SARAANSH

Monthly Current Affairs

January 2026

Economic Survey 2025-26

Union Budget 2026-27

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

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CURRENT AFFAIRS

(Coverage from 25th December 2025 to 24th January 2026)

INDEX

Polity & Governance 3-30

- Achievements of Cooperatives in India 3
- Foundation Day of Lokpal of India 3
- Euthanasia Debate in India 4
- WEF Global Risks Report 2026 5
- Central Vigilance Commission 7
- MHA's New SOP on Cyber Financial Frauds 7
- MS Sahoo Committee for NPS Reforms 8
- Prime Minister's Internship Scheme 8
- India's Maritime Strategy 10
- Age of Consent and Adolescent Autonomy 11
- Department of Rural Development: Year Ender 2025 13
- National Youth Day 2026 14
- Year-End Review 2025: Department of Justice 15
- NITI Aayog on Internationalisation of Higher Education in India 16
- Year End Review-2025: Ministry of Parliamentary Affairs 16
- Design Linked Incentive (DLI) Scheme 17
- NATGRID–NPR Integration 18
- BEE Standards and Labelling Programme 18
- Year End Review-2025: Ministry of Panchayati Raj 19
- Viksit Bharat Shiksha Adhishthan Bill 2025 21
- Good Governance Day 22
- Citizen-Centred Universal Health Coverage 25
- National Consumer Day and Consumer Commissions in India 26
- Supreme Court Verdict on DTAA 27
- UGC New Rules Against Caste Discrimination 28
- Demographic Winter and India's Narrowing Demographic Dividend 29

Nation & States 31-33

- Unlawful Activities (Prevention) Act 1967 31
- Governor's Rule in Chakma Autonomous District Council 32
- Year-End Review 2025: Ministry of Home Affairs 32
- Strengthening State PSCs 33

Economic Scenario 34-51

- Rising State Borrowings and Their Impact on Bond Yields 34
- Employment and Social Trends 2026 Report 34
- Guidelines for Virtual Digital Assets 34
- Decade of the Startup India Initiative 35
- NITI Aayog Report on Convergence of MSME Schemes 37
- Digital Transformation of India's Dairy Sector 37
- Gati Shakti Cargo Terminals and India's Logistics Transformation 38
- Year-End Review 2025: Department of Expenditure 40
- Gross Domestic Product and Net Domestic Product 41
- Achieving Sustainability in Rice Production 42
- Report on Trend and Progress of Banking in India 2024-25 43
- Year End Review-2025: Ministry of Micro, Small & Medium Enterprises 44
- Year End Review-2025: Ministry of Petroleum & Natural Gas 44
- Infrastructure Bonds 46
- Shrinking Clusters of India's Exports 47
- OMO Purchases and Dollar–Rupee Swap 49
- India's Power Sector Milestones 2025 49
- Limits of Household Stability 50
- Central Bank Digital Currency 51

International Relations 52-62

- India-EU FTA 52
- India–UAE Engagement Amid Regional Flux 53
- India–Germany Relations 55
- UN Flags Unaddressed Violence in Sri Lanka's Civil War 57
- US Retreat from Multilateralism 57
- Pax Silica & India's Inclusion 58
- US Intervention in Venezuela and the Revival of the Monroe Doctrine 59
- India's Foreign Policy Recalibration 60
- India and New Zealand FTA 62

Environment & Ecology 63-77

- Snowfall Deficit in the Western Himalayas 63
- Conservation of Grasslands 64
- White-bellied Heron and Kalai-II Project 65
- Year-End Review 2025: Ministry of Environment, Forest and Climate Change 66
- 10 Years of Paris Agreement 67
- Madhav Gadgil and the WGEEP 68
- Amazonian Stingless Bees-World's First Insects with Legal Rights 69
- Climate-Resilient Agriculture in India 69
- Dulhasti Stage-II Project 71
- Right to a Clean and Healthy Environment 72
- Nature-based Solutions and their Importance 74
- Sponges Mitigate Heavy Metal Pollution 75
- Southern Ocean Carbon Anomaly 77

Science & Technology 78-82

- PSLV Failures and Implications 78
- Marine and Space Biotechnology 78
- Remote Sensing and India's IRS Programme 79
- IndiaAI Mission and Emerging AI Ecosystem 80
- Nanorobots in Healthcare 80
- ISRO's Heaviest Launch: BlueBird Block-2 81
- Micrometeoroids and Orbital Debris 82
- Reusable Launch Vehicle (RLV) Technology 82

History, Art & Culture 83-84

- Indian Miniature Painting 83
- Somnath Swabhiman Parv 83
- Srimanta Sankardeva 84
- Holy City Status and Sikh Heritage 84

Social Issues 85-89

- Urbanisation Beyond Megacities 85
- Bal Vivah Mukt Bharat Abhiyan 86
- Transgender Welfare in India 87
- Acid Attacks in India 88

Facts for Prelims 90-115

- Reports & Indices 90
- Awards & Honours 92
- Important Days 92
- Defence & Security 96
- Summits & Conferences 98
- Places in News 98
- Portals & Apps 103
- Species in News 103
- Miscellaneous 104

Polity & Governance

Achievements of Cooperatives in India

The **UN declared 2025** as the **International Year of Cooperatives** with the theme **"Cooperatives Build a Better World"**, recognizing **India's cooperative achievements** rooted in **"Vasudhaiva Kutumbakam"** and **"Sahkar Se Samriddhi"**.

Current Status of Cooperatives in India

- **Scale**: **8.5+ lakh cooperatives**, serving ~**32 crore members** across **30 sectors**, covering ~**98% rural India**
- **Women Participation**: ~**10 crore women** linked via **SHGs**
- **Expansion**: **32,000+ new cooperatives** in multipurpose, dairy, fisheries
- **National Cooperatives**: National Co-operative Exports Limited **(NCEL),** National Cooperative Organics Limited **(NCOL) &** Bharatiya Beej Sahakari Samiti Limited **(BBSSL)**→ link cooperatives to **high-value supply chains**
- **Financial & Institutional Support: NCDC disbursements** – ₹95,000+ crore annually
- Support from **Ministry of Cooperation.** Involved in **world's largest decentralized grain storage plan**

- **Notable Cooperatives**– AMUL, IFFCO, Lijjat Papad, etc.
- **Top 5 states**– (Maharashtra– **25%**+ of all cooperatives, Gujarat, Telangana, MP, Karnataka) = **57%** of national total

Primary Challenges Faced by the Cooperative Sector in India	Suggestions
■ **Regulatory Fragmentation**: **Registrar of Cooperatives** (**State authority**) vs **RBI** control → jurisdictional conflicts, uneven supervision	■ **Technological Integration**: Enable **mobile banking**, **digital payments**, **online account opening.** Roll out **ERP**, **digital reporting**, integrate with **ONDC & GeM**
■ **Governance Deficits**: Weak **transparency & democracy** → elite capture, poor accountability. Example: **PMC Bank collapse** (**2019**) due to financial irregularities	■ **Financial Deepening**: Offer **investment, insurance, financial literacy.** Link to **MUDRA**, **CGTMSE**, **NABARD schemes** for MSME credit flow
■ **Financial & Infrastructure Gaps**: Low **capital buffers** limit resilience and expansion. Shortage of **storage, processing units, market linkages** hampers growth	■ **Institutional Strengthening**: **Training**, **skill-building**, clear **career pathways** for professional managers
■ **Operational & Tech Hurdles**: Lack of **digital systems**, **e-commerce**, **ERP** in rural cooperatives. Poor **connectivity & logistics** (e.g., UP, Bihar) limit reach	■ **Value Chain Development**: Invest in **warehouses**, **cold storage**, **Common Facility Centers.** Create **member-owned logistics cooperatives**
■ **Socio-Cultural Barriers**: **Caste & social hierarchies** hinder **equitable participation**	■ **Branding & Diversification**: Promote umbrella brands like **"CoopMade"**, **"Bharat Organics"** with certification. Expand into eco-tourism, renewable energy, advanced agriculture, digital services
■ **Market Competition**: Struggle against **banks**, **SFBs**, **fintechs** offering advanced services	

Examine the major challenges faced by the cooperative movement in India and suggest institutional reforms.

Drishti Mains Question

Foundation Day of Lokpal of India

The **Lokpal of India** observed its Foundation Day on **16th January**, marking the coming into force of **Section 3 of the Lokpal and Lokayuktas Act, 2013,** which provided for the establishment of the Lokpal in 2014.

Key Facts About Lokpal of India

- **Establishment of Lokpal of India:** The idea of a Lokpal was first mooted in 1963, inspired by the **Ombudsman model**, and was formally recommended by the **First Administrative Reforms Commission in 1966.**
  - India ratified the **UN Convention Against Corruption in 2011**, leading to the passage of the **Lokpal and Lokayuktas Act in 2013**, which came into force on 16th January 2014, formally establishing the **Lokpal under Section 3 of the Act.**
  - Before the enactment of the Lokpal and Lokayuktas Act, 2013, several states had already set up **Lokayukta institutions through their own laws,** with Maharashtra being the first to establish a Lokayukta in 1971.
- **Composition of Lokpal:**
  - The Lokpal consists of a **Chairperson and up to eight Members**, with at least **50% being Judicial Members and a mandatory 50%** representation from **SC, ST, OBC, minorities, and women.**
  - Members hold office for **five years or until attaining the age of 70 years,** whichever is earlier, ensuring both expertise and social inclusivity in the institution.

