender-sensitive healthcare & facilities**.
- **Severe Mental health crisis**: High **depression, anxiety, PTSD**; widespread **substance abuse**.
  - **Suicides**: **~80% of unnatural deaths (2021)**; higher than general population.
- **HR shortage**: **43% vacancy** in medical officers
  - **Inmate–doctor ratio 2.6× higher** than standards prescribed by the **Model Prison Manual, 2016**
  - Only **25 psychologists for ~5.7 lakh inmates**
- **Reactive, Not Preventive Care**: Focus on **treatment after severity**, lack of **preventive screening**.

HSV

- **About: Viral infection** causing **painful blisters/ulcers**; spreads via **skin-to-skin contact**.
- **Types**:
  - **HSV-1**: oral herpes (**cold sores**)
  - **HSV-2**: **genital herpes**
- **Symptoms**: Often **mild/none**; may include **blisters, fever, body aches, swollen lymph nodes**.
- **Complications**: Rarely **meningitis, encephalitis**.
- **Nature**: Lifelong infection; antivirals reduce symptoms/outbreaks.

Measures to Strengthen Prison Healthcare System

- **Adopt Model Prisons Act, 2023**: provisions for **gender care, counselling, mental illness transfer**.
  - Follow **Nelson Mandela Rules (2015)**: ensure **healthcare standards like general population**.
- **Prison Decongestion**: Strengthen **URCs** for **bail/release of undertrials**.
- **Integration with NHM**: Link with **NHM & Ayushman Bharat**; include **TB elimination programme**.
  - **Medical checks at entry** for **TB, HIV, HSV**.
- **Telemedicine Facilities**: Use **eSanjeevani + e-Prison system** for specialist care.
- **Dedicated Psychiatric services**: **Psychiatric Wards + psychologists** for mental health & substance abuse.
- **Specialised care**:
  - **Women**: prenatal & postnatal
  - **Elderly**: geriatric care
  - **Transgender inmates**: safe facilities

- **Improved Nutrition**: Improve diets to address **malnutrition & anemia**.
- **Alternative sentencing**: Under **BNS, 2023 → community service, open prisons** for minor offences.

Discuss the major health and human rights challenges faced by inmates in Indian prisons. How can prison reforms address these issues?

Drishti Mains Question

Denial of Public Spaces to Scheduled Castes

NCRB Crime in India 2023 data shows a **rise in cases of denial of access to public spaces for SCs** under the **SC/ST (Prevention of Atrocities) Act, 1989**.

NCRB Data on Denial of Access to Public Spaces

- **180 cases reported nationwide**, of which **173 were from UP**, making it a **major outlier**.
- **Rising trend since 2017**, mainly due to **increased reporting and registration in UP**.
  - **UP's share: ~68% (2018); ~80% (2019); >98% (2022)** of all such cases nationwide.
- **ST cases** of denial of access to public spaces remain **relatively low across India**.

Underlying Reasons for the Denial of Public Spaces

- **Caste-Based Spatial Segregation:** Dominant castes control **temples, water bodies, cremation grounds, and village pathways**.
  - Orthodox notions of **ritual purity** view SC entry as **"polluting"**, reflecting **continuing untouchability despite Article 17** and violating **Article 15 (equal access to public spaces)**.
- **Dominance of Local Power Structures: Village governance & caste councils** reinforce hierarchy.
  - Many **SCs remain landless agricultural labourers**, enabling dominant groups to enforce exclusion through **intimidation or social boycott**.
- **Weak Enforcement of Anti-Atrocity Laws:** Despite provisions under the **SC/ST (Prevention of Atrocities) Act, 1989**, issues such as **delays in FIR registration, poor investigation, and low conviction rates** weaken deterrence.
- **Limited Awareness of Legal Rights:** Many marginalized communities lack awareness of **constitutional safeguards and protections under the SC/ST Act**, reducing reporting and access to legal remedies.

Legal and Institutional Protections to Democratize Public Spaces (Along with Articles 15 & 17)

- **Article 21:** Ensures **right to life with dignity**, including freedom from **discrimination and social exclusion**.
- **73rd Constitutional Amendment Act, 1992:** Provides **reservation for SCs, STs, and women in PRIs**, promoting **inclusive control over village resources and public spaces**.
- **SC/ST Act, 1989: Criminalizes denial of access** to **public places, temples, water sources, and community resources** for SC/ST individuals.
- **Protection of Civil Rights Act, 1955:** Provides **legal safeguards against untouchability practices**, including **denial of access to public facilities**.
- **National Commission for Scheduled Castes (NCSC): Monitors safeguards for SCs** and **investigates discrimination complaints**.
- **Judicial Pronouncements:**
  - **State of Karnataka v. Appa Balu Ingale (1995):** SC held Article 17 aims to eliminate discriminatory caste practices lacking legal or moral basis.
  - **Arumugam Servai v. State of Tamil Nadu (2011):** SC directed authorities to eradicate spatial segregation practices, including the **"two-tumbler system" in tea stalls**.

Steps that Can be Taken to Democratize Public Spaces in India

- **Ensure Spatial Justice:** Place **public facilities (Panchayat Bhavans, Anganwadis, PDS shops, wells)** in neutral or SC-dominated areas to reduce caste-based spatial segregation.
- **Link Funds to Social Audits:** Make **Gram Sabha social audits mandatory** and link development grants to certification of no untouchability or spatial exclusion.
- **Official Accountability:** Enforce **Section 4 of the SC/ST (Prevention of Atrocities) Act, 1989**, penalizing public officials for negligence in FIR registration or victim protection.
- **Exclusive Special Courts:** Establish **district-level exclusive courts** for **speedy trials in atrocity cases**.
- **Behavioural Change Campaigns:** Promote constitutional values and anti-caste ideas of **B. R. Ambedkar, Jyotirao Phule, and Periyar E. V. Ramasamy**.

No-Fault Compensation Policy for Covid-19 Vaccine Adverse Effects

SC directed the Union Government to frame a "no-fault" liability compensation policy for individuals who suffered serious adverse effects or deaths after Covid-19 vaccination.

SC's Observation

- **No-Fault Liability Principle:** Victims/families entitled to **financial relief without proving negligence** by the **State or manufacturers**.

- Similar principle exists in **motor vehicle accident compensation** and **vaccine injury schemes in Australia, UK, and Japan**.

- **Rejection of Individual Litigation:** SC rejected the Centre's view that victims should approach **civil/consumer courts**.
  - Multiple individual cases would cause **inconsistent outcomes and unequal access to relief**, violating **Article 14 (Right to Equality)**.
- **State's Positive Obligation:** Under **Article 21 (Right to Life and Health)**, the State must act as an **active guardian of welfare**.
  - As vaccination was a **State-led programme**, the State must support victims of **rare severe outcomes (e.g., ~0.001 per one lakh doses)**.
  - Petitioners argued the drive, though **officially voluntary**, became **effectively mandatory due to administrative restrictions**.
- **Compensation Beyond Surveillance: AEFI committees** are adequate for monitoring, but the State's duty must **extend beyond surveillance to fair compensation**.
- **No Admission of Liability:** The **compensation policy does not imply liability** of the **Union Government**.
- **Previous Judicial Stand:**
  - **Gaurav Kumar Bansal v. Union of India (2021):** SC directed **NDMA** to frame **ex gratia guidelines for Covid-19 deaths**.
    - **NDMA fixed ₹50, 000 per deceased**, payable by states from **State Disaster Response Fund (SDRF)**.
    - **Deaths within 30 days of a positive test** treated as **Covid-19 deaths**.
    - **District-level grievance redressal committees** set up for **death certificate disputes**.
  - **Jacob Puliyel v. Union of India (2022):** SC upheld vaccine approval process and AEFI monitoring mechanisms.
    - Also held **bodily integrity under Article 21**, meaning **no person can be forcefully vaccinated**.

Side Effects of Covid-19 Vaccine

- **Common Side Effects: Mild–moderate effects** resolving within **1–3 days**; e.g., **fatigue, headache, fever**.
- **Rare Serious Adverse Effects:**
  - **Myocarditis & Pericarditis: Inflammation of heart muscle/lining**, associated with **mRNA vaccines** (Pfizer-BioNTech, Moderna); mostly in **adolescent and young adult males after 2nd dose**.
  - **Thrombosis with Thrombocytopenia Syndrome (TTS): Rare clotting disorder with low platelets**, linked to **viral vector vaccines** (AstraZeneca, Janssen).

International Women's Day 2026

India observed International Women's Day (8th March 2026) with the UN theme ***"Rights. Justice. Action. For ALL Women and Girls"*; Campaign theme–** ***"Give to Gain, "***

- The occasion highlighted **Nari Shakti** as central to the shift from **"development for women" to "women-led development"** toward **Viksit Bharat 2047**.

International Women's Day

- **Observed: 8th March** annually to honor **cultural, political, and socio-economic achievements of women**.
- **Historical Origins:** Emerged from **labour and suffrage movements** in **North America & Europe** (early 20th century).
  - **First National Women's Day: 1909**, observed in the **US by the Socialist Party of America**.
  - **8th March 1917: Women's strike in Petrograd, Russia** for **"bread and peace"**, contributing to the **Russian Revolution** and women's **right to vote**.
  - **First observed by UN: 1975** (International Women's Year).
  - **UN General Assembly recognition: 1977**, affirming **gender equality as a fundamental human right**.

India's Role in Advancing Nari Shakti Across Sectors

- **Grassroots Economic Empowerment:**
  - **DAY–NRLM:** 10.05 crore+ rural women organized into 90 lakh+ SHGs.
  - **Lakhpati Didi Initiative:** Target to create 6 crore women earning ₹1 lakh+ annual household income.
  - **Namo Drone Didi Yojana: 80% subsidy** for **SHGs** to procure agricultural drones, training women for precision farming.
  - **Dairy Sector:** Growth of **all-women dairy cooperatives** ensuring direct payments to women.
  - **PM MUDRA Yojana:** ~70% collateral-free loans to women-led micro-enterprises.
  - **Stand-Up India & Startup India:** 45%+ recognized startups have at least one female director/partner.
- **Expanding Frontiers in Defence**:
  - **Women officers:** Increased from **~3, 000 (2014)** to **11, 000+ (2026)**.
  - **Women inducted into NDA** for leadership training.
  - **SC Judgment – *Secretary, Ministry of Defence vs. Babita Puniya (2020)*:** Granted Permanent Commission to women officers.
  - Women now **command naval warships, fly fighter aircraft**, and hold **senior posts** (e.g., DG Medical Services – Army).

- **Education & Leadership in STEM:**
  - **Female GER in higher education:** 30.2 (2022–23) supported by Sukanya Samriddhi Yojana and Kasturba Gandhi Balika Vidyalayas.
  - **UGC NET-JRF (STEM) FY 2024–25:** 53%+ women scholars. Women form 43% of STEM graduates in India.
  - **Union Budget 2026–27:** Provision for **women's hostels in every district** to support **advanced technical education**.
- **Enhancing Dignity through Foundational Infrastructure:**
  - **PM Ujjwala Yojana:** 10.56 crore+ LPG connections reducing indoor air pollution.
  - **Jal Jeevan Mission:** Reduced burden of fetching water, freeing time for education and work.
  - **Swachh Bharat Mission: 12+ crore household toilets**, improving sanitation, maternal health, safety, and dignity of women.
- **Political Agency & Legal Safeguards:**
  - **Nari Shakti Vandan Adhiniyam (Constitution 106th Amendment Act, 2023):** 33% reservation for women in Lok Sabha and State Assemblies.
  - **73rd & 74th Amendments (1992): 33% reservation in PRIs and Urban Local Bodies**, leading to ~50% representation in many states.
  - **India granted women equal voting rights** from the start of the Republic.
  - **Mission Shakti:** One Stop Centres and Women Helpline for medical, legal, and counselling support.
  - **Sexual Harassment of Women at Workplace Act, 2013:** Internal Committees and SHe-Box portal for complaints.
  - **Shayara Bano v. Union of India (2017):** Instant Triple Talaq declared unconstitutional.
  - **Muslim Women (Protection of Rights on Marriage) Act, 2019:** Criminalised instant Triple Talaq
- **Health:**
  - **Sample Registration System (SRS) Report:** MMR declined from 130 (2014–16) to 88 per lakh live births (2020–22).
  - **UN:** MMR ~80 per lakh, 86% decline since 1990 (global decline **48%**).
  - **PM Surakshit Matritva Abhiyan** & **POSHAN Abhiyaan** strengthen maternal care and nutrition.
- **Sports:**
  - **BCCI:** Introduced **equal match fees for men & women cricketers**; **WPL** enhanced financial security and visibility.
  - **SMITA initiative: ~3 lakh women** in **2, 600 leagues across 33 disciplines**, supported by Sports Authority of India & Khelo India.

Challenges in Advancing the Nari Shakti

- **Feminisation of Agriculture without Land Rights:** Women are **70%+ of the agricultural workforce** but own only **13–14% of land**.
  - Lack of **land titles** excludes them from **institutional credit, MSP procurement, and PM-KISAN**.
- **"Time Poverty" Crisis: NSO Time Use Survey:** Women spend ~**7.2 hrs/day** on **unpaid domestic/care work** vs **2.8 hrs for men**. Limits **skilling & formal employment**, pushing women into low-paying informal/gig work.
- **Political & Governance Hurdles**: Despite **73rd & 74th Amendments**, **"Sarpanch/Pradhan Pati" syndrome** often gives male relatives real power in PRIs.
  - **Nari Shakti Vandan Adhiniyam** depends on **next Census and Delimitation**, delaying representation until **at least 2029**.
  - **ADR data–** Parties rarely give **winnable tickets to women**, limiting them mostly to **reserved seats or women's wings**.
- **Health and Social Vulnerabilities**: **NFHS-5: 57% of women (15–49 years)** are **anemic**, leading to **malnutrition cycle, high MMR, low birth-weight infants**, and reduced productivity. Preference for sons leading to **"unwanted girls" (~21 million)**.
- **Technological & Emerging Challenges: GSMA Mobile Gender Gap Report 2024:** Women less likely to **own smartphones or use mobile internet**, limiting **EdTech, FinTech, and job access**.
  - Women are ~**43% of STEM enrolments** but only 27% of STEM workforce and ~14% of scientific research workforce.
- **Cyber-Violence and Deepfakes:** Rise of **AI-driven Non-Consensual Intimate Imagery (NCII) and deepfakes** disproportionately targeting women, discouraging **digital participation**.
- **Institutional Failures: NCRB– Conviction rate ~25–26%** for crimes against women; judicial pendency >90%.
  - **Cruelty by husband/relatives** forms **30%+ of cases**.
  - Lack of **safe transport, working women's hostels, and crèches** restricts mobility and employment.
  - **Maternity Benefit (Amendment) Act, 2017** compliance costs may discourage hiring women.

Suggestions

- **Economic Empowerment:** Adopt **Kerala's Kudumbashree land-leasing model** to grant women farmer status and access to **credit and PM-KISAN**.
  - Bridge the **"missing middle" finance gap** with credit guarantee support for women-led MSMEs.
  - Support the **care economy** through **parental leave policies** and **CSR investment in childcare and eldercare**.

- **Women in Emerging Green Economy:** Train women for jobs in renewable energy, climate adaptation, and sustainable agriculture.
- **Governance & Political Participation:** Encourage parties to **field more women** through **ECI-linked incentives for female representation**.
  - Create **leadership academies for elected women in Panchayats** to strengthen administrative & financial capacity.
- **Technology & Digital Inclusion: Support women in deep-tech entrepreneurship** through Atal Innovation Mission incubation and innovation platforms.
- **Health System Reforms:** Expand **Ayushman Arogya Mandir services** to include screening for women's non-communicable diseases. Ensure gender-balanced clinical research through **ICMR guidelines**.
- **Safe Urban Spaces & Justice**: Integrate **Crime Prevention Through Environmental Design (CPTED)** in city planning.
  - Establish **specialized police investigative units for crimes against women** to improve evidence collection and conviction rates.
- **Strengthen Data for Gender Policy:** Expand **gender-disaggregated data** on employment, digital access, land ownership, and health for evidence-based policymaking.

Adolescent Mental Health Crisis

Recent adolescent suicides have exposed India's deepening child and teenage mental health crisis, driven by early psychological vulnerability and exacerbated by an unregulated digital ecosystem.

Key Factors Fueling the Crisis

- **Academic & Competitive Pressure:** High-stakes exams (boards); rank-oriented system.
  - Parental/social expectations linking marks to social mobility. Fear of failure → chronic anxiety & depression.
- **Digital Overexposure: 800+ million smartphone users**.
  - Excessive screen time → addiction, sleep disruption.
  - Cyberbullying, body shaming, social comparison. Online–offline boundary blur → social withdrawal.
- **Family Dynamics:** Parental discord, neglect, over-control.
  - Achievement prioritised over emotional well-being. Leads to inadequacy, stress, low resilience.
- **Socio-Economic & Gender Factors:** Urbanisation, poverty, migration, violence.
  - Academic insecurity in low-income families.
  - Girls report higher anxiety/depression due to social norms & discrimination.
- **Systemic Gaps:** Strong stigma → delayed help-seeking.
  - Severe shortage of professionals (below **WHO norm: 3 per 100, 000**).
  - Weak school counselling & early intervention systems.
- **Post-Covid Impact:** Isolation, bereavement, disrupted routines. Learning loss & uncertainty. Pandemic amplified existing vulnerabilities.

Scenario of Mental Health in India

- **Widespread Prevalence: 1 in 10 adults** currently suffers from a mental disorder.
  - **15%+ adults** require active intervention. **Lifetime prevalence: ~14%** of Indians likely to face a mental health issue.
- **Adolescent & Child Vulnerability:** As per **National Mental Health Survey (2015–16)**:
  - **7–10% adolescents** have diagnosable mental disorders.
  - **5–7% school children** suffer from **ADHD**.
- **Suicide Burden:** Suicide is a **leading cause of death (15–29 years)**. India's suicide rate: **12.6 per 100,000**. Global average: **9.2 per 100,000**.
- **Urban–Rural Divide:** Prevalence: Urban (13.5%) & Rural (6.9%)
  - Urban stressors: competition, isolation, work pressure.
- **Human & Economic Cost:** 2443 DALYs per 100,000 population.
  - Projected economic loss (2012–2030): **USD 1.03 trillion**.
  - Due to lost productivity & healthcare costs.
- **Critical Treatment Gap: 70–92%** of patients receive no treatment. Psychiatrists: **0.75 per 100,000 population** (**WHO norm: 3 per 100,000**).