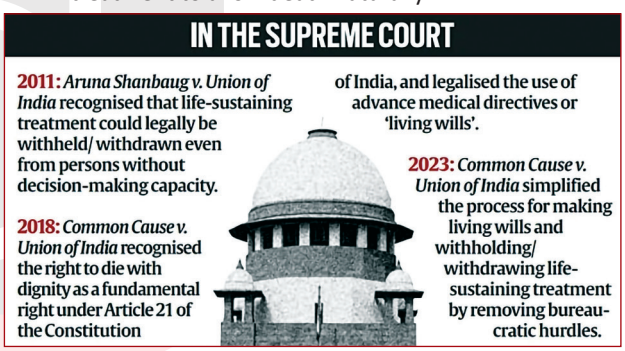
- **Appointment Process:** The Chairperson and Members of the Lokpal are appointed by the **President of India based on the recommendations of a Selection Committee** comprising the Prime Minister, Speaker of the Lok Sabha, Leader of Opposition, the **Chief Justice of India** or a nominee, and one eminent jurist nominated by the President.
- **Eligibility Criteria:** The Chairperson must be a **serving or former Chief Justice of India or a Supreme Court Judge.**
  - Judicial Members are drawn from serving or former Supreme Court Judges or Chief Justices of High Courts.
  - Non-Judicial Members must possess impeccable integrity and at least 25 years of experience in fields specified under the Act.
- **Jurisdiction of Lokpal:** The Lokpal has jurisdiction over the **Prime Minister** (with exclusions relating to national security, foreign relations, atomic energy, space, and public order), Union Ministers, Members of Parliament, and Group A to D Central Government officials.
  - It also covers entities receiving substantial government funding or foreign contributions under specified conditions.
- **Powers and Functions:** The Lokpal has powers of superintendence over investigations conducted by the **Central Bureau of Investigation (CBI)** in cases referred to it and exercises powers of a civil court during preliminary inquiries.
  - It can authorise **search and seizure, recommend prosecution or disciplinary action, issue guidelines to the CVC,** and suggest systemic reforms to address institutional corruption.
- **Filing of Complaints:** Any individual, NGO, company, trust, limited liability partnership (LLP) even foreign nationals (with passport) can file complaints.
  - Complaints must relate to offences under the **Prevention of Corruption Act, 1988.**
  - Complaints can be submitted online or offline in the prescribed format under the **Lokpal (Complaint) Rules, 2020,** within a limitation period of seven years.
- **Confidentiality and Safeguards:** The Lokpal ensures strict confidentiality of complainants, witnesses, and public servants during inquiry and investigation.
- **Complaint Handling Mechanism:** Complaints are generally placed before the Lokpal Bench within 15 working days after scrutiny.
  - Even defective complaints are considered, with opportunities given for rectification, and public servants are granted multiple stages to present their defence, ensuring adherence to principles of natural justice.
- **Significance of Lokpal:** The Lokpal strengthens India's anti-corruption framework by providing an independent, statutory mechanism to hold high public functionaries accountable.
  - By combining investigative authority with procedural fairness and confidentiality, it reinforces public trust and ethical governance in a democratic system.

Euthanasia Debate in India

SC is hearing *Harish Rana vs Union of India (2025),* a plea seeking permission for **passive euthanasia** via **withdrawal of life-sustaining treatment**; bedridden for **13+ years** with **100% quadriplegic disability** from a severe head injury.

Euthanasia

- **About:** Deliberately hastening death to prevent suffering from terminal illness.
  - **Active Euthanasia:** Directly causing death (e.g., lethal injection); **illegal in India**, classified as **culpable homicide or murder under BNS, 2023**.
  - **Passive Euthanasia:** Withdrawing life-support or treatment to allow death naturally.



- **SC Guidelines**
  - **2018**: Two-stage medical boards; 20 yrs experience.
  - **2023 Modifications**: Experience requirement **reduced to 5 yrs**, **48-hour** limit for opinion. Both boards have **3 members**; structure simplified.
- **Global Legal Position**:
  - **Euthanasia + Physician assisted suicide**: Netherlands, Belgium, Luxembourg, Spain, **Quebec (Canada)**, parts of **Australia**.
  - **Assisted suicide only**: **Switzerland** (non-physicians).
  - **Passive euthanasia**: **Sweden**, **France**; **Italy** allows refusal of treatment.
- **Debate & Concerns**: **Autonomy & dignity** vs **sanctity of life** and **Hippocratic principle**.
  - Issues of **mental competency assessment** and risks of **misuse/slippery slope in medical judgement**.

Key Arguments in Favor of Legalizing Euthanasia	Arguments Against the Legalization of Euthanasia
■ **Upholding Individual Autonomy:** Recognised by the SC in *Common Cause vs Union of India (2018)*, affirming the "right to die with dignity" under **Article 21.** ■ **Alleviating Incurable Suffering:** Supports relief from unbearable pain in terminal illnesses, as seen in permissive jurisdictions. ■ **Curbing Futile Medical Intervention:** Prevents non-beneficial, suffering-prolonging treatment, consistent with passive euthanasia allowed since the *Aruna Shanbaug case (2011).* ■ **Philosophical and Pragmatic Foundations**: **Libertarian principles** (John Stuart Mill) & **utilitarian ethics** (Jeremy Bentham) justify euthanasia on grounds of bodily autonomy & minimisation of suffering.	■ **Ethical/Moral Conflict**: Violates **sanctity of life**; rooted in **religious, cultural & deontological ethics** (Immanuel Kant). ■ **Risk of Abuse**: Vulnerable groups (**elderly, disabled, poor**) may face **coercion**, especially amid **healthcare inequality**. ■ **Consent Challenges**: Limited capacity of psychiatrists to detect **depression or coercion** in terminally ill patients. ■ **Legal Barriers**: **BNS, 2023** provisions – **Sec 100** (Culpable homicide); **Sec 101** (Murder); **Sec 108** (Abetment of suicide) ■ **Procedural Hurdles**: Passive euthanasia via **SC guidelines** is **court-driven**, slow, and often **inaccessible**.

Strengthening India's End-of-Life Care Framework

- **Legislative Clarity**: Enact a law codifying **SC's 2018 guidelines** on **passive euthanasia** and **living wills**; ensure **legal protection** for practitioners.
- **Procedural Streamlining**: Decentralise to **district/hospital ethics committees**; integrate **living wills** into **National Health Digital Record** (initiated by SC's 2023 simplification).
- **Universal Palliative Care Access**: Expand **home, community, hospital-based** services via **Ayushman Bharat**; train **ASHA workers** in pain management.
- **Rigorous Safeguards**: Mandate **psychiatric evaluations**, **social assessments**, and **cooling-off periods** to prevent coercion and ensure autonomy.
- **Public Awareness**: Launch campaigns on **living wills**, promote **public dialogue** with stakeholders to build **ethical consensus**.

The right to die with dignity is an extension of the right to live with dignity. Critically analyze this statement in the context of the judicial evolution of euthanasia jurisprudence in India.

Drishti Mains Question

WEF Global Risks Report 2026

The **World Economic Forum (WEF) Global Risks Report 2026** has identified **cybersecurity as the biggest risk for India in 2026**, while **geoeconomic confrontation** has emerged as the **single most severe global risk**, overtaking armed conflict and climate threats.

Key Findings of the Global Risks Report 2026

Global Risk Outlook

- In the immediate term (2026), **Geoeconomic Confrontation** has emerged as the biggest global risk, overtaking armed conflict and extreme weather events as the most likely trigger of a global crisis.
  - **Geoeconomic Confrontation** refers to the strategic use of economic tools such as trade restrictions, sanctions, investment controls, and technology bans by states to advance geopolitical interests and constrain rivals, weakening **multilateralism and rising protectionism.**
- **State-based armed conflict** ranks **second globally**, reflecting ongoing wars and regional spillover risks.
- **Climate-related risks like extreme weather events** rank next, alongside **societal polarisation.**
- **Technological risks are rising globally**, with **misinformation and disinformation ranking 5th worldwide**, reflecting growing threats to democratic processes and social trust.
  - At the same time, **adverse outcomes of Artificial Intelligence (AI) technologies have entered the top 10 global risks**, highlighting concerns over job displacement, ethical misuse, and security challenges.
  - **Cyber insecurity ranks 9th globally**, underscoring increasing digital vulnerability as economies and governance systems become more digitally dependent.
- Over the **long term (next ten years), climate-related risks dominate,** with extreme weather events, biodiversity loss, and **critical changes to Earth systems at the top**.

India Risk Outlook

- **Cybersecurity is the top risk for India in 2026**, reflecting dependence on digital governance, fintech, and critical digital infrastructure.
- **Income and wealth inequality** is the **second biggest risk for India**, highlighting social and regional disparities.
- Other key risks for India include:
  - **Insufficient public services and social protections** (this includes concerns regarding education, infrastructure, and **pensions**).
  - **Economic downturn** (fears of **recession** or stagnation).
  - **State-based armed conflict** (this includes **proxy wars, civil wars, coups, or terrorism**).
- India's risk profile shows a **stronger focus on societal and governance-related risks** compared to the global geopolitical emphasis.

- The findings underline the need for **strong digital security, inclusive growth, and resilient public service delivery** in India.

World Economic Forum (WEF)

- The **World Economic Forum** (**WEF**) is an international public–private cooperation body headquartered in **Geneva** (**Switzerland**), founded in **1971 by Klaus Schwab** (**a German professor**), which promotes **stakeholder capitalism** and provides a global platform for dialogue on economic, social, and governance issues, most notably through its annual **Davos meeting**.
- WEF regularly publishes globally recognized reports, including the **Global Competitiveness Report and the Global Gender Gap Report, Energy Transition Index, and Global Risk Report.**

Global Risk

- It is defined as the possibility of the occurrence of an event or condition that, if it occurs, would **negatively impact a significant proportion of global GDP**, population or natural resources.

Major Risks Facing India in the Emerging Global Risk Landscape

- **Cybersecurity Risk as a Systemic National Vulnerability:** According to the **Data Security Council of India**, **India recorded 369.01 million malware detections in 2025,** highlighting persistent exposure to cyber threats.
  - **Trojans (43.38%) and Infectors (34.23%) dominate attacks**, indicating a shift towards targeted and sophisticated campaigns, while mobile threats remain significant, driven by malware (42%) and adware (26%), reflecting the commercialisation of cybercrime.
  - India's rapid digital leap in **governance (DBT, Aadhaar-linked services), finance (UPI, fintech), and critical infrastructure** has outpaced cyber resilience.
    - ❖ Cyber threats have evolved into systemic risks that can undermine **elections, financial systems, power grids, and public trust,** going far beyond isolated IT failures.
    - ❖ The growing concentration of data and digital platforms creates single-point vulnerabilities, **turning cyber insecurity into a strategic national risk rather than a purely technical issue.**
- **Income and Wealth Inequality as a Risk Multiplier:** While the **World Bank's Gini Index for India stands at about 25.5 (2022–23)** placing India among countries with relatively lower measured income inequality.
  - The Oxfam report highlights that in 2022, the **top 1% of Indians captured 22.6% of national income**, pointing to deep and widening disparities that are not fully reflected in consumption-based Gini measures.
  - Rising inequality in India **amplifies economic shocks for informal and marginalised workers,** increasing the risks of social unrest, political polarisation, and institutional distrust while **eroding the social contract and weakening the state's ability to mobilise public cooperation** during crises.
- **Insufficient Public Services and Social Protection Capacity:** It remains a key vulnerability for India, as **public health expenditure is only 1.9% of GDP,** well below the 2.5% target set for 2025 under the **National Health Policy, 2017.**
  - India spends around **5% of GDP on social protection (excluding health),** compared to the global average of around 13% (World Social Protection Report 2024-26, ILO).
  - Combined with capacity gaps in health, education, urban infrastructure, and social security, this **weakens shock absorption and transforms climate extremes, economic volatility,** and external disruptions into **domestic governance challenges.**
- **Geoeconomic Shocks**: India's deep integration with global trade, energy markets, and capital flows exposes it to geoeconomic shocks, evident in the **record Foreign portfolio investment (FPI) outflow of USD 18.9 billion in 2025,** driven by global trade tensions, currency volatility, fears of US tariffs, and stretched market valuations, which heightened volatility in equities and the rupee.
  - Slowdowns in major economies quickly spill over into **India through weaker exports, investment uncertainty, job losses,** and rising fiscal pressure on welfare and subsidies.
- **State-Based Armed Conflict and Strategic Instability:** Regional geopolitical tensions have intensified India's security risks, as reflected in the **2025 Pahalgam attack, the blast near Delhi's Red Fort,** and continued cross-border terrorism by Pakistan-backed groups.
  - At the same time, **rising urban terrorism, lone-wolf and white-collar terrorism,** and persistent internal insurgencies strain border security, defence spending, and investor confidence.
  - Prolonged instability can divert state capacity from development and heightens **exposure to hybrid threats like cyber warfare, misinformation, and economic coercion.**

Steps to Reduce India's Vulnerability to Emerging Global Risks

- **Strengthen Economic Resilience:** Reduce supply-chain and capital-flow vulnerabilities by scaling up domestic manufacturing under **Make in India and PLI schemes.**
  - Diversifying trade through **Free Trade Agreement (FTA)** and maintaining **strong buffers via forex reserves and counter-cyclical fiscal policy,** in line with IMF recommendations.

- **Treat Inequality As A Macro-Risk:** Address inequality through formalisation and income security using **PM-JDY,** and **Ayushman Bharat**, since high inequality has amplified distress among informal **workers during crises like the pandemic and inflationary episodes.**
- **Build Capacity Against Hybrid Threats:** India must adopt a **whole-of-government and whole-of-society approach to counter hybrid threats** that blend terrorism, cyber attacks, disinformation, and economic coercion.
  - Building capacity against hybrid threats requires real-time intelligence fusion through a statutory **Multi-Agency Centre,** stronger cyber and financial surveillance under the **PMLA, 2002** and integrated security responses via a **National Security Strategy,** especially in urban areas.
- **Protect Information Integrity:** Counter disinformation through **'FACT Principle' strategy adopted by Election Commission of India, IT Rules 2021,** institutionalised fact-checking, and digital literacy initiatives such as **PM-DISHA,** aligned with **OECD and EU** approaches that treat information integrity as a national security concern.
  - Strengthening counter-disinformation and information warfare capabilities is equally vital to address cyber and psychological dimensions of hybrid threats.
- **Embed Climate Resilience In Development:** Mainstream adaptation via the **National Action Plan on Climate Change, Mission LiFE, National Disaster Management Plan,** climate-resilient infrastructure under **Gati Shakti,** and urban reforms through **Smart Cities,** consistent with reducing long-term fiscal and conflict risks.

Evaluate India's preparedness to deal with hybrid threats combining terrorism, cyber attacks, and disinformation.

Drishti Mains Question

Central Vigilance Commission

Shri Praveen Vashista appointed as **Vigilance Commissioner** in **CVC** under **Section 4(1) of CVC Act, 2003** by the **President**.

Central Vigilance Commission

- **About:** Apex statutory body to combat **corruption** & uphold **integrity** in the Central Government.
- **Origin**: Set up in **1964** on **Santhanam Committee** recommendations (1962–64). Gained **statutory Status** in **1998**; formalised under **CVC Act, 2003**.
- **Composition**: One **Central Vigilance Commissioner** + up to **two Vigilance Commissioners**.
- **Appointment**: By **President** on recommendation of committee: **PM** (**Chair**), **Home Minister**, **LoP in Lok Sabha**. **Tenure**– **4 years** or until **65 years** of age, whichever earlier.
- **Independence**: Salary & service conditions: Same as **UPSC Chairman/ Member**; non-alterable post-appointment. Expenses charged to **Consolidated Fund of India**; not subject to **Parliamentary vote**.
- **Removal Grounds**: Insolvency, moral turpitude, paid outside employment, infirmity, prejudicial financial interest.
  - For **misbehaviour/incapacity**, removal only after **SC enquiry** and **advice**.
- **Jurisdiction**: Covers **AIS** (**Central deputation**), **Group A officers**, senior officials in PSBs, RBI, NABARD, PSUs & **insurance companies**.
- **Organisational Structure**: Operates via **Secretariat**, **Chief Technical Examiners' Wing**, and **CDIs** for inquiries.
- **Core Functions:**
  - **Inquiries** into corruption under **Prevention of Corruption Act, 1988** involving central govt, AIS officers, specifiedn PSU officials.
  - **Supervises CBI** in corruption cases & reviews investigations.
  - **Handles whistle-blower complaints** under **Public Interest Disclosure and Protection of Informers'** (**PIDPI**) **Resolution**.
  - **Advises** govt on vigilance matters; reviews **prosecution sanctions**.
  - **Notified authority** for suspicious transactions under **PMLA, 2002**.
- **Post Lokpal and Lokayuktas Act, 2013 Role**: CVC conducts **preliminary inquiries** on Lokpal-referred complaints (Group A–D); recommends appointments to **CBI** & **ED**.
- **Working & Reporting**: Has **civil court powers**, advises departments (accept/reject with reasons), submits **annual report to President** (tabled in Parliament).
- **Vigilance Network**: **CVOs** in ministries link **department, CVC** & **CBI** handling **internal vigilance functions**

MHA's New SOP on Cyber Financial Frauds

MHA has approved a new **SOP** under the **National Cybercrime Reporting Portal (NCRP)** to enable **faster refunds** in **small-value cyber frauds** and ensure **victim-centric grievance redressal**.

- **About:** New **SOP** for cyber financial fraud cases under **Cyber Financial Crime Reporting and Management System (CFCFRMS)**. Implemented through **NCRP**; coordinated by **I4C**.
  - Provides a **uniform pan-India framework** for handling online financial fraud.
- **Core Objective: Quick freezing** of fraudulent transactions. **Faster restoration** of money to victims. **Accountability of financial intermediaries**.
- **Reliefs Under SOP:** For frauds **below ₹50,000**, refunds can be processed **without court order**. If no court/restoration order exists, **banks must lift freeze within 90 days**, preventing indefinite blocking of funds.

- **Need:** India lost **₹52,000+ crore** to cyber frauds in **6 years**.
- **Standardisation Across Institutions:** SOP defines common procedure for banks, NBFCs, payment aggregators, e-commerce platforms, stock-trading apps & mutual fund houses.
- **Digital Systems:** Two new modules to be developed under **NCRP– Grievance Redressal Module** & **Money Restoration Module**

- **Union govt** has set up a **high-level inter-departmental committee** under MHA to address **"digital arrest" scams**.
  - Reported losses: ~**₹3,000 crore**; involves key agencies– **RBI**, **CBI**; tech platforms involved- **Google**, **WhatsApp**.

MS Sahoo Committee for NPS Reforms

The **Pension Fund Regulatory and Development Authority (PFRDA)** has established a high-level committee to design a regulatory framework for assured payouts under the **National Pension System (NPS)**, aiming to address **post-retirement income certainty**.

- In a separate development, PFRDA has issued the **NPS Vatsalya Scheme** Guidelines 2025, providing comprehensive information on the **NPS Vatsalya**.

National Pension System (NPS)

- **About:** Introduced on 1st January 2004, **NPS** is a **market-linked, contributory pension scheme** designed to provide individuals with a retirement income, replacing the **Old Pension System** (**OPS**).
- **Working of NPS:** Administered by the **PFRDA** under the **PFRDA Act, 2013**, NPS is funded jointly by the employee and the government. **Employees** contribute **10%** of their basic pay and dearness allowance, matched by a **14%** contribution from the **government**.
  - Subscribers can select from **various schemes**, **pension fund managers**, and **private companies** to invest their contributions. Unlike OPS, NPS **does not offer an assured pension**.
- **Need for NPS:** The previous **OPS** was **unfunded**, lacking a dedicated **corpus**, which caused **government pension liabilities** to balloon from **Rs 3,272 crore** (**1990-91**) to over **Rs 1.9 lakh crore** (**2020-21**), creating an unsustainable fiscal burden.
- **Transition to UPS:** Faced with **opposition** due to **lower guaranteed returns** and employee contributions compared to **OPS**, the government formed the **Somanathan Committee in 2023**. Its **recommendations** have led to the new **Unified Pension Scheme** (**UPS**), shifting the focus toward greater **income certainty** in retirement

Key Facts Regarding the Newly Constituted Committee on NPS

- **About:** It is a 15-member panel headed by **MS Sahoo**, former chairperson of the **Insolvency and Bankruptcy Board of India (IBBI)**. It is constituted as a **standing advisory committee** on structured pension payouts and can invite external specialists for consultation.
- **Objectives:**
  - The **primary objective** is to formulate **guidelines** for **legally enforceable, market-based guarantees** under the NPS.
  - This involves defining key parameters like **lock-in periods** and **pricing**, establishing **risk management norms** with capital requirements, and examining tax implications for in-system payouts.
- **Significance**: It marks a shift from **exit flexibility** to **income certainty** in **retirement**, addressing a key gap in India's pension system. This aims to boost confidence in long-term savings and strengthen **financial security**, aligning with the **Viksit Bharat 2047** vision for **financial independence** in old age.

NPS Vatsalya

- **About:** NPS Vatsalya is a **dedicated, long-term contributory** savings scheme under the **NPS** designed exclusively for the financial security of **minors**. It aims to **nurture a culture of savings** and financial literacy from an early age.
- **Eligibility and Operational Features:** Open to **all Indian citizens**, including **NRI/OCI**, **below 18 years**, with the minor as the sole beneficiary.
  - The account is opened in the minor's name but **operated** by a **parent/legal guardian**.
  - The **minimum** initial and annual contribution is **Rs 250**, with **no upper limit**; **contributions** can also be **gifted**.
- **Flexibility and Withdrawal Provisions:** Allows **partial withdrawals** after **3 years** for specific purposes like **education and medical treatment**, limited to **25% of the minor's** own contributions.
- **Transition Upon Attaining Majority:** Between **18 and 21 years**, the **subscriber** can continue with **NPS Vatsalya**, shift to the **standard NPS Tier I**, or **exit**.
  - Exit rules mandate using a **minimum 20%** of the corpus to purchase an **annuity**, with **full withdrawal** permitted if the total corpus is **Rs 8 lakh or less**.