Measures to Improve Adolescent Mental Health

- **School-Based Reforms:** Integrate **SEL & life skills** under **NEP 2020** and **RKSK**.
  - Mandatory school counsellors (replicate Kota model).
  - Teacher training for early distress identification.
  - Strengthen **Tele MANAS** (24/7, adolescent modules). Expand **AFHCs** under RKSK.
- **Peer & Community Support:** Train peer supporters (e.g., **UNICEF–NIMHANS framework**).
  - Community helplines for vulnerable groups. Improve referral to professional care.
- **System Strengthening:** Increase mental health budget.
  - Expand **25 Centres of Excellence**. Strengthen **DMHP** at district level.
- **Budget 2026–27**: Second NIMHANS campus (North India); Ranchi & Tezpur institutes to be upgraded.
- **Regulation & Evidence:** Curb excessive social media use.
  - Implement **NCPCR (2024) anti-bullying guidelines**. Improve surveillance & state-level data.
- **Family Engagement:** Parenting awareness programmes. Use **ASHAs via RKSK** to reduce stigma.

Analyze the key factors fueling India's adolescent mental health crisis and propose a way forward, considering its profound socio-economic consequences.

Drishti Mains Question

From Population Explosion to Population Stabilisation

India has experienced a major **fertility transition** over the last **25 years**, with **NFHS** data showing most states reaching or falling below the **replacement fertility level of 2.1**. This trend has weakened the **"Population Bomb" thesis** proposed by **Paul R. Ehrlich** and **Anne H. Ehrlich**– rapid fertility would outpace economic growth and strain public services in **India**.

Key Facts Regarding the Transition in Fertility Rate in India

- **Historical trend: TFR ~6 children per woman** in the **early 1960s**; decline began from the **1970s** due to **family planning initiatives and socio-economic changes**.
  - **By 2000:** TFR ~3.5 children per woman.
- **NFHS-5 (2019–21): National TFR = 2.0**, first time **below replacement level (2.1)**.
- **Current estimates (2023–25): TFR ~1.9 births per woman**, indicating **sustained sub-replacement fertility**.
- **Regional variation: Southern states & urban areas: 1.4–1.8**; **Bihar & UP** near **replacement level**.
- **Future projection: Population peak ~1.7–1.9 billion during 2060s–2080s**, followed by **stabilisation or gradual decline**.

Key Factors Driving Low Fertility Rate in India

- **Female education:** Women with **12+ years schooling TFR = 1.8** vs **2.8 for no schooling**; linked to **delayed marriage, career focus, and greater reproductive autonomy**.
- **Urban–rural divide: Urban TFR ~1.6** vs **Rural TFR ~2.1** due to **high living costs, career priorities, smaller housing, and lifestyle changes**.
- **Economic pressures: UNFPA State of World Population 2025** highlights barriers—**job insecurity (~21%)**, **housing issues (~22%)**, **lack of affordable childcare (~18%)**—leading to **delayed or fewer births**.
- **Contraceptive access: Contraceptive prevalence ~67%** due to **family planning programs**, enabling **birth spacing and fewer unintended pregnancies**.
- **Weakening son preference:** Decline due to **higher education, changing gender norms**, and **girls seen as economic assets**, reducing pressure for **repeated childbirths**.
- **Social norm shift:** Preference for **"quality over quantity"** in children; **infant mortality declined from 89 (1990) to 25 (2023) per 1000 live birth**s, with better healthcare and savings reducing dependence on children for old-age support.

Implications of Low Fertility Rate in India

Positive	■ **Demographic dividend:** Larger **working-age population (15–59)** relative to dependents, boosting **workforce participation, savings**, investment, and human capital. ■ **Reduced pressure on resources:** Lower population growth reduces strain on land, water, food, infrastructure, and environment. ■ **Improved social equity & services:** Slower growth improves access to **education, healthcare, and public services**, enabling **quality-over-quantity investment in children**.	■ **"Silver economy" opportunity:** Aging population increases demand for **healthcare, assisted living, senior travel, and retirement-focused financial products**. ■ **Health & reproductive outcomes:** Lower fertility linked to better family planning access, reduced risks from frequent childbirth, and improved women's well-being.
Concerns/Risks	■ **Aging population:** Elderly share projected ~**20% by 2050**, increasing **old-age dependency ratio** and pressure on **healthcare, pensions, and social security**. ■ **Shrinking workforce: Fewer young entrants** may cause **labor shortages**, slowing GDP growth and innovation. ■ **Loss of demographic dividend:** Without **skills, jobs, and aging policies**, the advantage may fade (**Japan & China experience**).	■ **Getting old before getting rich:** Rapid aging before high income levels may cause inadequate elderly care, inequality, and fiscal pressure. ■ **Sandwich generation burden: Working-age group (15–59)** faces dual responsibility of **raising children and caring** for aging parents, causing financial and emotional stress.

Measures Required to Achieve Sustainable Population Growth

- **Human capital investment:** Address **learning crisis (NEP 2020)**, **skill youth for future jobs (AI, green energy)**, and strengthen **preventive healthcare (Mission Indradhanush)**.
- **Pro-family economic environment:** Reduce cost of raising children through **Anganwadi 2.0 childcare**, **paid parental leave**, and **tax breaks for middle class**.
- **Prepare for silver economy:** Ensure **universal pension for unorganized sector**, expand **geriatric healthcare**, and promote **age-accessible urban design**.
- **Manage internal migration:** Facilitate mobility from **high-fertility states (Bihar ~2.98)** to **low-fertility states (Kerala ~1.7)** to address **labor shortages and migrant integration**.

REPORTS & INDICES

World Happiness Report 2026

World Happiness Report 2026 was released by the **Oxford Wellbeing Research Centre**, with **Gallup** and the **UN Sustainable Development Solutions Network**, on **20th March (UN International Day of Happiness)**.

Key Findings

- **Top Rankings: Finland (1st, 9th year)**, Iceland (2nd), Denmark (3rd); Costa Rica (4th); Israel (8th)
  - **Lowest Rankings:** Afghanistan (147th), Sierra Leone (146th), Malawi (145th)
  - **Among BRICS:** China (65th), Russia (79th), Iran (97th)
- **No Anglosphere in Top 10:** New Zealand (11th), Ireland (13th), Australia (15th), US (23rd), Canada (25th), UK (29th)
- **India's Performance: 116th (↑ from 118th in 2025)**
  - Below **Nepal (99th), Pakistan (104th)**
  - Above **Bangladesh (127th), Sri Lanka (134th)**
- **Criteria: Cantril Ladder (life evaluations) + 6 variables** – GDP per capita, social support, life expectancy, freedom, generosity, corruption perception
- **"Goldilocks" Rules of Social Media: <1 hr/day beneficial**; global avg **2.5 hrs/day (harmful zone)**
- **Platform Impact:**
  - **Passive/Visual Platforms (Instagram, TikTok):** Social comparison → lower well-being
  - **Communication (WhatsApp, Facebook):** Higher life satisfaction in regions like Latin America & Middle East

International Day of Happiness

- **Established: UN** (2012); observed on **20th March**
- **Purpose:** Recognize **well-being** as a fundamental human goal
- **Date Significance: Vernal equinox** → equality & balance
- **Initiative:** Led by **Bhutan** (a nation famously prioritizing Gross National Happiness (GNH) over traditional GDP)

India's 1st Manuscript Mapping Drive

Ministry of Culture launched a **3-month nationwide survey** (first-of-its-kind) to map **India's manuscript heritage**.

- Aims to **digitise ~1 crore manuscripts** (world's largest collection) and curb **intellectual piracy**.

Manuscript Mapping Survey

- **About:** Conducted **district → national level** to create a **national database**.
  - Data compiled into **digital repository under Gyan Bharatam Mission**.
- **Objective: Preserve, digitise, promote** manuscript heritage.
  - Improve **accessibility for research** and safeguard **cultural knowledge**.
- **Technology Use: Geotagging** of manuscripts from **institutions, collections, individuals**.
  - Use of **Gyan Bharatam app** for **data upload + standardised digitisation**.
- **Policy Linkage:** Aligns with **New Delhi Declaration (Gyan Bharatam Conference)** to showcase **India's culture, literature, consciousness**.
- **Implementation**: **State-level committees** chaired by **Chief Secretary**
  - **District-level committees** chaired by **District Magistrate**

White Phosphorus

A **Human Rights Watch report** accused **Israel** of using **white phosphorus munitions in residential areas of Lebanon** amid the **escalating Israel–Lebanon conflict**, with Lebanese authorities reporting civilian casualties.

- **White Phosphorus: Toxic wax-like chemical** that burns at **>800°C**; typically white/yellow/colourless with garlic-like odour. Burns until fully consumed or deprived of oxygen.
- **Incendiary munition:** Used to create **smokescreens & illumination**; ignites rapidly and produces **dense smoke over large areas**.
  - **Incendiary weapon:** Weapons designed to **set fire or cause burn injuries** through **flame, heat, or chemical reactions on impact**.
- **Severe health hazards:** In **populated areas**, white phosphorus can **ignite buildings**.
  - Causes **deep burns reaching the bone** and releases **toxic chemicals damaging the liver, kidneys, and heart**.

- Can trigger **metabolic disorders (e.g., abnormal potassium levels)** that may lead to **heart failure**.

- **Legality under International Law: Not fully banned:** White phosphorus is **not banned when used as a smokescreen**.
  - **Illegal use:** Its use as an incendiary weapon in civilian-populated areas is prohibited under the **Convention on Certain Conventional Weapons (CCW), 1980**.
  - **CCW:** Restricts or bans **weapons causing excessive injury or indiscriminate harm**; **India is party to all five protocols**.
    - **Protocol III:** Restricts **incendiary weapons against civilians**, but **white phosphorus is often classified as multipurpose (smoke/illumination)**, allowing legal ambiguity.
    - **Israel: Not a signatory to Protocol III**, complicating **accountability**.

NHAI Releases 1st National Highways Green Cover Index 2025–26

NHAI released the **National Highways Green Cover Index (NH-GCI) Annual Report 2025–26**, prepared with **ISRO's National Remote Sensing Centre (NRSC)**.

Green Cover Index

- **About:** Measures **percentage of land with green canopy within each 1 km highway segment** using satellite-based chlorophyll assessment on both sides of highways.
- **Technology & Data:** Uses **space-based monitoring** with **5-m resolution multispectral data from Resourcesat-2/2A (LISS-IV)**; accuracy verified using **Cartosat-2S imagery**.
  - Results published on **NRSC's Bhuvan web GIS portal** with **interactive maps and standardized reports**.
- **Coverage:** Monitors **~30, 000 km of National Highways across 24 states**, mainly under the **Operation & Maintenance (O&M) phase**.
- **Policy linkage:** Implements the **Green Highways Policy, 2015**, requiring **tree plantation & survival monitoring** by **NHAI**.
- **Future enhancements:** Machine learning for auto-classification, vegetation loss change-detection alerts, and integration with carbon sequestration models.

World Obesity Atlas 2026

World Obesity Atlas 2026, **released by the World Obesity Federation on World Obesity Day (4th March)**, highlights rising obesity levels in India as a growing public health emergency.

- **Obesity (WHO):** Abnormal/excessive fat accumulation posing health risks; **BMI ≥25 = overweight**, **BMI ≥30 = obese**.

Key Findings

- **Obesity Prevalence**:
  - **Global:** China, India, US each have 10+ million obese children.
    - **Women (15–49):** 13.4% high BMI, 4.2% Type 2 diabetes.
    - 200+ million children (5–19) with overweight/obesity in 10 countries.
  - **India:** 15 million children (5–9) and 26+ million (10–19) overweight/obese (2025); **2nd-highest globally** with ~41 million children with high BMI.
    - Disease indicators linked to high BMI among 5–19 yrs **projected to rise significantly (2025–2040).**
- **Health consequences (2025–40): Hypertension:** 2.99m → 4.21m; **Hyperglycaemia:** 1.39m → 1.91m; **High triglycerides:** 4.39m → 6.07m; **Metabolic dysfunction-associated steatotic liver disease (MASLD):** 8.39m → 11.88m
- **Preventable risk factors:** 74% adolescents (11–17) lack adequate physical activity; only 35.5% receive school meals; 32.6% infants (1–5 months) have suboptimal breastfeeding; children (6–10) consume ~50 ml sugary drinks daily.
- **Global trends & warnings: 2025 target to halve childhood obesity rise likely missed (extended to 2030)**; 20.7% children (5–19) overweight/obese (14.6% in 2010); 507 million affected by 2040, 57+ million with early cardiovascular disease signs.

Policy Recommendations

Tax on sugar-sweetened beverages, **restrictions on marketing to children (including digital platforms)**, promote physical activity, protect breastfeeding, healthier school food standards, and integrate obesity prevention and care into primary health systems.

Innovators Business Environment Index (IBEI) 2026

StartupBlink released **IBEI 2026**, measuring business conditions (regulation, capital, infrastructure) using a **0–100 score**.

- **About IBEI:** Assesses national business environments on accessibility, predictability, and low-friction systems; focuses on enabling conditions (not startup outcomes).
- **Methodology:** 30+ indicators across pillars:
  - **Regulation & Government:** Ease of starting/operating business; regulatory friction.
  - **Access to Capital:** Funding availability; credit conditions.
  - **Taxation:** Business incentives & tax regime.
  - **Digital Infrastructure:** Internet speed, freedom, connectivity.

- **Global Mobility & Openness:** International access, market perception, governance stability.

- **IBEI Rankings 2026: 1st–** US (**100**); **2nd–** Singapore; **3rd–** UK
- **India's Performance**: **Rank 54**; Score **55.035;** ahead of **China (85th)**
  - **Strengths**: strong regional hubs, reliable capital access, large market, competitive cost structure.

AWARDS & HONOURS

Sahitya Akademi Awards 2025

Sahitya Akademi Awards 2025 announced across **24 languages**, honorinpg 8 poetry collections, 4 novels, 6 short story books, 2 essays, 1 literary criticism, 1 autobiography, 2 memoirs.

- **Notable winners:** Former diplomat **Navtej Sarna** (*Crimson Spring*– Novel), **Mamta Kalia** (*Jeete Jee Allahabad*– Memoir), **Sa Tamilselvan** (*Thamiz Sirukathaiyin Thadangal*– literary criticism).
- Follows **July 2025 MoU** b/w **Ministry of Culture** and **NSD, Sangeet Natak Akademi, Lalit Kala Akademi, Sahitya Akademi** for **award restructuring**.

Sahitya Akademi Awards

- **About:** Established **1954**; **2nd highest literary honour** in India (after Jnanpith).
  - Given by **Sahitya Akademi** (autonomous under **Ministry of Culture**).
- **Languages**: **24** (22 languages in Eighth Schedule + **English, Rajasthani**).
- **Eligibility**: **Original work** published within **last 5 years**
  - Author must be an **Indian citizen**.
- **Nature: One award per language annually** for **best original work** (poetry, novel, drama, essays) from last **5 years**.
- **Prize**: **Copper plaque, shawl, citation, ₹1 lakh** (earlier ₹5, 000 in 1955).
- **Other honours**: Yuva Puraskar, Bal Sahitya Puraskar, Sahitya Akademi Fellowship, Bhasha Samman, etc.

60th Jnanpith Award

Eminent Tamil lyricist and author **R. Vairamuthu** selected for **60th Jnanpith Award**; **3rd Tamil writer** and **1st for Tamil poetry**.

- Previous Awards: **Sahitya Akademi (2003)** for *Kallikattu Ithikasam*, **Padma Shri (2003)**, **Padma Bhushan (2014)**.
- Previous Tamil awardees: **Akilan (1975)**, **Jayakanthan (2002)**.

Jnanpith Award

- **About:** Instituted **1961** by **Bharatiya Jnanpith**; **India's highest literary honour** for **lifetime contribution**.
  - Known as **"Nobel Prize of Indian literature"**.
- **Institutional Background:** Founded by **Sahu Shanti Prasad Jain & Rama Jain**; **Bharatiya Jnanpith (1944)**.
  - **1st award (1965)**: G. Sankara Kurup (Malayalam).
  - **1st woman**: Ashapurna Devi (1976, Bengali).
  - **1st English winner**: Amitav Ghosh (2018)
- **Eligibility & Scope:** Awarded **annually to an Indian author** for **outstanding contribution towards literature**.
  - **1965–1981**: for a **specific work**; **since 1982**: **lifetime contribution**.
  - Covers **22 Eighth Schedule languages + English (added 2013)**. No posthumous awards are given.
- **Prize & Symbolism**: ₹11 lakh, citation, bronze Vagdevi (Saraswati) statuette; presented by President.
- **Selection Process**: By **Pravara Parishad** (eminent scholars/ litterateurs) based on **creativity, vision, impact**.

India Wins the ICC Men's T20 World Cup 2026

India won the ICC Men's T20 World Cup 2026, defeating **New Zealand by 96 runs** in the **final at Narendra Modi Stadium, Ahmedabad**, marking **India's largest victory margin in T20 World Cup history**.

- **Player of the Match:** Jasprit Bumrah; **Player of the Tournament:** Sanju Samson
- **Historic Milestones:**
  - **India** became the **first team to win 3 ICC Men's T20 World Cups** (**2007, 2024, 2026**).
  - First team to successfully defend the title.
  - First to win the tournament on home soil.
- **Men's T20 World Cup: ICC international championship**, first held in **2007**, generally held **every two years**.
  - **Prize Pool (2026):** Total: **USD 13.5 million**; **Winner's prize:** USD 3 million.
- **India-ICC World Rankings:**
  - **ICC Team Rankings:** Rank **men's teams** in **Tests, ODIs, T20Is** and **women's teams** in **ODIs & T20Is** using a **rating system by David Kendix**.
  - **Ratings:** Calculated by **total points ÷ matches/series played**; rankings **updated annually around 1st May**.
    - ❖ **India's Rankings (March 2026): Men–** No. 1 in T20Is & ODIs, No. 4 in Tests. **Women–** No. 3 in both T20Is 7 ODIs.

- **Regulation of Cricket:**
  - **ICC: Global governing body of cricket** with **108 member countries**.
    - **Headquarters:** Dubai, UAE.
    - Regulates **international cricket**.
    - **ICC Men's T20 World Cup 2028:** Co-hosted by Australia & New Zealand.
  - **BCCI**: **Established:** 1928; **Headquarters:** Mumbai.
    - Governing body for cricket in India.
    - Became **ICC Full Member in 1928**, enabling **India to play international cricket**.