Prime Minister's Internship Scheme

Data from the **Controller General of Accounts** show **severe underutilisation of funds under the Prime Minister's Internship Scheme (PMIS)**, pointing to weaknesses in the scheme's design, demand, and implementation barely a year after its launch.

Prime Minister's Internship Scheme (PMIS)

- **About:** The **PMIS**, under the **Ministry of Corporate Affairs**, announced in the **Union Budget 2024–25**, aims to provide **one crore internship opportunities over five years** in top 500 companies to enhance the employability of youth aged 21–24 years.

- **Benefits:** The scheme offers a **Minimum Stipend of Rs 5,000 per month**, a **One-Time Grant of Rs 6,000**, and **Insurance Coverage** under **PM Jeevan Jyoti Bima Yojana and PM Suraksha Bima Yojana**, along with exposure to diverse sectors and leading companies.
- **Internship Duration:** The internship lasts **12 months**, with **at least half of the period spent in real workplace or job-based experience**, not classroom training.
- **Eligibility:** Candidates must be **21–24 years old**, possess **Minimum Class 10 Qualification or above** (ITI, Polytechnic, Graduation etc.), and should **not be engaged in Full-Time Employment or Regular Education** (distance or online education allowed).
- **Ineligible Candidates:** Graduates from **IITs, IIMs, NLUs, IISERs**, holders of **professional or postgraduate degrees** (CA, CMA, CS, MBA, MBBS, etc.), candidates trained under **National Apprenticeship Promotion Scheme (NAPS)/ National Apprenticeship Training Scheme (NATS).**
  - Income of any family member exceeds Rs 8 lakh for FY 2023-24 , families with **regular government employees**, and applicants already in **any government skill, apprenticeship, or internship programme** are ineligible.
- **Significance: PMIS aims to enhance employability** by providing structured, real-world industry exposure to youth.
  - **Bridge the education–industry gap** through hands-on training in top companies.
  - **Expand access to internships** beyond elite institutions and urban centres.
  - **Support youth from low-income households** with financial assistance during internships.
  - **Build a skilled workforce** aligned with industry needs and national economic growth.

Key Concerns Regarding PMIS

- **Severe Underutilisation of Funds:** As of November 2025, the Ministry of Corporate Affairs has spent only **about 4% of its FY26 budget**, despite an allocation of over **Rs 11,500 crore**, of which **around 94%** was earmarked for PMIS.
  - This sharp underspending reflects **weak uptake of the scheme** and a clear gap between **budgetary intent and execution capacity.**
- **Low Acceptance Rates**: Despite high application numbers, **less than one-third of internship offers are accepted,** suggesting the scheme does not adequately meet candidate expectations.
  - The mismatch between applicant preferences and internship locations or roles points to flaws in design and coordination.
- **Poor Completion Numbers**: Very few interns have **completed the programme,** raising concerns about **retention, quality of engagement, & institutional support.**
- **Inadequate Financial Incentive**: The Rs 5,000 monthly stipend is **insufficient to cover basic living costs, reducing the scheme's attractiveness**, especially in urban centres.
- **Credibility Gap**: The sharp contrast between the ambitious target of **one crore internships** and weak pilot outcomes **risks undermining policy credibility.**

India's Major Skill Development Initiatives

- **Skill India Mission:** A flagship initiative to **skill, reskill, and upskill youth** through industry-relevant training. It focuses on employability, entrepreneurship, and future-ready skills, with **over 6 crore individuals trained**, including in **AI, robotics, green energy, and Industry 4.0.**
  - **Restructured Skill India Mission (2022–26)**, merges **Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0), the Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS), and the Jan Shikshan Sansthan (JSS) Scheme** into a single Central Sector Scheme.
- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):** Launched in **2015**, PMKVY provides free, short-term skill training to enhance employability.
- **Jan Shikshan Sansthan (JSS):** A community-based vocational programme for **non-literates, neo-literates, and school dropouts**, offering flexible and low-cost training.
- **Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS):** Aims to expand apprenticeships by providing **25% stipend support through DBT** to youth aged 14–35.
- **Rural Self Employment and Training Institutes (RSETIs):** Bank-led residential training centres focused on **entrepreneurship and self-employment** for rural youth.
- **Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY):** A demand-driven, placement-linked skilling scheme under **NRLM** targeting **rural youth unemployment**.
- **PM Vishwakarma Yojana:** Launched in **2023** to support **traditional artisans and craftspeople** in 18 trades.
- **Skill India Digital Hub (SIDH):** A technology-enabled platform using **Aadhaar-based verification** for skilling delivery.
  - **SIDH** supports real-time monitoring and integrates skilling with education and entrepreneurship systems.
- **Centres of Excellence at NSTIs:** Established in **2025** at **Hyderabad & Chennai** to strengthen advanced skilling.

Measures to Strengthen PMIS

- **Recalibrate Stipend**: Link stipend to regional living costs using benchmarks from **Germany's dual vocational training system** and **India's NAPS**. Aims to boost offer acceptance and completion rates.
- **Mandate Learning Outcomes & Certification**: Define **pre-set skill outcomes**. Issue **nationally recognised certificates** aligned with **NSQF** to enhance **employability**.

- **Strengthen Industry Accountability**: Require **CSR-based companies** to report on completion, skill acquisition, placement. Align with **social audit norms** used in welfare schemes.
- **Improve Candidate–Company Matching Using Skill Mapping**: Integrate **skill profiling, location preference, sector fit** before offer.
  - Reward **high completion rates** and **post-internship hiring**, as done under **NATS** and global youth programmes.
- **Decentralise Outreach**: Engage **ITIs, polytechnics, district employment offices** (as in **PMKVY**) to expand reach **beyond urban/elite institutions**.

How can India integrate internships, apprenticeships, and formal skilling into a coherent employability framework?

Drishti Mains Question

India's Maritime Strategy

India's evolving **maritime Strategy** has come into sharper focus following insights from *The Routledge Handbook of Maritime India*, which provides a comprehensive analysis of India's maritime evolution.

Evolution of India's Maritime Strategy

- **India's Early Maritime Orientation:** India's strategic geography is defined by the **Himalayas in the north and the Indian Ocean in the south**, creating both continental and maritime imperatives.
  - Historically, while invasions came via land routes, **India projected influence seaward** through trade, culture, and navigation.
  - Ancient and medieval maritime networks connected **India with Southeast Asia, the Arab world, and East Africa.**
  - The **Cholas and later the Marathas** demonstrated organised naval power, overseas expeditions, and maritime statecraft.
    - ❖ The Cholas are described as **"Nautical Tigers,"** symbolising organised naval power and overseas expeditions.
  - This early civilisational experience established the **Indian Ocean as a space of opportunity rather than threat.**
- **Colonial and Early Post-Independence Period: British colonial rule** subordinated Indian maritime power to imperial interests, dismantling indigenous naval traditions.
  - After Independence, India inherited a largely continental security mindset shaped by **Partition and hostility with Pakistan, the 1962 war with China**, and persistent border and internal security challenges.
  - As a result, maritime issues remained secondary despite early strategic warnings.
  - Although **Jawaharlal Nehru cautioned that control of the Indian Ocean directly affected India's trade and independence,** policy attention continued to remain predominantly land-centric.
- **Maritime Reorientation:** The mid-1980s marked a strategic shift as rising **dependence on seaborne trade and energy imports, naval modernisation**, and improved ties with Australia and Southeast Asia led India to view the seas as **strategic highways rather than mere defensive buffers.**
  - Economic liberalisation **deepened integration with global maritime supply chains**, while the **maritime vision expanded from the Indian Ocean to the Indo-Pacific,** enabling convergence with Japan, France, Australia, and **ASEAN** and reinforcing a rule-based order.
  - In the early 2000s, the Indian Navy's expanded reach and anti-piracy operations in the **Arabian Sea established India as a net security provider,** with **maritime diplomacy, joint exercises, and humanitarian assistance becoming key tools of influence.**
  - India's maritime strategy now integrates maritime security with capacity-building in neighbouring states and extends beyond defence to include the **Blue Economy,** underwater domain awareness, maritime technologies, climate resilience, and coastal security, treating oceans as strategic, economic, and ecological assets.
- **Legal Backing and Regulatory Modernisation:** India has modernised its maritime governance by replacing colonial-era laws with the **Merchant Shipping Act, 2025, Carriage of Goods by Sea Act, 2025, and Indian Ports Act, 2025**.
  - These reforms align Indian law with global conventions, strengthen safety and environmental standards, and improve ease of doing business through a rules-based regulatory framework.
- **Policy Vision**: India's Maritime Vision, through **Maritime India Vision 2030** and **Maritime Amrit Kaal Vision 2047**, aims to transform India into a global maritime hub.
  - India's maritime strategy is guided by the **SAGAR vision**, which frames the Indian Ocean as a **shared commons** based on collective security and growth, especially for the **Global South.**
  - This approach has been expanded globally through the **MAHASAGAR Vision,** integrating maritime security with development and sustainability.
- **Institutional Preparedness**: It has been strengthened through the **Indo-Pacific Oceans Initiative**, extending India's focus to the wider Indo-Pacific.

- Engagement with ASEAN, IORA, and BIMSTEC, supported by the **Information Fusion Centre–Indian Ocean Region**, reinforces a cooperative, rules-based maritime order.

Challenges to India's Maritime Strategy

- **China's IOR Penetration:** China's systematic expansion in the Indian Ocean Region—through **dual-use ports under the Belt and Road Initiative (Gwadar, Hambantota, Kyaukpyu)** and submarine forays has altered the regional balance.
  - India faces a **structural asymmetry** in shipbuilding capacity, defence-industrial scale, and logistics reach. The challenge lies in deterring coercion without triggering a destabilising **security dilemma** or a **zero-sum naval competition.**
- **Fragile Maritime Governance in the Neighbourhood:** Weak institutions, corruption, and elite capture in South Asian littoral states have enabled external strategic leverage.
  - **Sri Lanka's Hambantota** experience demonstrates how governance deficits, rather than ideology, drive alignment with China.
  - India's difficulty in offering **timely, financially competitive, and institutionally credible alternatives** limits its ability to shape maritime governance norms in its immediate neighbourhood.
- **Capability Gaps and Force Projection Constraints:** The Indian Navy operates across an expansive theatre from the **Strait of Hormuz to the Malacca Strait**, but faces persistent challenges due to delays in indigenous shipbuilding, submarine shortages, and dependence on imported propulsion, sensors, and combat systems.
  - Fiscal constraints further complicate the transition from **platform-centric modernisation** to **network-centric maritime dominance.**
- **Indo-Pacific Dilution and Partner Uncertainty:** The Indo-Pacific, once central to global strategic discourse, has lost momentum due to conflicts in **Ukraine, Gaza, and the Red Sea,** and evolving U.S. threat perceptions of China.
  - India must now navigate **Quad cooperation** without formal alliances, balancing **strategic autonomy**, partner expectations, and avoidance of bloc politics, making sustained maritime coordination increasingly complex.
- **Economic Exposure and Choke-Point Vulnerability:** India's dependence on maritime energy routes through **Hormuz and Bab el-Mandeb** exposes it to disruptions from regional instability, piracy, and maritime terrorism.
- **Technological Deficit in the Underwater Domain:** The next frontier of maritime competition lies below the surface.
  - India's lag in **Underwater Domain Awareness (UDA)**, seabed surveillance, autonomous underwater systems, and cyber-maritime integration risks eroding deterrence and situational awareness in contested IOR spaces.
- **Climate Change as a Force Multiplier**: Sea-level rise, extreme weather, and coastal erosion threaten critical naval infrastructure and island territories such as the **Andaman and Nicobar Islands**.
  - Simultaneously, **climate-induced humanitarian crises in the IOR will increasingly draw India into disaster response and stabilisation roles,** stretching naval resources beyond traditional security missions.

Measures to Strengthen India's Maritime Strategy

- **Statutory Integration:** Enact a consolidated **National Maritime Security Framework** by aligning the *Maritime Security Strategy (2015)*, *Sagarmala*, and *Blue Economy Policy* with clear legal roles for Navy, Coast Guard, ports, and coastal states.
- **Underwater Domain Awareness:** Operationalise UDA as a national mission by integrating Navy–ISRO–scientific institutions to secure **seabed cables, offshore assets, and EEZs**.
- **Regional Rule-shaping:** Assist Indian Ocean littorals in implementing **UNCLOS-compliant maritime laws**, coast guard legislation, and EEZ governance to convert cooperation into long-term alignment.
- **Climate–security Convergence:** Treat ports, naval bases, and island territories as **climate-critical infrastructure**, aligning maritime security planning with **NAPCC** and CRZ norms.
- **Human Capital for Maritime Statecraft:** Invest in ocean sciences, hydrography, maritime cyber expertise, and strategic studies to build **civilian and military expertise** essential for long-term maritime leadership.

Trace the evolution of India's maritime strategy from a land-centric outlook to an Indo-Pacific orientation.

Drishti Mains Question

Age of Consent and Adolescent Autonomy

In ***State of Uttar Pradesh versus Anurudh & Anr. (2026)***, the **Supreme Court of India** flagged the rising use of the **Protection of Children from Sexual Offenses (POCSO) Act, 2012 in cases involving consensual adolescent relationships**.

- Noting that a law meant to **protect children from sexual abuse** is often invoked by families against young couples when one partner is under 18, the Court urged the Union government to consider corrective measures.
- This observation has revived the long-standing debate on **whether India should reconsider the age of consent.**

Meaning of "Age of Consent" under Indian Law

- **Age of Consent:** It is the legally fixed age at which a person is **considered capable of consenting to sexual activity.** In India, this age is **18 years**, under the gender-neutral POCSO Act, 2012.
  - Anyone below 18 is legally treated as a "child", and their consent has **no legal validity**. Sexual activity with a minor is automatically classified as **statutory rape**, regardless of willingness.
  - Section 19 of POCSO Act, 2012 makes reporting mandatory for anyone who knows or even suspects an offence.
- **Legal Evolution:** In India age of consent was originally fixed at 10 years under the **Indian Penal Code (IPC), 1860** then raised to 12 by the **Age of Consent Act, 1891,** and subsequently increased to 14 and later 16.
  - In **2012**, the **POCSO Act** raised the **age of consent to 18 years**, and this position was **reinforced by the Criminal Law (Amendment) Act, 2013**, which aligned the **IPC's rape provisions** with the POCSO framework.
  - This standard has been retained under the **Bharatiya Nyaya Sanhita, 2023,** where **Section 63** defines rape to include sexual acts with or without consent if the woman is below 18 years of age.
  - Notably, the age of consent is **distinct from the minimum age of marriage, which remains 18 years for women and 21 years for men under Prohibition of Child Marriage Act, 2006.**
- **Judicial Views:**
  - **State v. Hitesh (2025), Delhi High Court**: The Court held that the law should recognise **consensual romantic relationships among adolescents and respect their autonomy**, provided such relationships are free from coercion, exploitation, or abuse.
    - ❖ It emphasised the need for legal and societal approaches to evolve in line with adolescent realities.
  - **Ashik Ramjaii Ansari v. State of Maharashtra (2023), Bombay High Court**: The Court ruled that sexual autonomy includes both the right to engage in **consensual sexual activity and the right to protection** from **sexual aggression,** and that recognising both is essential to uphold human dignity.
  - **Mohd. Rafayat Ali v. State of Delhi, Delhi High Court (2025)**: The Court reaffirmed that under the POCSO Act, consent is **legally irrelevant if the victim is below 18 years,** and any sexual act with a minor constitutes an offence irrespective of willingness.

Arguments Regarding the Lowering the Age of Consent

Arguments in Favour

- **Recognition of Adolescent Autonomy:** Adolescents aged 16–18 are increasingly capable of making informed choices about relationships due to **greater access to education, awareness of rights, exposure to digital information, and improved cognitive maturity,** yet the current law overlooks their evolving capacity for consent.
  - **Fourth National Family Health Survey (NFHS-4)** shows that 39% of Indian girls had their first sexual experience before 18, while Enfold and Project 39A studies (2016–20) found that **about one-fourth of POCSO cases involved consensual adolescent relationships,** making the law out of sync with ground realities.
- **Misuse of POCSO in Consensual Relationships:** A significant number of POCSO cases involve consensual romantic relationships between teenagers, often **triggered by parental disapproval rather than sexual exploitation.**
  - The blanket 18-year threshold **turns consensual intimacy into statutory rape, leading to arrest, incarceration,** and long trials that harm both the boy and the girl.
- **International practices:** Many countries set the age of **consent at 16 and provide "close-in-age" exemptions** to avoid criminalising peers in consensual relationships.
- **Shift towards Education Rather than Punishment:** Supporters argue that comprehensive sex education and awareness are more effective than criminal law in ensuring safe adolescent behaviour.
- **Need for a Nuanced Legal Approach:** Advocates suggest recognising consent for those above 16 while **retaining safeguards against coercion, exploitation**, or abuse of authority.

Arguments Against

- **Protection of Children from Exploitation:** Lowering the age risks weakening safeguards against sexual abuse, trafficking, and coercion, particularly in a society with deep power imbalances.
- **Consent May be Illusory:** A 2007 study by the Ministry of Women and Child Development found over 50% of abusers were known to the child (family members, teachers, neighbours), where apparent consent may actually be the result of fear, manipulation, or dependency.
  - A strict age threshold acts as a strong deterrent against **adult predators** who may otherwise exploit minors under the guise of consent.
- **Risk of Silencing Victims:** Diluting the POCSO could **discourage reporting** and legitimise coercive behaviour, undermining child protection goals.

- **Parliamentary and Expert Opposition:** Parliamentary Standing Committees (2011, 2012) opposed recognising minor consent or close-in-age exemptions.
  - **Law Commission (283rd Report, 2023)** warned that lowering the age would make POCSO ineffective and weaken efforts against child marriage, prostitution, and trafficking.
- **Broader social consequences:** Concerns exist that reducing the age may **encourage premature sexual activity without adequate emotional maturity or social support.**

Measures to Strengthen Child Safety & Protection While Reconsidering the Age of Consent

- **Legislative Domain with Judicial Clarity**: While **Parliament** holds authority to change the **age of consent**, SC must address the **interpretational divide** b/w **statutory law** & **HC rulings** to ensure **uniform application** by **police & lower courts**.
- **Holistic Approach**: Combine **legal reform** with sex education; Adolescent health services; Gender-sensitive policing; Family and community support—especially for adolescent girls.
- **Differentiate, Don't Dilute**: Law should **clearly separate consensual peer relationships** (16–18, close-in-age) from cases of **coercion, power imbalance, or exploitation**.
  - Allow consensual ties among **16–18-year-olds** within a **3–4 year age gap**, with **judicial scrutiny** to detect abuse.
- **Empathetic Framework**: Ensure **protection without over-criminalisation**, balancing child safety with adolescent autonomy.

The misuse of the POCSO Act in consensual adolescent relationships reflects a gap between law and social reality. Examine.

Drishti Mains Question

Department of Rural Development: Year Ender 2025

The **Department of Rural Development** released its **Year Ender 2025**, highlighting major gains in **rural connectivity, housing, livelihoods, employment, skilling, and social security**, alongside the enactment of a new employment guarantee law- marking a significant push towards **inclusive and resilient rural growth**.

Major Outcomes of India's Rural Development Efforts in 2025

- **Rural Connectivity and Physical Infrastructure:** Since its inception in 2000 the **Pradhan Mantri Gram Sadak Yojana (PMGSY)** has completed nearly **95% of sanctioned rural roads (7.87 lakh km) were completed**, strengthening economic integration, border connectivity, and all-weather access.
  - In 2025, high-performing states such as **Tamil Nadu (highest number of roads laid)**, and **Himachal Pradesh (highest road length) and Bihar (highest number of bridges constructed) demonstrate** region-specific gains, while focused investments in **border, hilly, Left-wing extremists (LWE)-affected, and northeastern regions** strengthened both economic integration and strategic access.
  - Digital reforms like **e-Bank Guarantees, and Standard Bidding Document (SBD)** improved transparency and execution efficiency.
- **Women-Centric Livelihood Transformation:** The **Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM)** emerged as a cornerstone of inclusive growth by mobilising **10.05 crore women into 90.9 lakh Self Help Groups (SHGs).**
  - The sharp decline in **non-performing assets (NPAs) from 9.58% (2014) to 1.76% (2025)** reflects institutional maturity, disproving the narrative that poor **households are "high-risk borrowers".**
  - The creation of **2 crore Lakhpati Didis** marks a structural shift from subsistence to sustainable income generation, corroborated by evidence of **19% income growth and 28% increase in savings** (3ie–World Bank study).
- **Housing Security and Human Development**: **Pradhan Mantri Awaas Yojana-Gramin (PMAY-G)** achieved large-scale housing outcomes with **3.86 crore houses sanctioned and 2.92 crore completed** by December 2025, including **23.4 lakh houses completed in 2025 alone**.
  - Under **Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyaan (PM JANMAN), 4.71 lakh houses were sanctioned and 2.42 lakh completed** for **PVTG households**, directly addressing historical deprivation.
  - Digital initiatives like **AwaasSoft, Awaas+, PAHAL (Pratyaksh Hanstantrit Labh)**, and **Aadhaar-based e-KYC** improved beneficiary targeting, transparency, and disaster-resilient housing design.
- **Skill Development and Employment Linkages: Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) under National Rural Livelihood Mission** strengthened placement-linked skilling by training around **82,000 rural youth in 2025**, while cumulative placements reached **11.64 lakh**.
  - Complementing this, **Rural Self Employment Training Institutes (RSETIs) trained 59 lakh rural youth**, achieving **43 lakh settlements**, with **RSETI 2.0** enhancing credit linkage targets to **50%**.
  - Together, these schemes improved employability, entrepreneurship, and non-farm income diversification.
- **Employment Security and Asset Creation**: **MGNREGS** generated **161.6 crore person-days in FY 2025–26**, with **56.73% women participation**.