IMPORTANT DAYS

Shri Guru Hargobind Sahib Ji

Union Home Minister paid tribute to the **6th Sikh Guru, Guru Hargobind Sahib Ji**, on his **Jyoti-Jyot Diwas (22nd March 2026)**, marking the day he **merged with the divine light**, and highlighted his enduring legacy in establishing the **Saint-Soldier tradition** & **protecting humanity**.

- **About Guru Hargobind Sahib Ji:** Born in 1595, Amritsar (Punjab)
  - Became Guru in **1606** after **Guru Arjan Dev Ji's martyrdom**
- **Miri-Piri Doctrine**: **Miri** (Temporal/Political power) + **Piri** (Spiritual authority)
  - Symbolised by **two swords**
- **Saint-Soldier Tradition**: Transformed Sikhs into **martial + spiritual force.** Foundation of **Sant-Sipahi ideal**
- **Establishment of Akal Takht (1609)**: Built for **secular & political affairs**
  - Located opposite **Harmandir Sahib (Golden Temple), Amritsar**
  - **Highest temporal authority** in Sikhism
- **Bandi Chhor Divas**: Imprisoned at **Gwalior Fort** by **Jahangir**
  - Secured release of **52 princes** along with himself
  - Celebrated as **Day of Liberation**
- **Military Role**: First Guru to maintain a **standing army**
  - Fought **4 battles** against **Mughal Emperor Shah Jahan**
- **Urban Foundation**: Founded **Kiratpur Sahib** (Shivalik foothills)
  - Attained **Jyoti-Jyot in 1644**

Death Anniversary of Savitribai Phule

Union Home Minister paid tribute to **Savitribai Phule** on her **death anniversary (10th March)**, highlighting her role in **promoting women's education during an era of deep-rooted social evils**.

Savitribai Phule

- **About: 19th-century social reformer from Maharashtra** who challenged patriarchal and caste hierarchies.
  - Born on **3rd Jan 1831** in **Satara (Maharashtra)** in the **Mali community**; married Jyotiba Phule at age 9.
- **Contributions:**
  - **Women's education:** Founded **India's first Indian-run girls' school in Pune (1848)** with **Jyotiba Phule**; together **established 18 schools**.
    - Helped create **Native Female School, Pune** & **Society for Promoting the Education of Mahars, Mangs and Etceteras**.
  - **Gender justice:** Founded **Mahila Seva Mandal (1852)**; campaigned against **child marriage** and for **widow remarriage**.
  - **Combating female infanticide:** Established **Balhatya Pratibandhak Griha (1863)** to prevent female infanticide and shelter pregnant Brahmin widows and rape victims.
  - **Caste equality:** Initiated the **first Satyashodhak marriage** (dowry-free, priest-free, non-Brahminical).
  - **Literary works:** Authored **Kavya Phule (1854)** and **Bavan Kashi Subodh Ratnakar (1892)**; poem **"Go, Get Education"** encouraged **oppressed castes to pursue education**.
- **Resistance & Death: Faced orthodox opposition**, including **social assaults and stoning**. **Died in 1897** after contracting **bubonic plague while caring for a patient**.

Jan Aushadhi Diwas 2026

On **Jan Aushadhi Diwas 2026 (7th March)**, under the theme **"Janaushadhi Sasti Bhi, Bharosemand Bhi, Sehat Ki Baat, Bachat Ke Saath, "** PM highlighted **PMBJP's role in reducing medicine costs** for millions.

PM Bhartiya Janaushadhi Pariyojana

- **About: Flagship scheme** of the **Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers**. Provides quality generic medicines and surgical items at **50–80% lower cost** to reduce **out-of-pocket healthcare expenditure**.
- **Launched: 2008** as **Jan Aushadhi Scheme**; **rebranded in 2016** as **PMBJP**.
- **Product Portfolio:** ~2, 110 medicines & 315 surgical items/ consumables across 29 therapeutic categories (e.g., anti-cancer, cardiovascular, anti-diabetic).
- **Quality Assurance:** Procured from **WHO-GMP certified manufacturers**. Tested in NABL-accredited laboratories.

- **Citizen-Centric Initiatives:**
  - **Janaushadhi Suvidha Sanitary Napkins (2019):** Oxo-biodegradable napkins sold at ₹1 per pad to promote menstrual hygiene.
  - **Jan Aushadhi Sugam App (2019):** Provides geo-location of Kendras, medicine availability, and price comparison with branded medicines.
- **Inclusive Entrepreneurship Model:** Franchise-based expansion with **one-time incentives up to ₹2 lakh** for women, SC/ST, Divyangjan, and ex-servicemen to set up Janaushadhi Kendras.
- **Strategic Expansion & Integration:**
  - **Target:** Increase **Janaushadhi Kendras from 18, 000+ (2026) to 25, 000 by March 2027**, focusing on **rural and underserved areas**.
  - **Innovative Locations:** Kendras established at **railway stations (116 as of Jan 2026)** and **government hospital premises**.
  - **Cooperative Involvement: Primary Agricultural Credit Societies (PACS)** used to expand rural outreach.
- **Economic Impact:** Estimated **₹38, 000 crore savings for citizens by June 2025** compared to **branded medicines**.

Jal Mahotsav 2026

Union Minister of Jal Shakti launched the **Jal Mahotsav 2026** campaign from **Gujarat** on **International Women's Day (8th March)**, observed as **"Sujalam Shakti Diwas. "**

Jal Mahotsav 2026

- **About: Flagship campaign** of the **Department of Drinking Water and Sanitation, Ministry of Jal Shakti**.
  - Observed **8th–22nd March**; tagline: ***"Gaon ka Utsav, Desh ka Mahotsav. "***
  - Aims to **strengthen community participation in rural drinking water management** and promote **water conservation under Jal Jeevan Mission (JJM)**.
- **Key Events:**
  - **Jal Arpan Diwas: Rural drinking water assets** handed over to **Gram Panchayats (GPs)** and **Village Water and Sanitation Committees (VWSCs)**.
  - **Jal Bandhan:** Sacred threads tied at water infrastructure sites.
  - **Jal Sankalp:** Community pledge for water conservation.
- **Multi-level implementation:** Conducted at **National, State, District, and Gram Panchayat levels**.
- **Women at the Core (Sujalam Shakti):**
  - **24 lakh+ women** engaged in **water quality testing using Field Testing Kits (FTKs)**.
  - Leadership of **women pump operators, SHG members, and VWSC members** highlighted.
  - **Tap water access** has **reduced the burden of fetching water**.
- **Convergence & Vision:** Promotes **inter-ministerial convergence** and aims to build **'Sujal Gram' (water-sufficient villages)**, contributing to **'Viksit Bharat'**.

Foundation Day of Bureau of Energy Efficiency

BEE celebrated its **25th Foundation Day (1st March 2026)**, launching **new digital initiatives** and reaffirming **energy efficiency as the country's "First Fuel. "**

- **Renewable Consumption Obligation (RCO) Portal**, **BEE Star Label Mobile App**, and **BEE@25 Logo** launched to **improve monitoring, empower consumers, and promote energy efficiency**.
- **RCO: Mandatory policy** under **Energy Conservation (Amendment) Act, 2022** requiring **designated consumers** to source a **minimum share of electricity from eligible non-fossil sources** (solar, wind, hydro, biomass).

BEE

- **About: Statutory body** under **Ministry of Power**, established **1st March 2002** under the **Energy Conservation Act, 2001**.
- **Objective:** Reduce **energy intensity of GDP** through efforts in **industry, buildings, transport, agriculture, and appliances sectors**.
- **Emission Reduction Impact: 36% reduction** in **emissions intensity of GDP (from 2005 levels)** and **52% non-fossil fuel installed capacity** (well ahead of 2030 climate targets).
- **Institutional Coordination:** Works through **State Designated Agencies (SDAs)** to implement **energy efficiency programmes at the state level**.

Protocol for the President during a State Visit

A **political controversy** arose after the **President** expressed displeasure over the **absence of CM and ministers** at her **West Bengal reception**, citing **protocol breach and disrespect**.

- **Precedence: President** holds the **first rank in the national table of precedence**; visits follow **strict security & logistical guidelines** in the **Blue Book**.
- **Blue Book:** A **confidential document** prepared by the **Union Ministry of Home Affairs (MHA)** outlining procedures for **visits of the President, VP, and PM**.
  - **Custody:** Maintained by the **District Magistrate** and **district police chief**, detailing **security, logistics, and ceremonial arrangements**.

- **Established Convention: Governor & CM** should **receive the President on arrival** and **see her off at departure**.
  - If unavailable, **CM may designate a senior minister** to receive the President.
- **Advance Approval:** The **President's office approves in advance** the **list of officials receiving or meeting the dignitary**.
  - Any **deviation from the approved list or Blue Book procedures** is treated as a **protocol breach**.

National Science Day 2026

National Science Day was observed on **28th Feb** to commemorate **C. V. Raman's discovery of the Raman Effect (1928)**. Theme **"Women in Science: Catalyzing Viksit Bharat".**

- Designated as **National Science Day in 1986**; the **first celebration was held in 1987**.

CV Raman

- **About:** Indian physicist known for discovering the **Raman Effect**; awarded the **1930 Nobel Prize in Physics**. His work proved the **quantum nature of light**.
- **Nobel Prize Significance: First Asian** and **first non-White person** to win a **Nobel Prize in any scientific field**.
- **Other Honours:** Knighted (1929), Fellow of the Royal Society (1924), Bharat Ratna (1954), Lenin Peace Prize (1957).
- **Institutional Contributions:** Founded **Raman Research Institute (1948, Bengaluru)**, **Indian Journal of Physics (1926)**, and **Indian Academy of Sciences (1934)**.

Raman Effect

- **Discovered by: C. V. Raman** with **K. S. Krishnan**.
- **Phenomenon**: Light passing through a transparent material changes wavelength due to interaction with molecular vibrations.

World Wildlife Day 2026

World Wildlife Day 2026 (3rd March), celebrated with the theme: **"Medicinal and Aromatic Plants: Conserving Health, Heritage and Livelihoods"**; commemorates adoption of **CITES**. The day was designated by **UNGA on 20th Dec 2013 (68th session)**.

Conservation of Medicinal Plants in India

- **Plant diversity:** India has **7% of global biodiversity**, with 45, 000 plant species; 15, 000 medicinal plants, **~8, 000 used in Ayurveda, Siddha, Unani, and folk medicine**.
  - **~70% medicinal plants** found in **Western Ghats, Eastern Ghats, Himalayas, and Aravalli range**.
- **Conservation approaches: In-situ:** 115 Medicinal Plants Conservation Areas (MPCAs); **Ex-situ:** National Seed Gene Bank, New Delhi.
- **National Medicinal Plants Board (NMPB): Nodal agency under Ministry of Ayush** implementing **Central Sector Scheme** for Conservation, Development and Sustainable Management of Medicinal Plants.
- **Key Govt. Initiatives**:
  - **National AYUSH Mission (NAM) 2014** & **MIDH**: Promote medicinal plant cultivation integrated with farming systems.
  - **e-CHARAK platform:** Provides market access with fortnightly price updates of 100 medicinal plants from 25 herbal markets in multiple local languages.
  - **Aushadhi Vanaspati Mitra Program (AVMP):** Recognizes contributions to **medicinal plant conservation**.
  - **Medicinal Plants Business Centre (MPBC):** Supports post-harvest management, scientific storage, and quality testing infrastructure.
- **GI-tagged medicinal plants/products:** Navara Rice **(Kerala)**, Green Cardamom **(Kerala & Karnataka)**, Ganjam Kewda Flower **(Odisha)**, Saffron **(J&K)**, Nagauri Ashwagandha **(Rajasthan, Nov 2025)**.

Rare Disease Day 2026

Rare Disease Day is observed on **28th Feb** (or **29th Feb** in leap years) to highlight the challenges faced by people with rare diseases.

- **Objective:** Ensure equity in social opportunities, healthcare, diagnosis, and therapy access for rare disease patients.
- **Origin & Coordination:** Established in **2008**; coordinated by **EURORDIS** with **70+ national patient alliances**.

Rare Disease

- **About:** No universal definition; generally affects **≤1 in 2, 000 persons** in a WHO-defined region.
- **Childhood & Genetic Link: 50–75%** manifest in childhood/ at birth; **~80% genetic** (e. g., lysosomal storage disorders); others include rare cancers, autoimmune and infectious diseases.
- **Global Context & Treatment Gap: 6, 000–10, 000** rare diseases; affect ~**300–450 million** people worldwide; **~95% lack approved curative treatment**.
- **India's Position:** No formal prevalence-based definition; **NPRD 2021** classifies diseases into **Group 1, 2, 3** based on treatability & clinical experience.
  - Estimated **72–96 million** affected in India.
- **Policy Support in India:**

- **NPRD 2021:** Financial assistance up to **₹50 lakh** for **63 notified rare diseases** at designated CoE.
- **Union Budget 2026–27: 7 additional rare diseases** exempted from import duties on personal imports of drugs/medical foods. Included as focus area under **PLI Scheme for Pharmaceuticals**.

Chandra Shekhar Azad

India paid tributes to freedom fighter **Chandra Shekhar Azad** on his 95th martyrdom day on 27th February 2026.

- **Born:** 1906, Alirajpur (MP) as *Chandra Shekhar Tiwari*.
  - Joined **NCM (1921)**; on arrest declared name as **"Azad"**, father "Swatantra", address "Jail".
- **Ideological shift (1922):** Withdrawal of NCM led him towards **revolutionary nationalism**.
- Joined **Hindustan Republican Army (HRA)** led by **Ram Prasad Bismil** & **Sachindranath Sanyal**.
- **Kakori Conspiracy (1925):** Played key role in train robbery to raise funds.
- **HSRA (1928):** Reorganised HRA into **Hindustan Socialist Republican Association** with **Bhagat Singh**; adopted socialist ideology; Azad became chief military strategist.
- **Saunders Assassination (1928):** Planned killing to avenge **Lala Lajpat Rai**; used pseudonym **"Balraj"**.
- **Final Stand (27 Feb 1931):** Surrounded at **Alfred Park, Allahabad**; helped **Sukhdev Raj** escape; shot himself to avoid capture.

Death Anniversary of VD Savarkar

PM paid tributes to **VD Savarkar** (Veer Savarkar) on his **60th death anniversary** (26th February). He passed away in Mumbai on **26th February, 1966**.

Vinayak Damodar Savarkar

- **About:** Revolutionary nationalist (influenced by Lal-Bal-Pal), known as **Swatantryaveer Savarkar**.
- **Revolutionary Activities:**
  - Founded **Mitra Mela (1899)** → later **Abhinav Bharat (1904)**.
  - Established **Free India Society, London (1906)**.
  - Associated with **India House (London)** (founded by Shyamji Krishna Varma).
  - Arrested in **Nasik Conspiracy Case (1910)**; attempted escape at **Marseilles (France)**; recaptured.
- **Imprisonment**
  - **50 years' imprisonment** (**1911**); deported to **Cellular Jail (A&N Islands)**.
  - Filed **mercy petitions (1911–1920)**; released in **1924**.
- **Political Career: President, Hindu Mahasabha (1937–43)**; Opposed **QIM (1942);** associated with **Cripps Mission (1942)** & **Wavell Plan (1945)**.
- **Social Reform:** Supported **inter-caste marriage** & **Dalit temple entry**.
  - Established **Patit-Pavan Mandir, Ratnagiri (1931)** (open to all castes).
  - Opposed restrictions on **sea-crossing**.
- **Literary Contributions:** ***The History of the First War of Indian Independence*** **(1909)** — termed **1857** a national war.
  - ***Hindutva: Who is a Hindu?*** **(1923)** — concept of **Hindu Rashtra** (cultural basis).
  - Pen-name **"Mahratta"**.
- **Legacy: Port Blair Airport** renamed **Veer Savarkar International Airport (2002)**.

DEFENCE & SECURITY

INS Taragiri

Indian Navy will commission **INS Taragiri (Project 17A)**, the **4th stealth frigate**, enhancing **maritime deterrence & indigenous shipbuilding** with improved **stealth, weapons, and sensors**.

INS Taragiri

- **Indigenous Prowess: >75% indigenous content**; built by **Mazagon Dock Shipbuilders Ltd (MDL)**; **200+ MSMEs** involved
- **Stealth & Design: Reduced radar cross-section (RCS)**, sleeker hull → **"lethal stealth"** to evade detection during multi-dimensional maritime operations
- **Weaponry & Combat: Supersonic surface-to-surface missiles**, **medium-range surface-to-air missiles,** anti-submarine warfare (ASW) suite; integrated **Combat Management System (CMS)**
- **Propulsion: Combined Diesel or Gas (CODOG) system** → high speed & endurance
- **Strategic Role: Combat + Humanitarian Assistance and Disaster Relief (HADR) + naval diplomacy**; counters Chinese naval presence & regional instability

Project 17A

- **About:** Indian Navy project for **7 stealth guided-missile frigates**
- **Ships:** INS Nilgiri, Himgiri, Udaygiri, Taragiri, Dunagiri, Vindhyagiri, Mahendragiri
- **Role:** Escort **large vessels**; performs **anti-submarine warfare (ASW), Aanti-air warfare (AAW), and anti-surface warfare (ASuW).**

Exercise LAMITIYE-2026

An Indian Armed Forces contingent is participating in the **11th Joint Military Exercise "LAMITIYE-2026"**, aimed at enhancing defence cooperation and **operational coordination b/w India & Seychelles.**

- **Exercise LAMITIYE**
  - **Meaning:** "**LAMITIYE**" means **"Friendship" in Creole** (official language of **Seychelles**).
  - **Nature:** Biennial joint military exercise since 2001
  - **Objective:** Improve **interoperability in sub-conventional operations (semi-urban areas)**, strengthen **peacekeeping coordination**, and **exchange tactical skills and military technologies**.
  - **11th edition:** First tri-service participation by India — ASSAM Regiment, Indian Navy (INS Trikand), and Indian Air Force (C-130J Super Hercules).
- **Seychelles: Archipelagic state of 155 islands** in the western Indian Ocean, northeast of Madagascar off East Africa.
  - Located on the **Mascarene Plateau**; **Africa's smallest country** with **Victoria (Mahé Island)** as capital.
  - Strategically located on **major maritime trade routes**; important for **India's maritime security** and **SAGAR vision**.