- The emphasis on productivity is evident in **49.62 lakh completed works**, of which **60.59% were Category-B assets** (community assets or individual assets for vulnerable sections) linked to agriculture and livelihoods.
- Digital interventions like **National Mobile Monitoring System (95% attendance capture)**, **GeoMGNREGA (6.44 crore assets geotagged)**, and **Direct Benefit Transfer (DBT) (99% wage payments)** enhanced transparency and reduced leakages.
- The **Viksit Bharat- Guarantee For Rozgar And Ajeevika Mission (Gramin) (VB–G RAM G) Act, 2025** marked a paradigm shift by expanding the statutory employment guarantee to **125 days**, embedding **Gram Sabha-led, bottom-up planning** through **Viksit Gram Panchayat Plans (VGPPs)**.
  - ❖ These plans are aggregated into the **Viksit Bharat National Rural Infrastructure Stack (VBNRIS)**, which consolidates **Gram Panchayat proposals at district and state levels.**
  - ❖ The Act aligns employment generation with durable asset creation and the vision of **Viksit Bharat @ 2047**.

■ **Social Security and Welfare Delivery**: **National Social Assistance Programme (NSAP)** operationalised **Article 41 of the Constitution** by supporting **3.01 crore beneficiaries** in 2025–26.

- Near-universal digitisation, **91.45% Aadhaar seeding**, and **44 lakh Digital Life Certifications** improved inclusion and efficiency, while state top-ups enhanced pension adequacy.

■ **Governance and Cooperative Federalism**: **Designing Innovative Solutions for Holistic Access to Justice (DISHA)** strengthened last-mile governance through **district-level meetings**, integrating **100 schemes from 35 ministries** on a real-time dashboard.

- With **district committees chaired by MPs** and state-level committees led by Chief Ministers, DISHA institutionalised convergence, accountability, and **cooperative federalism, improving coordination and on-ground delivery of rural development programmes.**

"Rural development in India is no longer about welfare delivery alone but about institution-building and resilience." Discuss.

Drishti Mains Question

National Youth Day 2026

National Youth Day (12th Jan) marks **Swami Vivekananda's birth anniversary**, honouring his ideals of **character, service, and nation-building**.

■ With **65%+ population under 35 years**, youth empowerment is key to **Viksit Bharat @2047**.

Key Initiatives Taken by the Government for Youth Empowerment

- **Mera Yuva Bharat** (**MY Bharat**): Digital platform for **volunteering**, **leadership**, **skilling**, with **AI career services** and **Fit India** integration.
- **National Service Scheme** (**NSS**) **& Viksit Bharat Young Leaders' Dialogue** (**VBYLD**): NSS fosters **civic engagement**; **VBYLD** engages ~**3,000 youth**, with **50.42 lakh+ digital outreach** via MY Bharat & MyGov.
- **Agnipath Scheme**: **4-year military service** for youth (17.5–21 yrs), building **discipline**, **skills**, and **post-service employability**.
- **PM-SETU**: Upgrading **1,000 ITIs** under a **Govt-industry hub-and-spoke model** to meet evolving **labour-market needs**.
- **Skill India Mission**: Integrates **PMKVY 4.0**, **PM-NAPS**, **Jan Shikshan Sansthans** (**JSS**) for **vocational training**, **apprenticeships** & **lifelong learning**.
- **PM Viksit Bharat Rozgar Yojana**: Targets **3.5 crore jobs in 2 years** with incentives for **youth and employers**.
- **Startup India & PM MUDRA Yojana**: Supports **1.97 lakh+ startups** and offers **loans up to ₹20 lakh** to new entrepreneurs, women, and MSMEs.
- **Fit India Movement**: Promotes **daily fitness** via **Sundays on Cycle**, **Fit India School**, **pledges**, and **digital tracking**.
- **Youth Spiritual Summit & Kashi Declaration**: Youth-driven roadmap promoting **mental well-being**, **substance-free living**, and **value-based leadership** for a **Nasha Mukt Yuva** under **Viksit Bharat**.
- **Rashtriya Kishore Swasthya Karyakram** (**RKSK**): Comprehensive adolescent health programme covering **nutrition**, **mental health**, **sexual/reproductive health**, **substance misuse**, **NCDs**, and **injury prevention**.

Swami Vivekananda

■ **About:** Born as **Narendra Nath Datta** on **12th Jan 1863**, he was a monk and chief disciple of **Ramakrishna Paramhansa**.

- Adopted the name **'Vivekananda'** in **1893** at the request of **Maharaja Ajit Singh of Khetri**, changing from 'Sachidananda'.

■ **Enlightenment:** In **1892**, meditated for **three days** on a rock off **Kanyakumari**, leading to his **enlightenment** (now **Vivekananda Rock Memorial**).

■ **Contributions:**

- **Philosophical**: Introduced **Vedanta** & **Yoga** globally; preached **neo-Vedanta**, blending **spirituality with material progress**.
- **Spiritual**: Drew from **Upanishads**, **Gita**, **Buddha** & **Jesus**; stressed **self-realization**, **compassion**, and **service**.
  - ❖ Advocated **serving jiva** (living beings) **as worship of Shiva**.

- ❖ Outlined **four paths to moksha (liberation)**: *Raja-yoga*, *Karma-yoga*, *Jnana-yoga*, *Bhakti-yoga*.
- **Revivalism**: Emphasised **education** for national regeneration; promoted **man-making, character-building** education.

- **Associated Organisations:** Founded the **Ramakrishna Mission** in **1897** for **service**, **education**, and **spiritual upliftment**. Established **Belur Math** in **1899** as his permanent residence.
- **International Address:** Represented **Hinduism** at the **1893 Parliament of Religions**, **Chicago**. Addressed the **London Hindu Association** in **July 1896**.

Year-End Review 2025: Department of Justice

The **Department of Justice's** 2025 annual review highlighted its key achievements in modernizing **India's legal landscape** through a multi-pronged strategy focused on **judicial appointments**, **digital transformation**, legal aid expansion, and infrastructure development.

Key Achievements in the Year 2025

- **Strengthening Judicial Capacity:** In 2025, **157 new Judges** were appointed to **High Courts**, led by Allahabad (40), Bombay (21), Madhya Pradesh (15), and Rajasthan (15), while **47 Additional Judges** were made permanent and 13 had their tenures extended.
  - Additionally, **12 new Chief Justices** were appointed and **44 inter-High Court judge transfers** were effected to optimize expertise distribution.
- **Expanding Legal Access:** Tele law (legal advice over **telephone or video conferencing**) has achieved massive **geographical penetration** by covering **2.5 lakh Gram Panchayats** across **776 districts** and provided pre-litigation advice to over **1.12 crore beneficiaries**.
  - District level **workshop and training** conducted in **638 districts** training over **37,000 participants**, and concluded with the **Hamara Samvidhan Hamara Samman campaign** (to inculcate constitutional values) reaching **70.70 lakh people**.
- **Legal Aid Schemes for Vulnerable Groups:** New schemes launched included the **Veer Parivar Sahayata Yojana** for defence personnel in Srinagar and the **NALSA Scheme for Victims of Human-Wildlife Conflict**.
  - The Supporting Potential and Resilience of the Unseen, Held-back and Affected **(SPRUHA) Scheme** was introduced for **dependents of prisoners and crime victims**, and marking 30 years of NALSA, a **Community Mediation Training Module** was also launched.
- **Digital Transformation of Courts:** India has become a global leader in **virtual hearings** with over **3.91 crore conducted**, and enhanced citizen access via **1,987 eSewa Kendras** and the **e-Courts** mobile app with **3.38 crore downloads**.
  - Under the **eCourts Phase-III** project, over **92 lakh cases** were filed electronically, and **Rs 1,215 crore** was collected as **online court fees**.
- **Enhancing Efficiency in Justice Delivery:** Operationalized **774 Fast Track Special Courts (FTSCs)**, including **398 exclusive POCSO courts**, in **29 States/UTs**. These courts disposed of **3.6 lakh cases** since inception, with a 2025 disposal rate of **7.41 cases/month/court**—more than double the rate of regular courts (3.18 cases/month/court).
- **Infrastructure and Monitoring Systemic Reforms:** Physical infrastructure was dramatically improved, with **Court Halls** increasing to **22,663** and **Residential Units to 20,033** from 2014 baselines of 15,818 and 10,211 respectively.
  - Real-time monitoring is enabled via the **Nyaya Vikas Portal 2.0**, and **geotagging 94.66%** of projects, while engagement in the **World Bank's B-READY** framework assessments aims to improve India's global standing in dispute resolution.

National Legal Services Authority (NALSA)

- **About:** NALSA is a **statutory body** constituted in **1995** under the **Legal Services Authorities Act, 1987**, to **monitor, evaluate, and implement** legal aid programmes across India. It has completed **30 years** in 2025. The **Chief Justice of India** (**CJI**) is the **Patron-in-Chief** of NALSA.
- **Constitutional Mandate:** Formed to give effect to **Article 39A** of the Constitution of India, which mandates the State to provide **free legal aid** to ensure **equal justice and opportunities** for all citizens, particularly those with economic or other disabilities.
  - Also upholds the obligations under **Article 14** (equality before law) and **Article 22**(**1**) (rights to be informed of grounds for arrest).
- **Primary Functions:** Lay down **policies and principles** for making **legal services available** under the Legal Services Authorities Act, 1987.
  - **Monitor and evaluate** the implementation of legal aid programmes across India. **Disburse funds and grants** to State Legal Services Authorities (SLSAs) and **Non-Governmental Organisations** (**NGOs**) for implementing legal aid schemes and programmes.
- **Integrated Network:** NALSA is the **apex body** of a nationwide network envisaged under the Legal Services Authorities Act, 1987 for providing **legal aid and assistance**. This network includes:
  - **State Legal Services Authorities** (**SLSAs**): Headed by the **Chief Justice** of the respective **High Court** (Patron-in-Chief).
  - **District Legal Services Authorities** (**DLSAs**): Chaired by the **District Judge** of the respective district.
  - **Taluk/Sub-Divisional Legal Services Committees**: Headed by a **senior civil judge**.
  - High Court Legal Services Committees and the Supreme Court Legal Services Committee.
- **Eligible Groups:** Women and Children, Members of **Scheduled Castes** (**SC**) and **Scheduled Tribes** (**ST**), **Economically Weaker Sections** (**EWS**), Industrial Workers, Disabled Persons and Other specified categories.