ALH Mk-III and Shtil Missiles

Ministry of Defence **signed contracts worth ₹5, 083 crore to procure 6 ALH Mk-III helicopters for the Indian Coast Guard** from HAL & Shtil Surface-to-Air Missile System with missile holding frames for the Indian Navy from JSC Rosoboronexport (Russia).

- **ALH Mk-III acquisition:** Under **Buy (Indian–IDDM)** category. **Twin-engine helicopters** for Indian Coast Guard to enhance maritime security, protection of offshore installations, fishermen, and marine environment; supports Make in India & Aatmanirbhar Bharat with **200+ MSMEs** and **~65 lakh man-hours employment**.
- **Shtil Surface-to-Air Missile System: Ship-based medium-range air defence system** to intercept aircraft, helicopters, UAVs, anti-ship missiles; **Russian origin**, derived from **Buk missile family**.
  - Uses **Vertical Launch System (VLS)** for **rapid all-weather interception**; strengthens layered maritime air defence of Indian Navy warships in the Indian Ocean Region.

Dharma Guardian Exercise

The 7th India–Japan Joint Military Exercise **'Dharma Guardian'** between the Indian Army and Japan Ground Self-Defense Force (JGSDF) began at Chaubattia, Uttarakhand.

- **Aim:** Enhance India–Japan military cooperation & joint operations in semi-urban settings.
- **Participants:** India: Ladakh Scouts & Japan: 32nd Infantry Regiment (JGSDF)
- **Key Activities:** Temporary Operating Base, ISR grid, vehicle check posts, cordon & search, heliborne ops, house intervention drills.
- **Significance:** Alternately hosted; boosts interoperability & modern operational synergy.
- **Other India–Japan Exercises:** JIMEX (naval), Veer Guardian & Shinyuu Maitri (air), Sahyog Kaijin (coast guard), Malabar (Quad naval exercise).

16th Edition of Exercise Vajra Prahar

The 16th India–US Joint Special Forces Exercise **'Vajra Prahar'** commenced at the Special Forces Training School, Bakloh (Himachal Pradesh).

- **Started:** 2010; held alternately in India & US.
- **Participants:** Indian Army Special Forces & US Army Green Berets.
- **Aim:** Enhance interoperability, jointness & tactical expertise; improve joint mission planning and operations.

India–US Defence Cooperation

- **Strategic Framework:** New Defence Framework (2015); Major Defence Partner (2016).
  - STA-1 status (2018); New Framework signed (2025).
  - INDUS-X (2023) for defence innovation & co-production.
- **Foundational Agreements:** LEMOA (2016); COMCASA (2018); ISA (2019); BECA (2020).
- **Defence Procurement:** Apache, Chinook, MH-60R, P-8I aircraft.
- **Joint Exercises:** Yudh Abhyas, Cope India, Tiger Triumph; multilateral drills – Malabar, RIMPAC, Red Flag.

SUMMITS & CONFERENCES

India-Japan CEPA Meeting

The **7th Joint Committee Meeting** under the **India–Japan CEPA** was held in **Tokyo** to review **implementation issues** and enhance **bilateral economic engagement**. Discussions covered **trade & investment, business environment**, and preparations for the **14th WTO Ministerial Conference (March 2026, Yaoundé, Cameroon)**.

India–Japan CEPA

- Came into force in **August 2011**.
- Covers **trade in goods and services, movement of natural persons, investments, IPR, customs procedures**, and other **trade-related issues**.

- Provides for **tariff elimination on over 94% of traded items** between the two countries within **10 years**.

India–Japan Economic Relations

- **Bilateral Trade (2023–24)**
  - **Total trade:** USD 22.85 billion.
  - **Japan → India:** USD 17.69 billion.
  - **India → Japan:** USD 5.15 billion → **trade deficit for India**.
- **Trade Share**
  - **India:** 18th in Japan's total trade (**1.4% share**).
  - **Japan:** 17th in India's total trade (**2.1% share**).
- **FDI Inflows**
  - **Cumulative Japanese FDI (2000–Dec 2024):** USD 43.2 billion.
  - **Japan: 5th largest source of FDI** into India.
  - **Major Sectors:** Automobile, electrical equipment, telecommunications, chemicals, financial services (insurance), pharmaceuticals.

India Slams Pakistan At UNHRC On J&K

India strongly rejected Pakistan's claims on J&K at **UNHRC**'s 61st Session.

- India exercised **Right of Reply** after **Pakistan & OIC** raised **J&K** at UNHRC.
- **J&K Integral to India:** Accession legal & irrevocable under **Indian Independence Act, 1947**; J&K "was, is, and will remain" part of India.
- **PoK Issue:** India termed **Pakistan's occupation of PoK** as the only outstanding issue; called for vacation of illegally occupied territories.
- **Development Counter-Narrative:**
  - High voter turnout in **General & Assembly elections** cited as endorsement of democracy.
  - Highlighted infrastructure growth incl. **Chenab Rail Bridge** (world's highest railway bridge).
  - J&K's developmental budget stated to be **more than double Pakistan's recent IMF EFF bailout**.
- **Criticism of OIC:** India termed OIC's stance as biased & influenced by Pakistan.

UNHRC

- Established in **2006**; HQ: **Geneva**.
- Intergovernmental body to **promote & protect human rights globally**.
- Replaced **UN Commission on Human Rights**.
- Supported by **Office of the High Commissioner for Human Rights (OHCHR)**.
- **47 members**, elected for **3-year staggered terms** (regional representation).
- India elected **unopposed for 7th time (2026–28 term)**.

ECI–SEC National Declaration 2026

The conference of **ECI** and **SECs** adopted the **National Declaration 2026** to enhance **federal coordination** in electoral processes.

- **Pure Electoral Rolls:** "Pure" (error-free, updated) electoral rolls declared **bedrock of democracy**.
  - Emphasis on transparency & efficiency in election management.
- **Core Objective:** Harmonise election laws & processes for: **Panchayats & Municipalities** (by SECs) & **Parliament & State Legislatures** (by ECI).
  - Ensure uniform standards & coordination.
- **Institutional Mechanism:** Proposal for **annual National Round Table Conference**.
  - SEC participation in ECI's global engagements.
  - Joint legal & technical team to review suggestions.
  - **State/UT-wise roadmap within 3 months**.
- **Sharing of ECI Resources**
  - **ECINET Portal**: Electoral roll management & coordination.
  - **EVMs**: Infrastructure support for local body polls.
  - **IIIDEM**: Training & capacity building support.
- **IICDEM 2026:** Release of publication **"A Confluence of Democracies"**.
  - Documentation of **IICDEM 2026** and adoption of **Delhi Declaration 2026**.

PLACES IN NEWS

India-China Border Trade via Lipulekh Pass

Border trade b/w **India & China through the Lipulekh Pass** in Uttarakhand's Pithoragarh district is set to resume in **June 2026** after a six-year hiatus. Halted in 2019-2020 due to Covid-19 pandemic and subsequent border tensions.

- **Nepal's Objection**: Claims **Kalapani–Lipulekh–Limpiyadhura** as **sovereign territory**
  - Resumption has **renewed diplomatic friction**
- **Bilateral Agreement (Aug 2025)**:
  - Reopen three designated Himalayan trade routes (Lipulekh, Shipki La, and Nathu La)
- **Infrastructure Upgrade**: Motorable road to Lipulekh (2020)
  - Reduced **logistics cost & travel time**
- **Lipulekh Pass:**
  - **Location**: **Kumaon (Uttarakhand)** near **India–Nepal–China trijunction**

- ❖ Connects the Indian subcontinent with the **Tibetan plateau**
- **Significance**: Historic **India–Tibet trade route**
  - ❖ Gateway to **higher Himalayas**
- **Trade History**: Opened in **1992** (first India-China trade post)
  - ❖ Followed by **Shipki La (1994)**, **Nathu La (2006)**

■ **Old Lipulekh Pass**: Located in **Vyas Valley, Pithoragarh**
- Part of **Kailash Mansarovar Yatra**

■ **Territorial Dispute with Nepal:**
- **Treaty of Sugauli (1816)**: **Kali (Mahakali/Sharda) River** as western boundary of Nepal
- **Dispute on River Origin**:
  - ❖ **Nepal's Claim**: Origin at **Limpiyadhura** → claims **Limpiyadhura, Lipulekh, Kalapani**
  - ❖ **India's Stand**: Origin near **Kalapani village** → area in **Pithoragarh (Uttarakhand)**

Indo-Myanmar Border

7 foreign nationals arrested in **Mizoram** while crossing into **Myanmar**. Incident highlights **porous Indo-Myanmar border**. Raises concerns over **border security** and **delay in fencing**.

■ **Indo-Myanmar Border**:
- **Length**: 1,643 km
- **States**: **Arunachal Pradesh** – 520 km; **Nagaland** – 215 km; **Manipur** – 398 km; **Mizoram** – 510 km
- Guarded by **Assam Rifles** (India's oldest paramilitary force)
  - ❖ **Administrative control**: MHA
  - ❖ **Operational control**: Indian Army

■ **Free Movement Regime (FMR):** Allows movement due to **ethnic & cultural ties**
- **Dec 2024 Regulation**: Movement limit reduced to **10 km** (from **16 km**)

■ **Fencing Delays:**
- **2024 Cabinet Committee on Security (CCS) approval**: ₹31,000 crore for fencing + infrastructure
- **Fencing**:
  - ❖ **Approved:** 1,643 km
  - ❖ **Sanctioned:** 390.39 km
  - ❖ **Completed:** 43.75 km
- **Border Roads**:
  - ❖ **Approved:** 3,194.8 km
  - ❖ **Completed:** 11.5 km
- **Biometric Gates**:
  - ❖ **Planned: 43** → Functional: **20**
  - ❖ Several shut due to **local resistance & non-usage**

■ **Security Challenges (Indo-Myanmar Border):** Enables **insurgent safe havens**, **arms & narcotics smuggling** (near **Golden Triangle**), **human trafficking**
- **Refugee influx** after **Myanmar 2021 coup**

■ **Measures Needed:** Deploy **Comprehensive Integrated Border Management System (CIBMS)** with advanced surveillance
- Resolve **dual control of Assam Rifles** for unified command
- Ensure **community engagement** with border populations

Tughlakabad Fort

Delhi HC criticised the **ASI** for delays in conducting a court-ordered **encroachment survey at Tughlakabad Fort**.

■ **Location: South Delhi**; along **Aravalli Hills** (provided natural defense & granite for construction)

■ **Built by:** Ghiyasuddin Tughlaq – founder of Tughlaq Dynasty (1321)

■ **Historical Status: 3rd extant city of Delhi** (after **Lal Kot** & **Siri**)

■ **Purpose:** Strong **military fortress** against **Mongol invasions**

■ **Architecture**
- **Style:** Early **Indo-Islamic military architecture**
- **Features:** Thick, rubble-filled, sloped (battered) walls

■ **Three-Part Urban Layout:**
- **Citadel**
- **Palace Complex** (underground chambers & escape routes)
- **Residential City Area** (rainwater harvesting, tanks, baolis)

■ **Mausoleum: Ghiyasuddin Tughlaq's tomb** (outside fort; **600-ft causeway**; **red sandstone + white marble dome**)

■ **Rapid Abandonment:** After **Ghiyasuddin's death (1325 CE)**; Muhammad bin Tughlaq shifted the capital to **Daulatabad**; focus moved to **Adilabad**
- **Legend:** Curse by **Nizamuddin Auliya** – *"Ya rahe ujjar, ya base gujjar"* → linked to decline

ASI Approves Site Excavations in Tamil Nadu

Archaeological Survey of India (ASI), under the **Ancient Monuments and Archaeological Sites and Remains Rules, 1959**, approved excavations at **8 sites in Tamil Nadu**.

■ **Significance:** The **8 sites** span **Iron Age to urban settlements (e.g. , Keeladi)**, potentially linking **early South Indian urbanisation with global trade networks**.

Key Sites	Significance
Keeladi	Urban settlement in the **Vaigai basin**; evidence of **Tamil-Brahmi script** and advanced drainage systems.
Adichanallur & Karivalamvanthanallur	Pre-eminent **burial site** providing insights into early **mortuary practices** and Iron Age material culture.
Vellalore	Evidence of commercial exchange with the **Roman Empire**, including jewelry & coinage.
Thelunganur	Signifies early technological advancement in **iron usage**, potentially dating back several millennia.
Nagapattinam & Pattinamarudur	Historical **Chola-era port** reflecting **Buddhist** influence and Indian Ocean trade networks.
Manikollai	Production center for **glass beads** tied to long-distance Southeast Asian trade.

- **Tamil Nadu's Commitment: Rs 7 crore** allocated (Budget **2025–26**) for archaeological work, including **DNA testing** and **Optically stimulated luminescence (OSL) dating**.
- **Dating of Sites:**
  - **DNA Testing (Ancient DNA/aDNA):** Used to trace **biological relationships, ancestry, migration, lineage** from skeletal remains
  - **OSL Dating:** Determines last sunlight exposure of **mineral grains**; used to date **soil layers (when no organic material for radiocarbon dating is available)**

South Pars Gas Field and Middle East Energy Hubs

Israel struck **Iran's South Pars gas field**, after which Iran retaliated by targeting key Gulf energy hubs such as **Ras Laffan (Qatar)** and **Habshan (UAE)**.

- **Iran's Islamic Revolutionary Guard Corps (IRGC) warnings:** Evacuation alerts for **Al-Hosn Gas Field (UAE), Ras Laffan Refinery (Qatar), Al-Jubail Petrochemical Complex (Saudi Arabia), Mesaieed Holding Company (Qatar), Samref Refinery (Saudi Arabia)**
  - Indicates potential escalation targeting **Gulf energy infrastructure**

South Pars / North Dome Gas Field (Iran / Qatar)

- **Location: Persian Gulf**
- **Significance:** World's **largest natural gas field** (shared by **Iran – South Pars** & **Qatar – North Field**)
- **Reserves: ~1, 800 trillion cubic feet**
- **Iran Dependence:** Provides **~80%** of Iran's natural gas supply

- **Ras Laffan Industrial City (Qatar)**
  - **Location:** Northeastern coast of Qatar peninsula
  - **Significance:** Main hub for **Qatar's LNG processing & exports** (from North Field)
  - **Importance:** Disruption threatens **energy markets in Europe & Asia**
- **Habshan Gas Complex & Bab Oil Field (UAE)**
  - **Location:** Inland **Abu Dhabi**
  - **Significance:**
    - ❖ **Habshan:** One of world's largest **gas processing facilities**
    - ❖ **Bab Field:** Major **onshore oil-producing asset**

Dual-Sex Crab of Silent Valley

Rare case of gynandromorphy observed in **freshwater crab Vela carli** (organism shows **both male & female traits**– e.g., male reproductive structures alongside female gonopores).

- **Species & Location**: Endemic freshwater crab (Vela carli) in tree holes, Silent Valley National Park (Western Ghats).
- **Scientific significance**: **First record** of **gynandromorphy** in **Gecarcinucidae family.** Previously known in other **crustaceans**
  - **Crustaceans**: Aquatic invertebrates (arthropods) → crabs, lobsters, shrimp, prawns.

Silent Valley National Park

- **Location**: Nilgiri Hills, Kerala; tropical evergreen forest.
  - Part of **Nilgiri Biosphere Reserve (1986)** (India's first BR).
- **Geographical Feature**: **Kunthipuzha River** flows through.
  - Name due to **absence of noisy cicadas**.
- **Biodiversity hotspot**: Part of **Western Ghats World Heritage Site (UNESCO, 2012)**
  - **Flagship species**: Lion-tailed macaque (endangered)
    - ❖ Harbors **Nilgiri langur, Malabar giant squirrel, Nilgiri tahr, Great Indian hornbill**
- **Historical Significance**: **Save Silent Valley movement (1973)** against a proposed dam on the **Kunthipuzha River.** Led to **National Park status (1984) and project's abandonment.**

Kharg Island–Fujairah Attacks

US strikes on Iran's Kharg Island and **Iran's retaliation on Fujairah (UAE)** escalate **West Asia tensions**. Both are **key oil supply hubs**, threatening **global shipping lanes and oil markets**.

- **Kharg Island:**
  - **Location: Persian Gulf, ~25 km off Iran's southwestern coast.**

- ❖ Known as **"forbidden island"**; access controlled by **Islamic Revolutionary Guard Corps (IRGC)**.
- **Iran's main oil export hub**: Connected to **Ahvaz, Marun, Gachsaran oil fields**.
  - ❖ Handles **~90% of Iran's crude exports**.
  - ❖ Capacity: **1.3–1.6 million barrels/day**, storage ~**30 million barrels**.
- **Historical Trade Centre:** Since **10th century**; linked **India–Basra trade & pearl diving**. Fortified by Dutch (18th century); **briefly occupied by British (19th century)**.

- **Fujairah:**
  - **Location**: UAE emirate on **Gulf of Oman**; only emirate **not on Persian Gulf**.
  - **Strategic importance** for **energy transport**.
  - **Bypasses Strait of Hormuz** via **Habshan–Fujairah pipeline**.
  - **Global energy hub**:
    - ❖ **Port of Fujairah** among **largest oil storage facilities**
    - ❖ **2nd-largest ship bunkering hub (after Singapore)**

Balirajgarh Fort

ASI approved **renewed scientific excavation at Balirajgarh Fort (Remains of Ancient Fort of Garh)** in **Madhubani, Bihar**.

- **About: Centrally protected national monument (~200 BCE)**, linked to **Mithila's early civilisation** and legends of **King Bali** (benevolent asura ruler from Hindu mythology).
  - Part of **ASI's Patna Circle**; one of **Bihar's 71 protected monuments**.
- **Cultural Sequence:** Fortification mainly from **Shunga period (~200 BCE)** with **earlier Iron Age origins**.
  - **5-fold cultural sequence: Northern Black Polished Ware (NBPW)** phase (700–200 BCE) → **Shunga** → **Kushan** → **Gupta** → **Pala** (up to 12th century CE).
  - Indicates continuous habitation from early historic to early medieval period.
- **Findings:** Excavations revealed **structural remains, NBPW pottery, and artefacts**, indicating a **major urban centre** with **massive boundary walls, elevated mounds, and defensive structures**.
- **Excavation History:**
  - **First identified (1884):** by **George Abraham Grierson**.
  - **Excavations:** 1962–63, 1972–73, 2013–14.
  - **2013–14 excavation halted** due to **environmental constraints and high water table**.