Assess the multifaceted initiatives undertaken by the Department of Justice in 2025 to enhance judicial capacity, legal aid, and access to justice in India.

Drishti Mains Question

NITI Aayog on Internationalisation of Higher Education in India

NITI Aayog's report– *Internationalisation of Higher Education in India: Prospects, Potential, and Policy Recommendations* outlines **roadmap** to make India a **global higher education hub**

Importance of Internationalisation of Higher Education for India

- **Addressing Brain Drain: 1:28 inbound–outbound student ratio; 16+ lakh** Indians renounced citizenship since 2011. Internationalisation can convert brain drain into **brain circulation**
- **Reducing Economic & Foreign Exchange Outflow:** Overseas education spending projected at **Rs 6.2 lakh crore** (by 2025). Equals **~2% of GDP** & **~75% of India's trade deficit** (FY 2024–25)
- **Strengthening India's Global Competitiveness**: Over **8.5 lakh Indian students** in **US, UK, Australia;** risks to India's knowledge economy & innovation base. Attracting global talent boosts research quality & rankings
- **Boosting Research & Soft Power:** India hosts **~47,000 international students (2022)**; potential to rise to **7.89–11 lakh by 2047.** Inflow grew by **518% since 2001**
  - Enhances **research**, **global collaborations**, and **cross-cultural learning**
  - Strengthens **educational diplomacy** and positions India as a **global knowledge hub**
- **Supporting National Development Goals:** Supports **NEP 2020** & **India@2047 vision.** Aids in building high-skilled workforce for growth and tech leadership

Challenges in Internationalisation of Higher Education in India	Recommendations Proposed By NITI Aayog
■ **Limited Scholarships & Financial Aid: 41% institutions** (surveyed by NITI Aayog) cite inadequate financial aid. India less competitive vs **Germany & France**	■ **Scholarships and Fellowships for Global Talent**: **Vishwa Bandhu Scholarships** (for international students); **Vishwa Bandhu Fellowships** (for foreign faculty/researchers)
■ **Weak Global Perception of Education Quality**: No Indian university in **QS World University Rankings: Asia 2026** top 50 despite strong performers like **IITs, IISc**	■ **Creation of National Research Fund**: **Bharat Vidya Kosh** – USD 10 billion sovereign research fund; **50% diaspora/philanthropy**, **50% GoI**
■ **Regulatory & Visa Hurdles**: Multiple regulators, slow visas, no single-window system; India lacks **fast-track academic visa** like **Australia**	■ **Multilateral Academic Mobility Framework**: **Tagore Framework** – Erasmus⁺-style exchange with **ASEAN, BRICS, BIMSTEC**
■ **Poor International Campus Infrastructure**: Lack of **hostels, labs, libraries, student services.** Few campuses (e.g., **IIT Madras**) meet global standards	● **Erasmus⁺**: EU programme for education, training, youth, and sport mobility across individuals and organisations
■ **Difficulty In Attracting Foreign Faculty**: Rigid rules, salary caps, no tenure security. India lags behind **US, Europe** in academic hiring.	■ **Regulatory & Visa Reforms**: Simplified norms, fast-track tenure, competitive salaries, single-window system. Allow **foreign university campuses** in India, incl. **campus-within-campus models**
● Lack of interdisciplinary, research-intensive, globally benchmarked courses; **joint degrees** & **dual-campus programmes** rare	■ **Reforms in Rankings & Quality Metrics**: Expand **NIRF** to include Outreach & Inclusivity, Globalisation & Partnerships
■ **Weak International Branding & Outreach: No coordinated global marketing** or **alumni ambassador networks.** Countries like Canada lead in global education branding	■ **Branding, Outreach & Alumni Engagement:** Launch **Bharat ki AAN** – Alumni Ambassador Network
	■ **Institutional & Cultural Readiness**: Strengthen student support, cultural integration, and institutional capacity

Why has the internationalisation of higher education become a strategic imperative for India? Examine in light of economic and geopolitical factors.

Drishti Mains Question

Year End Review-2025: Ministry of Parliamentary Affairs

In **2025**, the **Ministry of Parliamentary Affairs** successfully steered a **robust legislative agenda**, achieving significant milestones in **digital governance of legislatures** and expanding democratic engagement.

Key Achievements in the Year 2025

- **High Legislative Output**: Facilitated the passage of **39 Bills** by both Houses, including major reforms like the **Income-tax Bill, 2025** (to simplify the tax code), the **VB-G-Ram-G Bill, 2025** (for rural employment), and the **Promotion and Regulation of Online Gaming Bill, 2025**.

- **Substantive Parliamentary Discourse**: Organized and facilitated **high-level debates** beyond legislation, including discussions on **Operation Sindoor**, **Election Reforms**, **India's space program**, and the 150th anniversary of **Vande Mataram**, ensuring **Parliament** remained a forum for **national dialogue** on critical issues.
- **Pioneering Digital Governance**: Achieved a landmark in **e-governance** by making **20 State/UT Legislatures** fully live on the **National e-Vidhan Application (NeVA)**, a **Digital India Mission** Mode Project. Conducted the **3rd National Conference on NeVA** and capacity-building workshops for **state officials**.
- **Efficient House Management & Accountability**: Effectively managed mechanisms like **Rule 377** of **Lok Sabha** and **Zero Hour**, and ensured **100% disposal of RTI** and **public grievances**. The **Online Assurance Monitoring System (OAMS)** tracked implementation of **parliamentary assurances**.
- **Expanded Youth Engagement**: Scaled up the **Youth Parliament Programme** significantly through the upgraded **National Youth Parliament Scheme (NYPS) 2.0 portal**, recording over 1,800 institutional registrations and 15,800 individual participations nationwide.
- **National Celebrations & Outreach**: Actively coordinated the nationwide **Constitution Day 2025** and organized events for the 150th anniversary of '**Vande Mataram**, reinforcing **constitutional** and **patriotic values**.
- **Diplomatic & Coordination Functions**: Facilitated inter-parliamentary exchanges, hosting delegations from the **UK**, **Russia**, and **Saudi Arabia**, and provided clearances for **state government delegations** travelling abroad.
- **National Initiatives**: Executed **Special Campaign 5.0** for **cleanliness** and cleared 100% of identified pendencies. Promoted **Official Language implementation** through committees, workshops, Hindi Pakhwada, and seminars.
- **Committee Management**: Constituted and supported **42 Consultative Committees of Members of Parliament (MPs)** for various ministries, organizing **85 meetings** and nominating **MPs** to numerous **advisory boards** and **committees**.

Discuss the role of the Ministry of Parliamentary Affairs in strengthening legislative functioning and accountability in India.

Drishti Mains Question

Design Linked Incentive (DLI) Scheme

India's **Design Linked Incentive (DLI) Scheme** for **Semiconductors** has shown strong on-ground outcomes, highlighting rapid progress in building a **self-reliant semiconductor design ecosystem** amid global supply-chain vulnerabilities.

Key Facts About DLI Scheme

- **About:** The **DLI Scheme** is a central government initiative implemented by the **Ministry of Electronics and Information Technology (MeitY)** under the **Semicon India Programme** to promote **indigenous semiconductor chip design** by providing **financial incentives and advanced design infrastructure** to domestic startups and MSMEs.
- **Objective:** The DLI scheme aims to create a **globally competitive, self-reliant chip design ecosystem** focused on **fabless semiconductor design**.
  - **Fabless semiconductor design** means designing and developing semiconductor chips **without owning manufacturing plants**, with fabrication outsourced to specialised foundries.
- **Need for DLI Scheme:** Fabless semiconductor companies occupy the most strategic position in the electronics value chain, as **design and IP contribute over half of a chip's value, account for up to 50% of value addition** and **20–50% of the Bill of Materials,** and drive nearly **30–35% of global semiconductor sales.**
  - Since **design and IP determine performance, efficiency, security, and long-term competitiveness**, the absence of indigenous design capabilities leaves countries dependent on imported core technologies even with local manufacturing, underscoring the need to build a **strong domestic fabless ecosystem through the DLI Scheme**.
- **Eligibility** The DLI Scheme covers **startups** (as per **Department for Promotion of Industry and Internal Trade (DPIIT) notification, 2019**), **MSMEs** (as per MSME notification, 2020), and **domestic companies** owned by resident Indian citizens in line with **Foreign Direct Investment (FDI) Policy Circular, 2017** or extant norms.
  - This inclusive design allows participation across stages of enterprise maturity.
- **Scope of Support:** Support is provided across the **entire semiconductor design lifecycle**, including **Integrated Circuits (ICs), chipsets, Systems-on-Chip (SoCs), systems, and IP cores**.
  - The scheme emphasises **indigenous design, IP ownership, and deployment** in electronic products.
- **Financial Incentives:** The scheme offers two major incentives. The **Product Design Linked Incentive** reimburses up to **50% of eligible expenditure**, capped at **₹15 crore per application**.
  - The **Deployment Linked Incentive** provides **4–6% of net sales turnover for five years**, capped at **Rs 30 crore**, subject to minimum sales and successful product deployment.

- **Design Infrastructure Support:** Provided through the **ChipIN Centre operated by Centre for Development of Advanced Computing (C-DAC).**
  - This includes access to advanced **National EDA (Electronic Design Automation) Tool Grid, IP core repositories, MPW prototyping, and post-silicon validation**, significantly lowering entry barriers for chip design.
- **Key Achievements of DLI:** Under the DLI scheme, 24 chip-design projects have been sanctioned across areas such as video surveillance, **drone** detection, energy meters, microprocessors, **satellite communication**s, and broadband and **Internet of Things System on a Chip (IoT SoC).**
  - The **ChipIN Centre** has democratised access to chip design infrastructure, supporting **about 1 lakh engineers and students across 400 organisations**, while the national **EDA Grid** has seen extensive usage, reflecting strong ecosystem adoption.