National Chambal Sanctuary

SC took **suo motu cognisance** to protect the **fragile lotic ecosystem of the National Chambal Sanctuary** from **rampant illegal sand mining by the "sand mafia. "**

- **About:** Also called **National Chambal Gharial Wildlife Sanctuary**; **tri-state protected area** (Rajasthan, MP, UP) covering **~5, 400 sq km** along **~600 km stretch of the Chambal River (960 km)**.
- **Biodiversity:** Hosts **~90% of the world's wild Gharial population**.
  - Important habitat for **Ganges River Dolphin**.
  - Other species: **Marsh crocodile (mugger), Red-crowned roof turtle, Smooth-coated otter, striped hyena**, and **330+ bird species (e.g., Indian skimmer)**.
  - It forms part of **Project Crocodile (1975)** to conserve **declining crocodilian populations**.
- **Conservation Status:** Important Bird Area (IBA); proposed Ramsar Site; candidate for **UNESCO World Heritage Site**; **IUCN Category IV protected area**.
- **Ecological Uniqueness: Chambal River** is among **India's cleanest rivers**, forming a **lotic ecosystem** with deep channels, sandbanks, and ravines (beehad).
- **Threats: Illegal sand mining** damaging **nesting grounds of gharials & turtles**; **water extraction and illegal fishing** reducing **water levels and prey availability**.

V. O. Chidambaranar Port: India's First Digital Twin Port

V. O. Chidambaranar Port (TN) became **India's first port to launch a Digital Twin initiative** for port management, aligned with **Maritime India Vision 2030** and **Amrit Kaal Vision 2047**.

- **Digital Twin Platform:** Creates a real-time virtual replica of port infrastructure and operations using **IoT sensors, GPS tracking, LiDAR mapping, drone imaging, and CCTV networks**.
- **Key Features:** Enables real-time monitoring of berth occupancy, vessel movement, crane utilisation, and yard capacity; supports **AI-based predictive maintenance of cargo equipment**.
- **Expected Outcomes & Benefits:** Up to 25% reduction in vessel turnaround time
  - Improved equipment availability & reliability
  - Enhanced safety through predictive alerts
  - Optimised energy use & lower carbon emissions.

V. O. Chidambaranar Port (formerly Tuticorin Port)

- **About:** One of **India's 13 major ports**, an **artificial, all-weather deep-sea port** on the **Coromandel Coast**.
- **Historical Significance:** Established as **Tuticorin Port**, declared a **major port in July 1974**; renamed in **2011** after **V. O. Chidambaram Pillai**, founder of the **Swadeshi Steam Navigation Company (1906)**.
- **Strategic Location:** Located at **Thoothukudi (TN)** in the **Gulf of Mannar**, near **East–West international sea routes**.
- **Operational Significance: 2nd-largest port in TN (after Chennai)** and **3rd-largest container terminal in India**; key gateway for trade with **Mediterranean, Europe, and US**, handling **containers, coal, salt, and fertilisers**.

Visakhapatnam Selected for High-Energy Proton Accelerator

Visakhapatnam will host a **high-energy proton accelerator system** to support **India's three-stage nuclear programme** and **thorium use through Accelerator-Driven Systems (ADS)**.

- Chosen for its **strong tech ecosystem** and **sea access for cooling water**.
- Project developed by **Raja Ramanna Centre for Advanced Technology (RRCAT), Indore**.

High-energy Proton Accelerator System

- **About:** Uses **electromagnetic fields** to accelerate **protons (ionized hydrogen)** to very high speeds, forming a **proton beam**.
  - The beam hits a **heavy metal target (lead/bismuth)** causing a **spallation reaction**.
  - The collision **breaks the nucleus and releases many neutrons**.
  - These **neutrons trigger nuclear fission**, enabling **energy generation**.
- **ADS: Neutrons from spallation** are supplied to a **sub-critical nuclear reactor core** that cannot sustain a chain reaction independently.
  - The reactor **depends on an external neutron supply from the proton accelerator** to maintain fission.
  - If the **accelerator stops**, neutron supply ends and the **reaction automatically shuts down**, preventing **reactor meltdown**.
- **Need of ADS for India:**
  - **Harnessing Thorium:** India has ~**25% of the world's Thorium reserves**.
    - ❖ **Thorium (Th-232)** is **fertile, not fissile** and cannot sustain a chain reaction.
    - ❖ It must absorb a **neutron to convert into Uranium-233 (U-233)**, a **highly fissile fuel**.
    - ❖ **ADS provides abundant high-energy neutrons** to convert **Thorium into U-233** for electricity generation.
- **Nuclear Waste Management (Transmutation)**
  - **Traditional reactors produce long-lived radioactive waste** (e. g., **Minor Actinides**).
  - **High-energy neutrons in ADS** can **transmute/burn this waste** into **shorter-lived or stable isotopes**, reducing the **nuclear waste disposal burden**.

Established in **1984**, RRCAT developed India's **synchrotron radiation sources Indus-1 and Indus-2**, which serve as **national research facilities**.

Karnataka and Andhra Pradesh Plan Social Media Ban for Minors

Karnataka & **Andhra Pradesh** proposals to **ban social media for minors** have sparked a **constitutional debate**, as **internet regulation falls under the Union Government's jurisdiction**.

- **State Initiatives:**
  - **Karnataka:** Restricting **users under 16**.
  - **Andhra Pradesh:** Restricting **users under 13** to address negative psychological impacts of social media.
- **Union's Exclusive Domain: 7th Schedule – Union List, Entry 31:** Telecommunications and internet regulation under the Union Govt.
- **Legal Framework: India's digital space** governed mainly by **IT Act, 2000**.
  - Rules for **digital intermediaries** generally require **Union Govt. action**.
- **Implementation Issue:** State-specific bans are difficult to enforce without **Union control over internet gateways and Internet Service Providers**.
- **State Justification:** States may invoke **Public Order, Public Health, or Child Welfare** under the **State/Concurrent Lists**.
- **Fundamental Rights Issue:**
  - Blanket bans may violate **Freedom of Speech and Expression (Article 19(1)(a))** and **Right to Information**.
  - Restrictions must satisfy **"reasonable restrictions" under Article 19(2)** and be **proportionate**.
- **Global Precedents:**
  - **Australia:** First country to enact a nationwide social media ban for children.
  - **Indonesia:** Announced similar restrictions for users under 16.

Black Rain over Tehran

Residents of **Tehran** experienced **"black rain"** after **Israeli strikes on Iranian oil facilities** caused large fires, raising **environmental & public health concerns**.

- **About Black Rain: Rainfall contaminated with soot, ash, oil particles, and industrial chemicals** from large fires or industrial accidents, making rain **dark and oily**.
  - Occurs after **oil facility fires, refinery explosions, wildfires, volcanic eruptions, or nuclear fallout**.
- **Formation: Explosions at oil storage and refining facilities** release toxic hydrocarbons, sulfur oxides, nitrogen compounds, smoke, and particulates.
  - **Rainfall absorbs these pollutants**, resulting in **black precipitation** (**black rain**).
- **Immediate Health Risks: WHO** warned of a "**real danger**", mainly to **respiratory health**.
  - Risks include **headaches, skin and eye irritation, breathing difficulty, chemical burns** on contact.
  - **Long-term exposure to benzene** (in petroleum mixtures) **increases cancer risk**.
- **Environmental Impact:** Risk of "**forever chemicals**" (Per-and Polyfluoroalkyl substances) from **firefighting foam** contaminating **soil and groundwater**.
  - **Acid rain** may accelerate **building corrosion**.
  - **Toxic compounds** may enter the **food chain through** contaminated vegetation.
- **Historical Precedent: Hiroshima nuclear attack–** radioactive black rain spread contamination beyond the blast zone.

Denmark Eliminates Mother-to-Child Transmission of HIV and Syphilis

Denmark has been certified by **WHO** as the **first European Union country** to eliminate **mother-to-child transmission (EMTCT) of HIV & syphilis**.

- **Elimination of MTCT: MTCT** is transmission of **HIV/syphilis** from **mother to child** during **pregnancy, childbirth, or breastfeeding**, causing infant infections, stillbirths, neonatal deaths, or congenital diseases.
- **WHO Criteria for EMTCT:** Transmission rate: < 50 per 100, 000 live births.
  - **Coverage: > 95% of pregnant women** tested & treated.
- **Global Context: 20+ countries/territories** validated or progressing toward **EMTCT**.
  - **Examples:** Anguilla, Antigua (Caribbean); Brazil (South America); Botswana (Africa); Malaysia, Maldives (Asia).
- **WHO's Triple Elimination Strategy:**
  - **Goal:** Eliminate **HIV, Syphilis, and Hepatitis B** transmission.
  - **Four Pillars:** Universal antenatal care; Integrated maternal infection testing; Effective treatment protocols; Strong health systems with community engagement and human-rights protections

- **HIV**: Virus that **attacks CD4 cells of the immune system**; untreated infection leads to **AIDS**, increasing vulnerability to **severe infections and cancers**.
- **Syphilis**: **Bacterial infection** caused by **Treponema pallidum**, transmitted through **sexual contact**; progresses from **painless sores** → **rashes** → **severe heart and brain damage if untreated**.

Kappatagudda Wildlife Sanctuary

Karnataka HC directed the **State govt.** to include the **omitted 55 sq. km reserve forest area** into **Kappatagudda Wildlife Sanctuary (Gadag, Karnataka)**, restoring its **originally approved size**.

- The court **dismissed petitions from stone-crushing units** operating within the sanctuary's **Eco-Sensitive Zone (ESZ)**, prioritizing **ecological conservation**.

Kappatagudda Wildlife Sanctuary

- **Unique Conservation Goal: Only Wildlife Sanctuary in Karnataka** declared specifically for conservation of wild flora, protecting an endemic gene pool of medicinal herbs and grasses.
- **Ecosystem & Landscape:** Known as the **"Western Ghats of North Karnataka. "** A dryland ecosystem with scrub jungles, grasslands, and patches of dry deciduous and riverine forests in valleys and depressions.
- **Hydrological Significance:** Major catchment area for **River Tungabhadra**.
- **Faunal Diversity:** Leopards, Indian Wolves, Striped Hyenas, Blackbucks, Four-Horned Antelopes.
- **Ecological Threats:** Habitat fragmentation, encroachment, overgrazing, illegal firewood collection, poaching.

Hexagon of Alliances

Israel announced the **"Hexagon of Alliances, " a strategic framework to unite moderate powers** across the Indo-Pacific, Eastern Mediterranean, Gulf, and Africa amid growing geopolitical competition in the Middle East and the Horn of Africa.

- **Objective:** Create a **six-sided network of like-minded nations** to counter:
  - **Axis of Resistance led by Iran** (Hezbollah, Hamas, Houthis, Iraqi militias)
  - **Radical Sunni axis** (ISIS remnants, Muslim Brotherhood-affiliated groups)

- **Key partners: India** positioned as a **central pillar**; other core members include **Israel, Greece, Cyprus**.
- **Possible expansion: Arab, African, and Asian nations** (e. g., **Ethiopia, UAE**).
- **Focus areas:** Defence cooperation, intelligence sharing, technology, diplomacy, and security coordination.
- **Strategic significance:** Evolution of existing groupings such as **Abraham Accords**, **India–Israel strategic ties**, and **I2U2 (India–Israel–UAE–US)**; aims to link **Indo-Pacific to the Mediterranean** through moderate nations.
- **Geopolitical implications:** Seen by supporters as a **counterweight to radicalism**.
  - Critics question **feasibility due to diverse national interests**.
  - **Turkey & Pakistan** view it as **anti-Turkey/anti-Muslim Ummah**; **Pakistani Senate passed a resolution condemning the plan**.

Megalithic Laterite Rock-Cut Chamber Unearthed in Kerala

A **Megalithic laterite rock-cut chamber** discovered in **Kasaragod, Kerala**, provides insights into **prehistoric burial practices**. It forms part of a **Megalithic burial complex** where **pottery of various shapes and sizes** was interred as part of **ritual beliefs**.

Megalithic Culture

- **About: Prehistoric cultural practice** marked by **large stone structures (megaliths)**.
  - **Megaliths** mainly served as **burial sites**, usually located **away from habitation areas**.
- **Time Period (South India): 1000 BCE – 100 CE**; peak b/w **600 BCE – 100 CE**.
  - Represents a **full-fledged Iron Age culture** in South India.
  - **Iron objects** such as **weapons and agricultural implements** have been widely found.
- **Geographical Distribution:** Main concentration in the **Deccan**, esp. **south of the Godavari River**.
  - Key sites: Brahmagiri, Chandravalli **(Karnataka)**; Junapani, Khapa, Muhurjhari **(Maharashtra)**; Adichanallur **(TN)**.
  - Also found in **Punjab Plains, Indo-Gangetic basin, Rajasthan, Gujarat**, and **Burzahom (J&K)**.
- **Subsistence & Culture:** Economy based on **agriculture, hunting, fishing, and animal husbandry**. **Rock paintings** depict **hunting, cattle raids, and group dancing**.

India-Nepal MoU for Transboundary Conservation

India and Nepal signed an **MoU** to promote bilateral cooperation in **forests**, **wildlife**, **environment**, **biodiversity conservation**, and **climate change**.

- **Landscape-Level Conservation:** Joint biodiversity planning; focus on **flagship species**: Elephant; Gangetic Dolphin; Rhinoceros; Snow Leopard; Tiger; Vultures.
- **Transboundary ecosystems:** Corridor restoration + habitat interlinking.
  - **Khata Corridor:** Bardia National Park ↔ Katarniaghat WLS
  - **Valmiki–Chitwan link:** Valmiki TR ↔ Chitwan NP + Parsa Wildlife Reserve
- **Wildlife crime control:** Capacity building of frontline enforcement; curb poaching — **Rhino horn, Tiger parts (skin, bone, claws, teeth), Elephant ivory**.
- **Multilateral alignment:** Cooperation under **IBCA**, CBD, 1992, CITES, 1973, etc.

India-Sweden SITAC Partnership

IndiaAI Mission & **Business Sweden** signed **Statement of Intent (SoI)** during **India AI Impact Summit 2026** to enhance bilateral cooperation in **AI & digital technologies**.

- **Launch of SITAC:** Establishment of **Sweden–India Technology and Artificial Intelligence Corridor**.
  - Platform for structured engagement among: Governments; Industry & startups; Academic institutions.
- **Key Focus:** Develop & deploy **AI solutions for real-world industrial and societal use**.
  - Promote innovation, economic growth & sustainable development.
  - Address AI-related risks responsibly.
- **Strategic Synergy:** Aligns **IndiaAI Mission** (compute, data, talent ecosystem) with Sweden's strengths in **industrial innovation, advanced R&D, and responsible AI**.

Other India-Sweden Technological Partnership

- **Joint Declaration on India–Sweden Innovation Partnership (2018):** Foundational framework for bilateral tech cooperation.
  - Based on **co-funding & co-creation**. Focus sectors: **Smart Cities, AI, Green Energy**, sustainable solutions.
- **India–Sweden ITP-2023:**
  - **Focus: Decarbonisation of heavy industries** (steel, cement).
  - **Tools:** Low-carbon technologies, **carbon capture**, hydrogen use, AI optimisation.
  - **Mode:** Joint innovation, pilot projects & knowledge sharing.

Renaming Kerala to "Keralam"

The Union Cabinet has approved the proposal to change the name of the State of **Kerala** to **"Keralam. "** A Bill titled **Kerala (Alteration of Name) Bill, 2026** will be processed under **Article 3 of the Constitution**. The move follows a **2024 resolution by the Kerala Legislative Assembly** requesting the change.

Constitutional Procedure for Renaming a State

- **Article 3:** Parliament has exclusive power to alter a State's name, area, or boundaries (simple majority; not a Constitutional Amendment under Article 368).
- **Initiation:** State Assembly passes resolution → sent to Ministry of Home Affairs (MHA).
- **Clearance:** MHA seeks NOCs (Railways, IB, Posts, Survey of India, Registrar General, etc.); Law Ministry concurrence required.
- **Presidential Role:** Bill introduced in Parliament only with prior recommendation of the President.
  - Draft Bill referred to concerned State Legislature for views (within a time limit).
  - Parliament not bound by State's opinion.
- **Final Step:** After passage, Presidential assent → First Schedule amended → name change becomes law.
- **Kerala Case:** Proposal to change "Kerala" to "Keralam" in First Schedule and all Eighth Schedule languages.
- **Precedents:** Uttaranchal → Uttarakhand (2007); Orissa → Odisha (2011).

The Origins of 'Keralam'

- **Epigraphic Reference:** Mentioned as **"Keralaputra"** in Ashoka's Rock Edict II (257 BCE), linked to the Chera dynasty.
- **Etymology:**
  - From **"Cheram/Cheralam"** (Herman Gundert).
  - *Cher* = "to join"; *Alam* = "land" → "Joined/Integrated land" (Gokarnam to Kanyakumari).
- **Aikya Kerala Movement:** 1920s demand to unite Malayalam-speaking regions (Malabar, Kochi, Travancore).
- **State Formation (1956):** Based on SRC (Fazl Ali Commission) recommendation.
  - Formed on **1 Nov 1956** (**Kerala Piravi Day**).
  - Constitution records name as "Kerala" instead of "Keralam.

PORTALS & APPS

PRISM-SG Portal

Recently, the Government launched the PRISM-SG (Portal for Rail-Road Inspection & Stages Management – Steel Girders) Portal in New Delhi to improve efficiency, transparency, and coordination in infrastructure development.

- **Purpose:** Developed to digitise approval and inspection processes related to construction of Road Over Bridges (ROBs).
  - **Covers critical components such as:** Quality Assurance Plan (QAP); Welding Procedure Specification Sheet (WPSS); Fabrication stage inspection of steel girders
- **End-to-End Digital Functionality:** Online submission of documents; Scrutiny and query management; Approval processes; Scheduling of inspections; Uploading inspection reports, photographs, and test results
- **Transparency & Monitoring:** Provides complete audit trail. Enables real-time monitoring capabilities
- **Integration of Stakeholders:** Brings together– Road Owning Departments; Indian Railways; Contractors; Fabricators; Inspection agencies

SPECIES IN NEWS

Project Great Indian Bustard (GIB)

Project GIB entered its **4th year of captive breeding** with **two chicks hatched at the Rajasthan Conservation Breeding Centre**, raising the **captive population to 70 birds**.

- **About GIB:** Critically endangered bird, **State bird of Rajasthan**, and flagship species of grassland ecosystems.
- **Bustard Species in India:** Great Indian Bustard, Lesser Florican, Bengal Florican, Macqueen's Bustard.
- **Traits: Omnivorous**; highly vulnerable to **power line collisions** due to **poor frontal vision**.
- **Distribution:** Among the **heaviest flying birds in the world**, mainly in **Thar Desert (Rajasthan)** with small populations in **Gujarat, Maharashtra, Karnataka, Andhra Pradesh**.
- **Conservation Status: IUCN** – Critically Endangered, **CITES** – Appendix I, **CMS** – Appendix I, **Wildlife (Protection) Act, 1972** – Schedule I.
- **Conservation Efforts:**
  - **Project GIB (2018):** Joint initiative of **MoEFCC, Wildlife Institute of India (WII), Rajasthan Forest Department**.
  - Covered under **Integrated Development of Wildlife Habitats scheme**.
  - **Captive breeding centre (2019)** at **Desert National Park, Jaisalmer** to breed and release birds into the wild.

India's 1st Comprehensive Checklist of Fireflies

Scientists compiled the **first checklist of Indian fireflies using 260+ years of records (1881–2025)**, identifying 92 species across 27 genera.

- It aims to fill the **gap in modern literature and serve as a baseline for future taxonomic research**.

Key Findings

- **High Endemism:** >60% species endemic to India; **50+ species not recorded again since their first description in the 1800s**.
- **Geographical Distribution:** Recorded across **22 States and 1 UT**.
  - **Western Ghats:** 25.33% (highest)
  - **North East:** 22.66%
  - **Gangetic Plain:** 17.33%
  - **Deccan Peninsula:** 13.33%
  - **No records in Desert and Semi-Arid zones**.

Firefly

- **About: Soft-bodied beetles** of family **Lampyridae** under order **Coleoptera (beetles)**; known for **bioluminescence (light production)**.
- **Bioluminescence Mechanism:** Light produced by reaction of **luciferin + luciferase + oxygen + ATP**; occurs in a **photophore (light-emitting organ) on the abdomen**.
  - Produces **yellow-green "cold light"** with **~100% energy efficiency and almost no heat**.
- **Purpose:**
  - **Adults: Mating communication** through species-specific flash patterns.
  - **Larvae (glowworms): Warning signal (aposematism)** to predators indicating distastefulness.
- **Habitat & Behaviour:** Found in **moist, vegetated environments** on all continents **except Antarctica**; prefer **forests, fields, wetlands**; active **at dusk and night (crepuscular/nocturnal)**.
  - **Rapid decline** due to **light pollution & urbanisation**, highlighting the need for **research and conservation**.

Botswana Cheetah Translocation to India

Nine cheetahs were translocated from **Botswana** to **Kuno National Park (MP)**, advancing India's cheetah reintroduction project.

- **Current Population: 48 cheetahs** in India, including **29 cubs born at KNP**.
- **Previous Introductions:** 8 from Namibia (Sept 2022); 12 from South Africa (Feb 2023)
- **Botswana's Cheetah Significance:** Hosts **~24% of global population (7, 100 individuals)**; **76.9%** live on community/commercial farmlands, adapted to human-dominated landscapes.

Project Cheetah

- **Launched:** 2022 (under **Project Tiger**); aims to reintroduce cheetahs extinct in **1952**; world's first intercontinental wild carnivore translocation project.
- **Governance:** Implemented by **NTCA** with **MP Forest Dept.** and **WII**; **Steering Committee (2023)** for oversight.
- **Cheetah Habitat Designation: Kuno NP** & **Gandhi Sagar WLS** (MP); **Nauradehi WLS** identified for future expansion.
- **Community Support: 350+ 'Cheetah Mitras'** for awareness & conflict mitigation.

MISCELLANEOUS

Smog-eating Photocatalytic Coating

Delhi Govt partnered with IIT Madras to test "smog-eating" photocatalytic coatings on urban surfaces to reduce air pollution.

Key Points

- **About:** To deploy **photocatalytic coatings powered by Titanium dioxide (TiO_2)**, a stable, relatively inexpensive, and commercially available material.
  - Sunlight activates TiO_2 to break down pollutants like NO_2 and VOCs into safer substances.
  - Applied on roads, buildings, and pavements for continuous passive air cleaning.
- **Benefits:** Helps reduce formation of secondary pollutants like ozone and secondary particulate matter.
  - Works as a decentralized, zero-energy system (unlike Smog Towers or weather-dependent Cloud Seeding) complementing measures like GRAP.
- **Challenges:** Effectiveness limited by low sunlight, dust accumulation, and wind conditions.
  - May cause nitrate runoff leading to eutrophication in water bodies (Yamuna).
  - Does not directly remove primary pollutants (PM2.5/PM10).

RELIEF Scheme and P&I Club

Union Government introduced the **Rs 497 crore Resilience & Logistics Intervention for Export Facilitation (RELIEF) scheme** to provide **credit insurance at pre-conflict rates** for exporters (**MSMEs**) affected by the **West Asia crisis**, and is also exploring a **domestic Protection & Indemnity (P&I) club** to protect **shipping operations in the Strait of Hormuz**.

RELIEF Scheme

- **About:** Launched by **Ministry of Commerce & Industry**; provides **financial surety** to exporters amid **West Asia maritime risks**

- **Three-Part Framework:**
  - **Component 1:** Existing **ECGC Ltd. (Export Credit Guarantee Corporation) cover**; **pre-disruption premiums** (14th Feb–15th Mar 2026); up to **100% loss cover** (war risks)
  - **Component 2:** New exporters; **ECGC cover (16th Mar–15th Jun 2026)**; up to **95% loss cover** (excluding energy shipments)
  - **Component 3:** MSMEs without prior insurance; cap **Rs 50 lakh/exporter**
- **Geographic Coverage:** UAE, Saudi Arabia, Kuwait, Qatar, Oman, Bahrain, Iraq, Iran, Israel, Yemen

P&I Club Initiative

- **About: Mutual, non-profit associations** of shipowners for **third-party maritime liability insurance**
- **Coverage:** Crew injury, pollution, cargo damage, collisions, legal liabilities
- **Global Role: International Group of P&I Clubs** covers ~**90%** of global fleet

Small Hydro Power Development Scheme

The **Union Cabinet** approved the **Small Hydro Power (SHP) Development Scheme** (FY 2026-27 to FY 2030-31) with **Rs 2, 584 crore** to install **~1, 500 MW** and boost **decentralized clean energy**.

- **Project Scope:** Supports **1–25 MW** projects; focus on **hilly, NE States & districts with international borders**
- **Central Financial Assistance (CFA):**
  - **NE & Border Areas: Rs 3.6 cr/MW** or **30% of project cost** (lower); max **Rs 30 cr/project**
  - **Other States: Rs 2.4 cr/MW** or **20% cost** (lower); max **Rs 20 cr/project**
- **Proposed Benefits: Socio-Economic Impact: Rs 15, 000 crore** private investment; **51 lakh person-days** employment (construction); long-term jobs (**40–60 years**) in remote areas
  - **Atmanirbhar Bharat: 100% indigenous** machinery; boosts domestic manufacturing
  - **Environmental Benefits:** Minimal **land acquisition, deforestation, displacement** vs large dams
  - **Technical: Decentralized** → lower transmission losses & reduced long-distance infrastructure
- **Future Pipeline: Rs 30 crore** for **Detailed Project Reports (DPRs)** of ~**200 future projects**

Guillotine Procedure

Lok Sabha approved **Demands for Grants worth over ₹53 lakh crore for 2026–27** using **Guillotine procedure**. Most **ministry expenditures passed without detailed discussion**.

- **Meaning of Guillotine:** Clubbing & fast-tracking of Demands for Grants.
  - All pending demands **voted together without discussion** due to time constraints.
- **Budget Process Context:** Post-Budget: **~3-week recess** for **Department-related Standing Committees** to examine demands.
  - **Business Advisory Committee (BAC)** schedules discussion on **selected Ministries**.
- **Application:** On the last day of discussion, **Speaker applies Guillotine**.
  - **All remaining demands put to vote together**, even if not discussed.
- **Implications:** Ensures **timely Budget passage** and avoids **funding crisis**.
  - Reduces **parliamentary scrutiny**, raising **accountability concerns**.
- **Post-Guillotine:** Passage of **Finance Bill & Appropriation Bill**.
  - Authorises spending from **Consolidated Fund of India**.
- **Institutional Significance:** Applies only to **Lok Sabha (power of purse)**.
  - **Rajya Sabha** can only **discuss/recommend**, not vote on Demands for Grants.

Bharat Audyogik Vikas Yojna

Union Cabinet approved **BHAVYA (Bharat Audyogik Vikas Yojna) to establish 100 plug-and-play industrial parks**; outlay–**₹33, 660 crore**.

- **Plug-and-Play Ecosystem:** Pre-approved land + ready infrastructure (100–1, 000 acres). Enables **quick shift from intent to production**.
- **Financial Support:** Up to **₹1 crore/acre** for:
  - ❖ **Core infra** (roads, drainage)
  - ❖ **Value-added infra** (testing labs)
  - ❖ **Social infra** (worker housing)
  - **25% support** for **external connectivity**.
- **Selection Mechanism:** Via **"Challenge Mode"** → ensures **high-quality, reform-oriented and investment-ready proposals** from States and UTs.
- **Strategic Integration:** Aligned with **PM GatiShakti**. Features multimodal connectivity, green energy, underground utility corridors for a no-dig environment.
- **Implementation Framework:** Under National Industrial Corridor Development Programme **(NICDP)** by National Industrial Corridor Development Corporation **(NICDC).**
  - Partnership: **States + Private Sector**.
  - **NICDC** under **DPIIT, Ministry of Commerce & Industry**.

- **Beneficiaries:**
  - **Primary**: Manufacturing units, **MSMEs, startups, global investors**.
  - **Secondary**: Workers, logistics providers, service sector, local communities.

Dark Fleet

China-bound **sanctioned Russian tanker (Aqua Titan)**, part of **'dark fleet'**, diverted mid-route to India

- **Dark Fleet (Shadow Fleet): Aging, often uninsured commercial vessels** used to transport **sanctioned petroleum** (Russia, Iran, Venezuela).
- **Modus Operandi:**
  - **Disabling AIS:** Turn off **Automatic Identification System (AIS) transponders** to **avoid tracking**.
  - **Ship-to-Ship Transfers (STS) Transfers:** Mid-ocean **bunkering** to mix **sanctioned + non-sanctioned oil**.
  - **Flags of Convenience:** Register under **lax-regulation countries** (Panama, Liberia).
    - Use **shell companies** to hide ownership.
  - **Regulatory Loophole:** Under **UNCLOS**, ships must fly a **flag (jurisdiction)**.
    - Weak enforcement on **high seas** → exploitation of **grey zones**.
- **Concerns with Dark Fleet:** Low transparency, regulatory gaps.
  - Environmental risks.
  - Weakens sanctions enforcement.
  - **Geopolitical & compliance risks for India** despite discounted crude.
    - **S&P Global and Ukrainian intelligence– Russia relied heavily on its shadow tanker fleet in 2025,** with India as the main destination. **~5.4 million tonnes (≈55%)** of Russian crude via shadow tankers.

SC Rules Maternity Leave for All Adoptive Mothers

Sc ruled that adoptive mothers are entitled to **maternity leave (no age limit)**, declaring **maternity leave is a basic human right**. **Paternity leave** should be a **social security benefit**.

- **Struck Down Age Restriction: Section 60(4), Code of Social Security, 2020** declared **unconstitutional & discriminatory**.
  - Earlier limited **12-week maternity leave** to adoption of children **below 3 months**.
  - **Adoptive mothers = biological mothers** in rights and responsibilities.
  - Leave cannot depend on **child's age**.
- **Practicality of Adoption:** Adoption process takes **>3 months** → restriction termed **impractical & otiose**.
- **Right to Reproductive Autonomy:** Adoption recognised as **expression of reproductive autonomy**. Family based on **caregiving & emotional bonds**, not just biology.
- **Workplace Equality: Maternity leave** as tool of **"de-familisation"** → reduces dependence on family.
  - Protects **economic independence** and prevents **workplace exclusion**.
- **Addressing Gender Inequality:** Lack of leave → early return to work → childcare shifts to siblings.
  - **Girl child** caregiving → risk of **school dropout**, reinforcing gender inequality.
- **Call for Legal Recognition of Paternity Leave:** Urged **statutory paternity leave**.
  - **Parenthood = shared responsibility**. Absence of fathers affects **bonding & family support**.

National Quantum Mission

Under **National Quantum Mission**, **23 institutions** approved for **quantum teaching labs**; **100+ proposals under evaluation**.

- **About NQM: DST initiative**; outlay **₹6, 003 crore (2023–24 to 2030–31)**.
- **Aim:** Make India a **global leader in quantum technologies** via **R&D ecosystem**.
- **Objectives: Seed, nurture, scale up R&D** in quantum tech. Build **indigenous capabilities** and drive **tech-led economic growth**.
- **Four Key Domains:**
  - **Quantum Computing**: Develop **50–1000 qubit systems** in **8 years**.
  - **Quantum Communication**:
    - **Satellite-based secure links (2000 km)**
    - **Long-distance Inter-city Quantum Key Distribution (QKD)**
  - **Quantum Sensing & Metrology**: High-sensitivity magnetometers, precision atomic clocks.
  - **Quantum Materials & Devices**: Indigenous fabrication of quantum materials/devices.
- **Implementation: Hub-and-Spoke model** with **4 Thematic Hubs** at premier institutions.
- **Strategic Alignment:** Linked to **Digital India, Make in India, Skill India**.
  - Focus on **security, defence, critical infrastructure**.

Reforms in India's Food Safety Framework

MoHFW approved **food sector regulatory reforms** (aligned with **NITI Aayog's High-Level Committee on Non-Financial Regulatory Reforms**) to balance **ease of doing business & food safety**.

- **Perpetual Validity of Licenses**: No **renewals** → reduced **compliance burden for Food Business Operators (FBOs)**.
  - **Stronger State role**: Focus on **enforcement, monitoring, capacity-building**.
- **Revised Turnover Thresholds (from 1st April 2026)**:
  - **Registration**: ₹12 lakh → ₹1.5 crore
  - **State licence**: up to ₹50 crore
  - **Central licence**: above ₹50 crore
- **Deemed FSSAI Registration for Street Vendors:** Registered under the **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014** → benefits 10+ lakh vendors.
  - **MSMEs**: Instant registration, no pre-inspection, less regulatory interaction.
- **Risk-based Inspection Framework**: Tech-enabled, based on commodity risk & compliance history of the FBO.

FSSAI

- **About:** Established under **Food Safety and Standards Act, 2006**; **apex statutory body** for **food regulation**.
  - Operates under **MoHFW**; **Chairperson (Secretary rank)**.
- **Regulatory Functions**: **Frame regulations and standards** for food products, grant licenses**;** conduct **research & risk assessment** on food safety.
- **Key Campaigns:** Eat Right India, State Food Safety Index, RUCO (Repurpose Used Cooking Oil), and Food Safety Mitra scheme.

Economic Stabilisation Fund

Lok Sabha approved **2nd Supplementary Demands for Grants (2025–26)**. **Economic Stabilisation Fund (₹1 lakh crore)** introduced as **fiscal buffer** for **macroeconomic stability & resilience**.

- **Article 115**: Used when **allocated funds are insufficient** under **Appropriation Act**. **President** places **Supplementary Demands for Grants** before **both Houses of Parliament** for approval **before financial year ends**.

Economic Stabilisation Fund

- **About:** Acts as **"financial shock absorber"** against **global risks** (West Asia conflict, oil price spikes, supply disruptions) without breaching **fiscal deficit targets**.
- **Funding**: **₹57, 381.84 crore** via **supplementary demands.** Rest from **savings, recoveries, higher receipts**
  - Managed as **reserve fund** under **Department of Economic Affairs (Ministry of Finance)**.
- **Fiscal discipline**: No **additional borrowing**; no impact on **fiscal deficit target (4.4% for 2025–26 RE)**.
- **Global comparison**: Similar to **stabilisation/sovereign funds** like **Norway (oil price fluctuations)** and **Chile (copper price shocks)**.

US Investigates India and 59 Others Over 'Forced Labour'

US launched a **Section 301 (Trade Act, 1974) investigation** against **India + 59 economies** over **use of forced labour in supply chains**.

- Aims to address **unfair trade advantage** from **lower production costs** harming **US industries/workers**.
  - **Forced labour is seen** as **human rights + national security issue** by **US Trade Representative (USTR)**.
- **Tariff revival strategy** after **US SC struck down reciprocal tariffs (2026)**.
- **Covers 60 economies**: India, China, EU, UK, Japan, Australia, Canada, Russia, Bangladesh, Sri Lanka.
  - **Focus:** goods using **imported intermediates** like **cotton/yarn (textiles)**, **critical minerals (solar/electronics)**, **palm fruit (biofuels)**.
- **Impact on India:** Despite **Bonded Labour System (Abolition) Act, 1976**, exports face scrutiny due to **Chinese inputs**.
  - **Vulnerable sectors: Solar panels** (Chinese polysilicon); **Electronics** (Chinese sub-assemblies); **Textiles/garments** (imported fabrics)
  - Separate US probe on **"excess manufacturing capacity"** in **solar modules, petrochemicals, steel**.
  - **Possible outcomes:** heavy tariffs/trade restrictions. Exporters may need **strict traceability mechanisms** to prove **no forced labour**.

First Export of Assam's Joha Rice

APEDA, under the Ministry of Commerce & Industry, facilitated the **1st export consignment of GI-tagged Joha Rice from Assam to the UK & Italy**.

Joha Ricespeci

- **About**: Aromatic short-grain winter paddy grown in **Assam & Northeast India**, known for **distinct fragrance, fine texture, and rich taste**.
- **Varieties: ~22 traditional varieties**; notable ones include **Kola Joha, Kunkuni Joha, Keteki Joha**.
- **Key Features:**

- **Anti-diabetic properties:** Helps **lower blood glucose levels** and may **prevent diabetes**.
- **Healthy fatty acids:** Contains **linoleic acid (omega-6)** and **linolenic acid (omega-3)** supporting metabolic & cardiovascular health.
- **Balanced fatty acid ratio: Optimal omega-6: omega-3 ratio**, nutritionally superior to many rice varieties.
- **Rich in bioactive compounds:** Contains **antioxidants, flavonoids, and phenolics** such as **oryzanol, ferulic acid, and tocotrienol** with **antioxidant, hypoglycaemic, and cardio-protective benefits**.

- **Challenges:** Low productivity & yield leading to **declining cultivation** and risk of **extinction of traditional varieties**.

Shortage of Cybersecurity Talent in India

India's **enterprise sector faces a major security crisis** due to a **severe shortage of skilled cybersecurity professionals**, leaving **critical digital assets vulnerable to advanced cyberattacks**.

- **Talent Deficit: ~3.8 lakh cybersecurity professionals** against demand of **>1.2 million**, with a **30–40% shortfall** in roles needing **cloud, platform, and enterprise risk expertise**.
  - **Critical Skill Gaps:** Identity & access architecture, threat intelligence, platform security, privileged access management, digital forensics, cloud-native security.
- **Extended Hiring Cycles: Average hiring time >90 days**; **offer acceptance rate ~70%**, down from **80–85% earlier**.
- **Leadership Vacuum:** Shortage creates a "**strategic vacuum"**, causing slower threat detection, fragmented response, higher remediation costs, and delayed compliance.
- **Escalating Threats:**
  - **Spyware attacks ↑ 273% (H1 2025)** targeting sensitive corporate data.
  - **Password-stealing malware ↑ ~18% to 111, 281 incidents**.
  - **DSCI report: 265.52 million malware detections (Oct 2024–Sep 2025)** across enterprise endpoints (**~505 per minute**).
- **Organisational Response: 92% of senior IT security professionals** prefer **outsourcing security operations** or adopting **Security Operations Center as a Service (SOCaaS) models** for specialised expertise and 24×7 monitoring.

US Launches Section 301 Probe into India

US launched a **Section 301 investigation under the Trade Act, 1974** into **16 major trading partners, including India**, over alleged structural excess manufacturing capacity.

- **Trigger: US SC struck down tariffs imposed under emergency powers**, prompting the administration to use **Section 301** to maintain **trade pressure**.
- **Legal Basis:** Under **Section 301 of the US Trade Act, 1974**, the **USTR** can investigate **foreign trade practices considered "unfair" or burdensome to US commerce**.
- **Rationale for the Investigation: USTR** will examine if countries maintain **"structural excess manufacturing capacity"** through subsidies, SOEs, subsidised lending, currency practices, suppressed wages, and lax labour/ environment standards, distorting trade and harming US industries.
  - **US 2025 order** cited **India's $58 billion trade surplus with the US**, especially in textiles and automotive goods.
  - **Sectors with Excess Capacity– Solar modules** (capacity **~3× domestic demand**), along with **petrochemicals and steel**.
- **Potential Consequences:** If violations are found, the US may impose tariffs, import restrictions, or suspend trade concessions. In 2018, the US used Section 301 to impose **up to 25% tariffs on ~$370 billion of Chinese imports**.
- **WTO Compatibility Debate:** In **1998**, the **EU challenged Section 301 at the WTO** (with **India, Brazil, China** as third parties). A WTO panel ruled that key provisions **did not violate global trade obligations**.

Peptide Therapy

Rising **global interest in peptide-based therapies** for **disease treatment and wellness** has created **medical opportunities** but also **safety concerns**, prompting calls for **greater caution and regulation**.

- **Definition: Short chains of amino acids (2–50)**; essentially **smaller versions of proteins** (proteins usually have **50+ amino acids**).
- **Biological Role:** Act as **signaling molecules** functioning as **hormones, neurotransmitters, and local regulators**, controlling **me**tabolism, immune response, and tissue repair.
- **Peptide Therapy:** Uses **synthetic or natural peptides** that **mimic the body's signaling molecules**.
  - Work through **"lock-and-key" binding to specific cell receptors**, producing targeted biological responses with fewer side effects.
  - Usually given via **subcutaneous injections** as peptides are easily broken down by digestive enzymes.
- **Major Clinical Applications: Peptide-based medicines** are increasingly used to treat conditions like diabetes, cancer, infertility, growth disorders, and hormonal diseases.

- A major example is **GLP-1–based peptide drugs**, widely used to **regulate blood sugar and appetite in diabetes and obesity treatment**.
- In **oncology**, peptides can **target tumour receptors or deliver drugs directly to cancer cells**, improving treatment precision.
- In **regenerative medicine**, peptides are being studied for **tissue repair in muscles, nerves, and tendons**.
- Peptides are also being explored in **dermatology, wound healing, osteoporosis, cardiovascular diseases, and viral infections**.

- **The Danger of Misuse:** Biohacking & anti-ageing trends have led to **self-injection of unapproved "research chemicals" bought online**.
  - Lack of **human clinical trials** poses risks like **endocrine imbalances, metabolic disturbances, and severe cardiovascular problems**.

Rollback of Seismic Code of 2025

Bureau of Indian Standards (BIS) withdrew the **2025 seismic code (IS 1893)** after concerns from the **Ministry of Housing and Urban Affairs (MoHUA)**, restoring the **2016 version of IS 1893**.

- **MoHUA Concerns:** Expected **construction cost increase** of **~10–15% for buildings (Zones V & VI)** and **up to 50% for infrastructure projects**, and **inadequate stakeholder consultation** before finalising the code.
  - Based on **advanced methods** such as **Probabilistic Seismic Hazard Assessment (PSHA)**, **active fault mapping**, and **near-fault effects**.
- **Seismic Code:**
  - **Definition:** Regulations ensuring **buildings/structures withstand earthquake forces**, minimizing **collapse, damage, and loss of life**.
  - **Current Standard (March 2026): IS 1893 (Part 1): 2016** issued by **BIS**.
    - **Seismic Zones in India: Zone II:** Low; **Zone III:** Moderate; **Zone IV:** High; **Zone V:** Very High. **~59% of India's landmass** is **earthquake-prone**.

SC Clarifies OBC Creamy Layer Criteria

SC ruled that **parental income alone cannot determine the "creamy layer" status of OBC candidates**, clarifying confusion in **reservation rules for civil services examinations**.

- **Quashing 2004 Clarificatory Letter:** SC resolved confusion between **1993 DoPT Office Memorandum** and **2004 clarification**.
  - **1993 DoPT OM: Salary and agricultural income not counted** in creamy layer income test.
  - **2004 clarification:** Included **salary of PSU/private sector employees**, causing **unequal treatment** with **government employees' children**.
- **Status-Based, Not Purely Income-Based:** SC held creamy layer determination must be **status-based**, considering **parent's employment status and post category (Group A/B/C/D)**, not only income.
- **Constitutional Validity:** SC held the policy caused **hostile discrimination** by allowing **children of lower-tier government employees** to retain OBC benefits despite higher salaries, while **PSU/private sector employees' children** were excluded once income crossed **₹8 lakh**.
  - This treated **equals unequally**, violating **Articles 14, 15, and 16**.
- **Relief for PSU/PSB Wards:** The verdict may **expand OBC reservation eligibility**, especially for **children of PSU and private sector employees** earlier excluded due to **salary-based criteria**.
  - SC directed the **government to create supernumerary posts** if needed to **accommodate candidates wrongly excluded earlier**.
- **Creamy Layer:**
  - **Origin:** Introduced in **Indra Sawhney v. Union of India (1992)** to **exclude socially advanced OBCs from reservation**.
  - **Existing Rules: Children of Group A officers** or those promoted before age 40 are excluded from OBC quota.
    - **Children of two Group B officers** also fall under **creamy layer**.
    - For **non-government occupations**, **income limit: ₹8 lakh per year (since 2017)**.

PM SETU Scheme

Ministry of Skill Development and Entrepreneurship has constituted a **National Steering Committee (NSC)** as the **apex body** to guide the **PM SETU Scheme**, aimed at upgrading ITIs and improving employability outcomes.

- **About: Vocational education and training upgradation scheme** approved by **Union Cabinet (2025)** with a **₹60, 000 crore budget** to align **skill training with modern industry needs**.
  - Shifts from government-driven training to industry-led skilling, with companies involved in curriculum, training methods, and infrastructure.
- **Hub-and-Spoke ITI Upgradation: 200 "Hub" ITIs** with **advanced infrastructure** will mentor **~4 nearby "Spoke" ITIs** each.

- Sharing of modern equipment, digital learning resources, and specialised training facilities.

- **Strengthening NSTIs: Five NSTIs** (**Bhubaneswar, Chennai, Hyderabad, Kanpur, Ludhiana**) to be upgraded as global Centres of Excellence.
- **Special Purpose Vehicle (SPV) Governance:** Each upgraded **ITI** managed through **SPV** with **51% industry ownership** and **49% government**.
  - **Industry partners** eligible for up to **83% government funding** for infrastructure and training upgrades.
- **Industry Participation: Ministry of Skill Development and Entrepreneurship** invited **Anchor Industry Partners (AIPs)** through **Expression of Interest (EOI)** to upgrade training institutes.
- **Modern Training Ecosystem:** SPVs can propose curriculum redesign, improved training models, infrastructure upgrades, and industry exposure.
  - **Directorate General of Training** introduced **31 new-age courses** under **Craftsmen Training Scheme (CTS)**.
  - **Target Sectors:** Advanced manufacturing, electronics, mobility, logistics.

Garo Hills Autonomous District Council

Garo Hills Autonomous District Council (GHADC) elections in Meghalaya were postponed due to unrest after a Feb 2026 notification mandating that all candidates **must possess a ST certificate** to contest.

- **Opposition from Non-Tribal Communities: Non-tribal residents of the plains belt**, largely **Muslim communities**, opposed the rule as **unconstitutional and exclusionary**.
  - They argue it **restricts democratic participation** in **five Muslim-dominated GHADC constituencies** and that only Parliament can amend Sixth Schedule provisions.
- **ADCs in Meghalaya: Three ADCs–** Garo Hills, Khasi Hills, Jaintia Hills.
  - **30 members:** 29 elected, 1 nominated by the Governor.
- **Coordination: District Council Affairs Department (State Government)** coordinates b/w **District Councils** and other **state government departments**.

Autonomous District Councils

- **Administrative Structure: Sixth Schedule areas** in **Assam, Meghalaya, Tripura, Mizoram** organised into **Autonomous Districts and Regions** governed by **District and Regional Councils**.
  - **Governor** can **create, alter, or reorganise** these units.
- **Composition & Tenure: ADC–** up to **30 members (26 elected, 4 nominated by Governor)** with **5-year tenure**.
  - **Exception:** Bodoland Territorial Council – 46 members.
- **Legislative Powers:** Can make laws on **land, forests** (excluding reserved forests), **inheritance, marriage, social customs**, and **regulation of moneylending and trade by non-tribals**, subject to **Governor's assent**.
- **Applicability of Laws: Central and State laws** do **not automatically apply** to **Sixth Schedule areas**; applicability depends on **Governor's or President's notification**.

Cabinet Extends Jal Jeevan Mission Till 2028

The **Union Cabinet** approved extension of **JJM** till **Dec 2028** with an **enhanced outlay of ₹8.69 lakh crore**, focusing on **structural reforms in rural drinking water supply under JJM 2.0**.

- **Target:** Certification of all **Gram Panchayats as "Har Ghar Jal"** by providing tap water connections to **19.36 crore rural households by Dec 2028**.
  - Currently, **~15.80 crore (81.61%) households** have connections.
- **Digital governance: Sujalam Bharat framework** to assign each village a **unique Sujal Gaon/Service Area ID** and digitally map the water supply system from source to tap.
- **Community ownership: Gram Panchayats and Village Water Sanitation Committees** involved through **"Jal Arpan"**; **Har Ghar Jal certification only after ensuring O&M mechanisms**.
- **Strategic vision:** Move from infrastructure-centric to citizen-centric utility service, aiming for **24×7 rural drinking water supply under Viksit Bharat @2047**.

WHO (Impact of JJM): 5.5 crore hours/day saved from **women's menial work**. 4 lakh diarrheal deaths prevented. **14 million Disability Adjusted Life Years (DALYs) saved.**

Easing of FDI Curbs from Land-Bordering Countries

Union Cabinet eased **Press Note 3 (2020)** restrictions, allowing **limited investments from countries sharing land borders with India (including China)** while **retaining safeguards for strategic sectors**.

- **PN 3 (2020):** Mandates **government approval for FDI from countries sharing land borders with India**.
  - Mainly targets **Chinese investments**; **Bangladesh and Pakistan already follow the government route**, while investments from **Nepal, Myanmar, Bhutan, and Afghanistan remain minimal**.
  - Introduced during the **Covid-19 pandemic** to prevent **opportunistic takeovers of Indian companies** and continued after the **Galwan Valley clash** due to **national security concerns**.

Revised FDI Norms

- **10% automatic route threshold: Non-controlling beneficial ownership up to 10%** from **land-bordering countries** allowed under **automatic route**, subject to **sectoral caps and conditions**.
- **Targeted sectors:** Capital goods, electronic capital goods, electronic components, polysilicon, ingot-wafers for solar cells. **Strategic sectors (e.g., semiconductors)** remain **restricted**.
- **Ownership & control conditions**: Majority ownership/ control must remain with resident **Indian citizens or Indian-owned entities**; **beneficial ownership test** applied at investor entity level to prevent proxy investments.
- **Time-bound clearance: 60-day deadline** for processing investment proposals.
- **Mandatory reporting:** Investee entity must report details to DPIIT.
  - **Committee of Secretaries (headed by Cabinet Secretary)** empowered to revise the list of permitted sectors.
- **Reasons for Policy Shift: Economic Survey 2023–24** recommended **Chinese investment in non-strategic sectors** to boost **exports and Atmanirbhar Bharat**.
  - **PN3 restrictions** were impacting **global PE & VC funds** with **minor Chinese backing**.
  - Response to **global supply-chain disruptions** linked to tensions around the **Strait of Hormuz**.
  - Reflects **India–China diplomatic thaw**, including **Kailash Mansarovar Yatra resumption** and **restoration of direct flights**.

MHA Revises Guidelines for Look Out Circulars

MHA modified **LOC** guidelines, restricting power to **directly order the Bureau of Immigration (BoI) to stop a person's departure**.

- **Restriction on Statutory bodies**: **NCW, NHRC, NCPCR, and NCLT** are barred from directly requesting the BoI to open an LOC.
  - **LOC requests must be routed through a law enforcement agency** with criminal jurisdiction (e. g., Police, CBI).
- **Standardised Actions:** LOC proforma updated with **3 standardized actions**:
  - Detain & inform the originator (agency that sought the LOC)
  - Prevent departure & inform the originator
  - See remarks for action.
- **Intelligence Agency Prerogative: "See remarks" category** can be used only by IB, R&AW, CBI, NIA, and State Anti-Terrorism Squads, only for counter-terrorism purposes.
  - It allows a **flexible or non-standardized response** in **sensitive national security situations**.
- **Handling Court Orders: BoI** must **inform the originating agency immediately**; the agency must **respond within 7 working days**. The person cannot leave India until BoI updates the LOC status as per the court's direction.
- **Custody timelines:**
  - **Originating agency must take custody within 3 hours** if a person is detained under an **LOC**.
  - If not, the person is **handed over to local police**.
  - The **originator has 24 hours to assume formal custody**.

LOC

- Issued to **prevent absconding or wanted individuals from leaving the country**
- Used at **immigration checkpoints at international airports and seaports.**
- **BoI** under **MHA** enforces LOCs by **stopping the movement of listed individuals**.

Essential Commodities Act, 1955

Amid **energy uncertainty** from the **US–Israel–Iran conflict** and **West Asian supply disruptions**, **India directed refiners to increase LPG production** under the **Essential Commodities Act, 1955**.

- **US** has temporarily allowed **India to purchase Russian crude oil for 30 days** to **stabilize global energy markets**.
- **Essential Commodities Act, 1955:** Ensures **availability of essential goods at fair prices** and prevents **hoarding, black marketing, and artificial shortages**.
  - Used to curb hoarding, offset retail inflation, and maintain food security.
- **Key Provisions:**
  - **Section 3:** Central Govt. can **control production, supply, and distribution**, impose **stock limits**, **regulate trade**, **fix prices**, and **restrict hoarding**.
  - **Section 5: Powers under Section 3** may be **delegated to State Governments or authorised officers** for enforcement.
- **2020 Amendment:** Centre's power to regulate **cereals, pulses, potatoes, onions, edible oilseeds and oils** limited to **extraordinary circumstances** such as war, famine, extraordinary price rise, or grave natural calamity.
- **LPG under EC Act: Petroleum products, including LPG**, classified as **Essential Commodities**.

- **Current Direction:**
  - Refineries ordered to maximise LPG production and prioritise domestic household supply.
  - **Propane & butane diversion** to petrochemicals prohibited to ensure LPG availability.

RBI's OMO Purchases

RBI announced **Open Market Operation (OMO) purchases worth ₹1 lakh crore** in **two tranches** to **infuse liquidity** into the banking system.

- Each tranche of **₹50, 000 crore** is scheduled ahead of **mid-March advance tax outflows (~₹2 lakh crore)** to **offset the liquidity crunch**.

Open Market Operation (OMO)

- **About: Quantitative monetary policy tool** involving **buying & selling of Government Securities (G-Secs)**, including **dated securities and Treasury Bills**.
- **Liquidity Impact:**
  - **Purchase of securities: Injects liquidity** (expansionary effect).
  - **Sale of securities: Absorbs liquidity** (contractionary effect).
- **Execution in India:** Conducted by **RBI** through **auctions or direct market operations** with primary dealers, commercial banks, and eligible participants via the **E-Kuber electronic platform**.
- **Objectives: Adjust durable liquidity** in the banking system and stabilize short-term rates for effective monetary policy transmission.
  - **Manage inflation** by absorbing excess liquidity or support growth by infusing liquidity during deficits
- **Types of OMOs:**
  - **Outright OMOs: Permanent purchase or sale of securities**, causing **lasting liquidity changes** (e.g., ₹1 lakh crore purchase announcement).
  - **Temporary Operations: Short-term liquidity adjustments** through **Liquidity Adjustment Facility (LAF)** such as **repo and reverse repo operations**.
- **Significance:** Complements **CRR** & **SLR**, enabling the **RBI to fine-tune liquidity**.
  - Helps manage liquidity due to **seasonal factors** (e.g., advance tax outflows), **external shocks**, or **capital inflows** without **changing policy rates**.

Thirumangai Alvar Idol Returned to India

The **Ashmolean Museum, Oxford** returned a **16th-century bronze statue of Saint Thirumangai Alvar** to **India**, identified by the **India Pride Project** using **1957 French Institute of Pondicherry archival photographs** linking it to the **Soundararaja Perumal Temple, Tamil Nadu**.

Thirumangai Alvar

- **About:** 12th and last of the Alvar saints, **Tamil poet-saints devoted to Lord Vishnu** in the **Vaishnava tradition (8th century CE)**.
- **Early Life as a Warrior:** Originally **Kaliyan**, from the **Kallar community**; served as **military commander and chieftain (Thirumangai Mannan)** under the **Chola Empire**; a **skilled archer**.
- **Literary Contribution:** Known as **"Narkavi Perumal"** (excellent poet); authored **1000+ verses**, including **Periya Thirumozhi, Thirunedunthandakam, Thirukkuruthandakam**, part of the **Nalayira Divya Prabandham**.
- **Temple Legacy:** Contributed to **Srirangam Sri Ranganathaswamy Temple (Tiruchirapalli, TN)**; **built one of its walls** and composed **poems on Lord Ranganathan**.
  - Said to have **visited all 108 Divya Desams** (sacred Vishnu temples).
- **Spiritual Significance:** Considered an **incarnation of Vishnu's Sharanga bow**; his life symbolizes transformation from materialism to devotion through bhakti.

Lok Sabha Committee of Privileges

Lok Sabha Speaker has **reconstituted the Committee of Privileges**, which safeguards the rights, privileges, and immunities of the House and its members.

- **Parliamentary Privileges:** Special **rights, immunities, and powers** enjoyed by **Parliament and MPs** to perform their duties without interference.
  - **Article 105:** Privileges of **Parliament and its members**
  - **Article 194:** Privileges of **State Legislatures**
- **Breach of Privilege:** Any act **violating the rights, privileges, or immunities of Parliament or its members**.
- **Committee of Privileges: Standing Committee of Parliament** that examines **breach of parliamentary privilege** cases.
  - **Composition:**
    - ❖ **Lok Sabha Committee: 15 members**, nominated by the **Speaker**
    - ❖ **Rajya Sabha Committee: 10 members**, nominated by the **Chairman**
  - **Functions:**
    - ❖ Examines **breach of privilege** cases
    - ❖ **Investigates** by calling witnesses & examining documents

- ❖ Determines whether **breach of privilege or contempt of the House** occurred
- ❖ **Submits report to the House**, which may **accept, reject, or modify** it
- ❖ **Note: Most privilege notices are rejected**; **punitive action is rare**.

- **Defection Matters:** Under the **Tenth Schedule** and **Members of Lok Sabha (Disqualification on Ground of Defection) Rules, 1985**, the Speaker may refer defection disqualification petitions to the committee for preliminary inquiry.
- **Significance**
  - Protects the **independence & dignity of Parliament**
  - Ensures **accountability for actions obstructing parliamentary functioning**
  - Maintains **discipline and integrity in legislative proceedings**.

IAEA–Iran Dispute Over Alleged Natanz Strike

International Atomic Energy Agency (IAEA) held an emergency meeting in **Vienna at the request of Russia & Iran** following the US–Israel military engagement with Iran.

- **IAEA's Assessment:** No indication of damage to **Iran's nuclear installations** (including **Bushehr** & **Tehran Research Reactor**); **radiation levels normal**.
- **Iran's Claim: US–Israeli airstrikes** targeted **Natanz uranium enrichment facility**, but **no public or technical evidence** of damage.
- **Possible Strategic motive:** Iran has previously used **foreign attacks** to justify suspending **IAEA cooperation**.
  - **Mid-2025 law:** Iran **suspended all cooperation with IAEA inspections**, citing **national security** after strikes.
  - **Diplomatic angle:** Claims of attacks could help **rally support from Russia & China**.
  - **Nuclear policy:** Could justify **higher uranium enrichment** in **"self-defense."**
  - **Transparency:** May **limit transparency** and **restrict information sharing** with **international inspectors**.
- **Iran–IAEA Tensions:** Iran alleges **political bias**, claims **Western influence**, and accuses the agency of leaking **nuclear site coordinates** and **scientists' identities**.

IAEA

- **Established: 1957** within the **UN system**, following **Dwight D. Eisenhower's "Atoms for Peace" speech (1953)** at UNGA.
- **Statute:** Approved by **81 countries in 1956**; **India is a founding member**.
- **Members:** 181 member states (Dec 2025).
- **Headquarters:** Vienna, Austria.
- **Role:** Global **nuclear watchdog** promoting **peaceful uses of nuclear energy** and preventing **military diversion** through **safeguards, inspections, and nuclear safety measures**.

NITI Aayog–JICA Cooperation on SDGs

NITI Aayog and **Japan International Cooperation Agency (JICA)** signed the **Record of Discussions (RoD)** for **"Japan-India Cooperative Actions Towards SDGs – Phase II."**

- **Objective:** Strengthen policy frameworks & implementation across 6 themes — Global Partnership, Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development, Basic Infrastructure.
- **Focus:** Institutional capacity building; improved monitoring & evaluation; SDG localisation in **Aspirational Districts & Blocks**.
- **Activities:** People-to-people exchanges; capacity-building; Japan–India knowledge forums; dissemination of Best Practices.

India-Japan Development Partnership

- **Official Development Assistance (ODA) Support:** Japan, India's largest bilateral donor since **1958**; cumulative **ODA > ₹4.4 lakh crore**; supports **84+ ongoing projects** (transport, energy, water).
- **Joint Vision (Aug 2025):** 8 strategic directions; new target of **USD 68 billion** Japanese private investment over next decade.
- **Recent Financial Commitments: 6 ODA loan agreements (March 2025)** worth **₹11, 181 crore** for infrastructure & sustainable development.
- **Financial Stability: Bilateral Swap Arrangement** renewed at **USD 75 billion** (Feb 2026).

Nucleic Acid Amplification Testing

SC sought details on the **cost, feasibility, and infrastructure** for implementing **Nucleic Acid Amplification Testing (NAT)** in government hospitals, following a **PIL** to prevent transfusion-transmitted infections.

- **Constitutional Angle:** PIL seeks recognition of **"Right to Safe Blood"** under **Article 21**; demands mandatory **NAT** in all blood banks to detect **TTIs** (HIV, HBV, HCV, malaria, syphilis).
- **Regulatory Framework:** Under **Drugs and Cosmetics Act, 1940**, only **serological testing (e.g., ELISA)** is mandatory; **NAT not legally mandatory** nationwide.

- **Thalassemia Crisis:** India termed **"Thalassemia capital of the world. "**
  - Patients need blood transfusions every **15–20 days**, increasing TTI risk if screening is inadequate.
  - Petition cites preventable HIV & Hepatitis cases in **MP, Jharkhand, UP** due to unsafe transfusions.

NAT

- **Molecular technique** detecting viral **RNA/DNA** in donated blood.
- Unlike serology (antibody-based), **directly detects virus**, reducing the **window period** for **HIV, Hepatitis B Virus, and Hepatitis C Virus**.
- Identifies **false reactive** donations, preventing unnecessary discard and enabling accurate donor counselling.

Meningococcal Bacterial Infection

Meghalaya issued a high-level health advisory after two **Agniveer trainees** died due to suspected **meningococcal bacterial infection** at the **Assam Regimental Centre (ARC), Shillong**.

- **Etiology:** Caused by *Neisseria meningitidis* (bacteria); severe, rapidly progressing.
- **Clinical Forms: Meningitis** (inflammation of the brain and spinal cord lining) or **meningococcemia** (a life-threatening blood infection/sepsis).
- **Transmission:** Direct contact with nose/throat discharges.
- **Risk Groups:** Children <5 years; 16–23 years; crowded settings.
- **Treatment:** Immediate antibiotics; mortality **10–15%** even with care.
- **Vaccine:** WHO-recommended **Men5CV**, first conjugate vaccine to protect against the five main causes of meningococcal meningitis

Revamp of FRA Cells into Project Monitoring Units

Ministry of Tribal Affairs will revamp **Forest Rights Act (FRA) Cells** into unified **'one-stop' Project Monitoring Units (PMUs)** to streamline coordination & implementation of tribal policies.

- **FRA Cells:** Sanctioned under **Dharti Aaba Janjatiya Gram Utkarsh Abhiyaan (DAJGUA) (Oct 2024)** to support States with additional human resources.
  - **Aim:** Expedite forest rights claims & digitise records under **FRA, 2006**.
  - **Functions:** Assist in claim processing, documentation, land record digitisation, scheme access, and conversion of forest villages into revenue villages.
- **New PMU Structure:** FRA Cells restructured into unified **Project Monitoring Units (PMUs)**.
  - **State/UT PMU:** 4 officials – FRA support, livelihood support, IT/Management Information Systems (MIS) expert, overall team leadership.
  - **District level:** 2 experts – FRA support and MIS.
- **Rationale Behind the Revamp:** Separate FRA cells increased administrative costs and created silos. Unified PMU to ensure simpler, faster, coordinated implementation.

Standards for Green Ammonia and Green Methanol

Ministry of New and Renewable Energy notified **emission standards for Green Ammonia and Green Methanol** to promote trade of **green hydrogen derivatives** under the **National Green Hydrogen Mission (NGHM)**.

- **NGHM (2023):** Targets by **2030 — 125 GW renewable capacity**, ₹8 lakh crore investment, 6 lakh jobs, ₹1 lakh crore reduction in fossil fuel imports, and 50 million metric tons annual emission reduction.
- **Green Hydrogen:** Produced using **renewable energy (solar/wind) via electrolysis**.
  - Qualifies as **"green" if emissions ≤ 2 kg CO_2 equivalent per kg of hydrogen produced**.
  - Can also be produced from **biomass (e. g., agricultural waste)** within this emission limit.
- **Green Ammonia Threshold: Emission threshold: ≤ 0.38 kg CO_2 equivalent per kg of ammonia** (average over **preceding 12 months**).
  - Produced by combining **green hydrogen (from renewable electrolysis)** with **nitrogen**.
  - Carbon-neutral fuel and fertilizer feedstock; alternative to grey ammonia for shipping, power generation, and agriculture decarbonization.
- **Green Methanol Threshold: Emission threshold: ≤ 0.44 kg CO_2 equivalent per kg of methanol** (average over **preceding 12 months**).
  - Produced from **biomass (bio-methanol)** or **green hydrogen**.
  - **Low-carbon liquid fuel and chemical feedstock; net-zero alternative to fossil methanol**, reducing **GHG emissions by 60–95%**.
- **Eligible carbon sources (Green Methanol):** Biogenic sources, Direct Air Capture (DAC), and existing industrial sources.
- **Strategic significance:** Standards provide **regulatory clarity for investors** and support **decarbonization of hard-to-abate sectors** like **fertilizers, shipping, power, and heavy industry**.

Mars-Like Conditions in Salar de Pajonales

Scientists found that in **Salar de Pajonales in the Atacama Desert**, gypsum acts as a microscopic shield, protecting microbes and preserving their ancient fossils.

Salar de Pajonales

- **About**: Large **playa** (**salt flat**) in northern Chile; western margin of **Altiplano-Puna plateau**; elevation of ~**3, 500 m above sea level.3rd-largest salar** in Atacama Region (after Salar de Atacama & Salar de Punta Negra).
- **Environmental Conditions**: Located in hyperarid core of Atacama Desert; **polyextreme conditions**: extreme aridity, high altitude, intense UV radiation, temperature fluctuations, sulfate-rich mineralogy. Conditions closely resemble those on **Mars**.
- **Hydrological & Geological Features: Endorheic basin** (no outflow), sustained by groundwater. Surface is dominated by evaporitic deposits: **gypsum** (**calcium sulfate dihydrate**) crusts and layered microbial structures (**stromatolites**).
- **Astrobiological Significance as a Martian Analogue:** Gypsum preserves biosignatures (as per studies).
  - Hosts active **extremophile microbial communities** (halophilic bacteria & archaea) in protected microhabitats.
  - Fossilized microbes and molecular biosignatures in gypsum date back **thousands of years**.
- **Implications for Mars Exploration: Gypsum** shields biological material from desiccation & radiation.
  - As gypsum is abundant on **Earth and Mars**, such deposits are prime targets for orbiters and rovers to search for ancient life.

Total Lunar Eclipse

A **total lunar eclipse** will occur on 3rd March 2026, visible across most of **India**, eastern Asia, Australia, the Pacific Ocean, and the Americas.

Lunar Eclipse

- **About:** Occurs when **Sun–Earth–Moon** align (**syzygy**) during **Full Moon** and Moon passes through **Earth's shadow**.
- **Earth's Shadow Structure**
  - **Umbra:** Dark inner region; sunlight completely blocked.
  - **Penumbra:** Outer lighter region; sunlight partially blocked.
- **Types**
  - **Penumbral:** Moon passes only through penumbra; slight dimming.
  - **Partial:** Part of Moon enters umbra; partial darkening.
  - **Total:** Entire Moon in umbra; complete eclipse.
- **Observational Features:** Visible from entire **night side of Earth** (where Moon is above horizon).
  - **Safe for naked-eye viewing**.
- **Blood Moon (Total Eclipse):** Reddish appearance due to **Rayleigh scattering**: Earth's atmosphere scatters blue light and refracts red wavelengths onto Moon.

CERT-In Framework for Space Cyber Security

CERT-In and SIA-India have released a Space Cyber Security Advisory Framework to safeguard India's space assets.

- It promotes **resilience, accountability, proactive risk management**, and adoption of **"secure-by-design" architecture** in India's space ecosystem.

Key Provisions of the Framework

- **Threat Assessment:** Identified risks are Signal jamming, spoofing, unauthorized command uplink, ground station compromise, firmware manipulation.
- **Segment-wise Security Controls:**
  - **Security across:** Space segment; Ground infrastructure; Communication links; User terminals.
  - **Measures:** Authentication, encryption, access control, intrusion detection.
- **Incident Response:** Mandatory **incident detection, response & reporting** aligned with **CERT-In Directions**.
- **Governance:** Appointment of **Chief Information Security Officer (CISO)** for SatCom operators.
- **Supply Chain Security: Risk assessment, equipment certification, supply-chain safeguards**.
- **Global Alignment:** Aligned with standards of **ITU, CCSDS, NIST, SPACE-Shield, TREKS, SPARTA.**

CERT-In

- Established under **Section 70B, IT Act, 2000**.
- India's national nodal agency for **cyber incident response**.
- Functions under **MeitY (since 2004)**.
- Operates **24×7 help desk**; provides **incident handling & preventive cybersecurity services**.

Reserve Bank of India's Switch Auction

The **RBI** has announced a **switch auction of G-Secs** to manage **debt maturity** and reduce redemption pressure in FY27.

- **Redemption Pressure:** Arises when a large volume of govt. bonds mature simultaneously. Requires **repayment or refinancing**, increasing fiscal stress.

- **Switch Auction (RBI Tool):** Govt. exchanges **short-term maturing bonds** for **long-term bonds**. Postpones repayment; smoothens debt profile.
- **Recent Development: ₹25, 000 crore switch auction**.
  - Targets heavy redemption in **FY27 (₹5.47 lakh crore due)**.
  - Maturities extended beyond **FY32**.
- **Significance:** Reduces refinancing risk; Smoothens maturity bunching; Supports fiscal stability.
  - Helps manage **₹17.2 lakh crore gross market borrowing** without immediate liquidity stress.

CBDC Pilot for Food Subsidy Distribution

India launched a **CBDC-based food subsidy pilot** under **PMGKAY** in **Puducherry**, integrating the **Digital Rupee (e₹)** into the **DBT framework** for PDS delivery.

- **Programmable CBDC tokens** credited directly to beneficiary wallets under **PMGKAY**.
- **Purpose-bound usage**: Redeemable only for entitled foodgrains at authorised **Fair Price Shops (FPS)** → eliminates diversion.
- Ensures **instant, secure, and fully traceable** transactions → reduces leakages & improves accountability in PDS.
- Implemented in coordination with **Govt. of Puducherry, RBI, PFMS, and Canara Bank**.
- To be expanded in phases to other **UTs and beneficiaries**.

CBDC

- Digital form of a country's **fiat currency**. Issued by the **central bank → direct sovereign liability**.
- **Digital Rupee (e₹):** Official CBDC of India.
- **Legal tender** → same value as physical cash (1:1 exchangeable).
- **Types:**
  - **Retail CBDC (e₹-R):** For public & businesses. Operates via bank-provided **digital wallets**.
    - ❖ Instant P2P & P2M transactions. No interest on balance (cash-like feature).
  - **Wholesale CBDC (e₹-W):** For financial institutions.
    - ❖ Used for: Govt. securities trades; Inter-bank lending; Reduces settlement cost & counterparty risk.
- **Difference from UPI**
  - **UPI**: Payment interface transferring money between bank accounts.
  - **e₹**: Wallet-to-wallet settlement without bank ledger dependency.
  - Interoperable with **UPI QR codes** for convenience.

India–GCC Free Trade Agreement

India and the GCC signed a Joint Statement to advance negotiations on the India–GCC FTA.

India-GCC Trade

- **Largest Trading Bloc:** GCC accounts for **15.42%** of India's global trade.
- **Trade Volume (FY 2024-25): USD 178.56 bn (**Exports: USD 56.87 bn & Imports: USD 121.68 bn). Avg. growth: ~15.3% (last 5 years)
- **Key Exports:** Engineering goods, rice, textiles, machinery, gems & jewellery.
- **Key Imports:** Crude oil, LNG, petrochemicals, gold.
- **Economic Significance:** Market: 61.5 million people; GDP USD 2.3 trillion (9th globally).
  - FDI in India: USD 31. 14 bn (till Sept 2025).
- **Diaspora:** ~10 million Indians in GCC; strong people-to-people & business ties.

Gulf Cooperation Council (GCC)

- **Established:** 1981; regional political & economic bloc.
- **Members:** Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE.
- **Purpose:** Promote economic, security, cultural & social cooperation; formed amid regional tensions (Iranian Revolution, Iran–Iraq War (1980–1988)).
- **Headquarters:** Riyadh, Saudi Arabia.
- **Structure:** Supreme Council (heads of states; rotating presidency) – highest authority.

IEA Full Membership for India

The IEA welcomed progress on India's bid for full membership. India is the world's third-largest energy consumer and has been an IEA associate member since 2017.

International Energy Agency

- **Established:** 1974 by 17 OECD countries after 1973 oil crisis (Yom Kippur War); ensures energy security & emergency oil coordination.
- **Oil Reserve Rule:** Members must maintain 90 days' net import oil reserves.
- **Evolving Role:** Now covers renewables, climate change, energy transition & critical minerals.
- **Membership:** 32 full members (OECD-based); 13 associate members (since 2015; no voting rights).
- **India's Significance:** Associate member (since 2017); major driver of future global energy demand.
- **Key Reports:** World Energy Outlook, World Energy Investment Report, Global Energy Review.