Key Institutional Frameworks for Semiconductor Design in India

- **Semicon India Programme (SIM):** With an outlay of **Rs 76,000 crore**, SIM supports **semiconductor and display manufacturing as well as chip design.**
  - **Centre for Development of Advanced Computing (C-DAC)** acts as the **nodal implementing agency**.
- **Chips to Startup (C2S) Programme:** A national **capacity-building initiative** across academic institutions to create ~**85,000 industry-ready professionals** at BTech, MTech, and PhD levels in semiconductor chip design.
- **Microprocessor Development Programme:** Led by **C-DAC, IIT Madras, and IIT Bombay**, this programme has delivered **open-source, indigenous microprocessors** such as **VEGA, SHAKTI, and AJIT**, advancing **technological self-reliance**.

NATGRID–NPR Integration

National Intelligence Grid (NATGRID) has been linked to the **National Population Register (NPR)**, allowing authorised agencies real-time access to **family-level demographic data** of **nearly 119 crore residents**, significantly expanding India's intelligence and investigation architecture.

Key Facts About NATGRID

- **NATGRID:** It is a **secure, integrated intelligence-sharing platform** designed to help law enforcement and security agencies **access multiple databases in real time** for counter-terrorism and criminal investigations.
  - NATGRID was conceived in **2009**, in the aftermath of the **26/11 Mumbai terror attacks (2008)**, to overcome information silos among security agencies and enable faster, intelligence-led responses.
    - ❖ It became operational in **2023** and currently processes **around 45,000 data access requests per month** from authorised agencies.
  - Initially limited to **10 central agencies (IB, RAW, NIA, ED, FIU, NCB, DRI**, etc.) had access. It has now been **expanded to SP-rank officers** of State police, strengthening Centre–State coordination.
- **Key Tools:** Advanced analytics tools like **Gandiva** support **facial recognition, entity resolution, and multi-source data analysis**, allowing investigators to identify suspects using images and family-linked NPR data.
  - An **Organised Crime Network Database** is being developed on NATGRID to enable secure data-sharing between the NIA and State Anti-Terror Squads.
- **Nature of Data Access:** NATGRID allows access to **Aadhaar, banking, tax, FASTag, passport, travel, Financial Intelligence Unit and social media data**. The information is categorised as **non-sensitive, sensitive, and highly sensitive** (bank statements, financial and tax data, export-import details).
- **Privacy and Safeguards:** Each query is **logged, purpose-based, and subject to senior officer oversight**, but **data access without a First Information Report (FIR)** raises concerns over **privacy, proportionality, and due process**.
- **Federal Dimension:** States have been encouraged to **actively use NATGRID**, strengthening **Centre–State intelligence coordination**.
  - NATGRID's architecture is designed to integrate databases connected to nearly 14,000 police stations across the country.

National Population Register (NPR)

- The NPR is a **nationwide database containing demographic and family-wise details of residents in India,** including name, age, gender, address, and family relationships. NPR is the first step for the creation of a countrywide **National Register of Citizens (NRC)**.
- The NPR is prepared under the provisions of the **Citizenship Act 1955** and the **Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003.** It is mandatory for **every "usual resident of India"** to register in the NPR. A **usual resident** is a person who has lived in a local area for **six months or more**, or **intends to reside there for the next six months or more**.
- NPR data was collected during the **2010–11 Census** and last updated in 2015. no decision has been taken to update it during the **upcoming Census 2027**.

BEE Standards and Labelling Programme

The **Bureau of Energy Efficiency (BEE)** has tightened India's energy efficiency regime by **making star labelling mandatory for a wider range of appliances**, thereby expanding compulsory **energy performance disclosure under the Standards and Labelling (S&L) Programme**.

India's Energy Efficiency Initiatives

- **National Mission for Enhanced Energy Efficiency (NMEEE):** It is one of the eight national missions under the **National Action Plan on Climate Change (NAPCC). NMEEE** consist of four initiatives to enhance energy efficiency in energy intensive industries which are as follows:
  - **Perform, Achieve and Trade (PAT) Scheme:** Improves efficiency in energy-intensive industries through mandatory targets and tradable Energy Saving Certificates (ESCerts).
  - **Energy Efficiency Financing Platform (EEFP):** Facilitates access to finance for energy efficiency projects by connecting project developers with financial institutions.
  - **Market Transformation for Energy Efficiency (MTEE):** Encourages uptake of super-efficient technologies through policy and financial interventions.
  - **Framework for Energy Efficient Economic Development (FEEED):** It provides partial credit guarantees to cover default risk on energy efficiency loans, with guarantees for up to 5 years and 40–75% of the loan amount or Rs 15 crore per project.
- **Energy Conservation Building Code (ECBC), 2017:** Sets minimum energy performance standards for commercial buildings to curb energy use.
- **Unnat Jyoti by Affordable LEDs for All (UJALA):** Accelerates adoption of LED lighting and efficient fans to reduce household bills and peak power demand.
- **Bachat Lamp Yojna (BLY):** The programme was developed for replacement of inefficient bulbs with Compact Fluorescent Lamps (CFLs).
- **Street Lighting National Programme:** Its objectives include reducing energy consumption, lowering operational costs for municipalities, and fostering a market transformation towards energy-efficient appliances.
- **BEE State Energy Efficiency Index:** It **assesses and compares the energy efficiency performance of Indian States and Union Territories**, enabling **data-driven monitoring**, **healthy inter-state competition**, and identification of **best practices and policy gaps** across key sectors.
  - States are classified into **Front Runners** (>60%), **Achievers** (50-60%), **Contenders** (30-50%), **and Aspirants** (<30%), reflecting their relative progress.

BEE's Standards and Labelling (S&L) Programme

- **Background:** Launched in **2006** under the **Energy Conservation Act, 2001** by the **Ministry of Power**, Government of India, and implemented by the **BEE**.
- **Objective: S&L Programme** enables **informed consumer choice**, reduces electricity consumption and energy bills, and encourages manufacturers to adopt **energy-efficient technologies**.
- **Star Labelling System:** A key feature of the programme is the star labelling system, which rates appliances **on a scale of one to five stars based on their energy efficiency.**
  - **Five stars indicating the most energy-efficient product** within a given category, making efficiency comparison simple and visual for consumers.
  - Under the programme, appliances are tested against prescribed **Indian Standards** and assigned star ratings based on their **energy consumption and performance parameters**, with labels displaying essential information such as star rating, annual energy use, product category, and brand.
- **Coverage:** The programme covers a wide range of household appliances and industrial equipment, with **some products brought under mandatory star labelling and others under voluntary labelling,** depending on government notifications and market readiness.
- **Labels under the S&L Programme:**
  - **Comparative Label:** Shows **1–5 star ratings** to compare energy efficiency among models of the same product category. It helps consumers easily identify the **most energy-efficient appliance**.
  - **Endorsement Label:** Certifies products that meet **minimum energy performance standards** notified by BEE. It assures compliance with efficiency norms rather than comparison.
- **Dynamic Nature:** To keep pace with technological advancements, **BEE periodically revises star rating criteria,** ensuring that efficiency benchmarks remain relevant and that manufacturers continuously improve product efficiency.
- **Significance:** It plays a crucial role in **curbing national electricity demand**, **lowering consumer power bills**, and **cutting carbon emissions**. Notably, **Standards and Labelling (S&L) programmes have already reduced around 60 million tonnes of CO_2 annually**, while also **strengthening India's long-term energy security**.

Year End Review-2025: Ministry of Panchayati Raj

In **2025**, the **Ministry of Panchayati Raj (MoPR)** significantly strengthened **grassroots governance** by leveraging digital tools, capacity building, women and tribal empowerment, and institutional reforms.

Key Achievements of the Ministry of Panchayati Raj in 2025

- **Progress in Land Governance:** Under the **SVAMITVA Scheme**, **2.75+ crore property cards** were generated. **Drone surveys** completed in 3.28 lakh villages; full saturation achieved in multiple States/UTs.
  - Earned international recognition at the **World Bank Land Conference 2025**.
- **Digital & Geospatial Governance Innovations:** Implementation of **Enhanced Gram Panchayat Spatial**

Development Plans (GPSDP) in 36 Gram Panchayats (GPs) across 14 States.

- Promotion of **One Nation One Map** and digital planning tools like **Gram Manchitra** and **SVAMITVA GIS platforms**.

- **AI and e-Governance for Transparency:** Launch of **SabhaSaar** (AI-powered Gram Sabha meeting summarizer) supporting 13 regional languages via **BHASHINI**.
  - **eGramSwaraj** platform strengthened financial governance with **Rs 34,573 crore online payments**.
- **Institutional Strengthening:** Construction sanctioned for **1,638 Gram Panchayat Bhawans**, ensuring offices for all GPs with population above 3,000.
  - Leadership and Management Development Programs conducted at **IIMs, IITs, and IRMA**, strengthening administrative capacity.
- **Women-Led Development:** Launch of **Sashakt Panchayat Netri Abhiyan** (44,421 Women Elected Representatives trained) and **Model Women-Friendly Gram Panchayat** initiative.
- **Financial Self-Reliance of Panchayats:** Promotion of the **Saksham Panchayat** initiative for **Own Source Revenue (OSR)** generation. Over **1.10 lakh** elected representatives and officials **trained** using an **IIM Ahmedabad-designed OSR module**, advancing financial Atmanirbharta.
- **Youth Engagement:** Launch of **Model Youth Gram Sabha (MYGS)** involving Jawahar Navodaya Vidyalayas (JNVs) and **Eklavya Model Residential Schools (EMRS)** students, nurturing future democratic leadership.
- **Empowerment of Tribal Communities: 16,000+ dedicated staff deployed** for **Panchayats Extension to Scheduled Areas Act (PESA), 1996** implementation across **10 PESA States**.
  - Launch of cultural campaigns like **Hamari Parampara, Hamari Virasat** and organization of PESA Mahotsav 2025.
- **International Recognition: Meri Panchayat** m-Governance platform won the **WSIS Champion Award 2025**, reinforcing India's leadership in **Digital India** and good governance.

Primary Challenges Confronting PRIs in India

- **Devolution Deficit:** Despite the **73rd Amendment Act, 1973**, mandating **devolution of 29 subjects**, functional devolution has declined from **35.34% to 29.18%.** Critical functions like **rural electrification** and **vocational training** remain under **state control**, curtailing PRIs' authority and local accountability.
- **Fiscal Dependence and Resource Starvation: PRIs** exhibit extreme **fiscal dependence**, generating only about **1% of revenue from local taxes**. In **FY 2022–23**, **own tax revenue** was a mere **Rs 737 crore** of a **Rs 35,354 crore total revenue**. Average own-tax per panchayat is just **Rs 21,000**, compared to **~Rs 20 lakh** in combined grants.
- **Patriarchal Norms and Apathetic Participation:** The **Sarpanch Pati** phenomenon subverts **women's leadership**, particularly in states like **Uttar Pradesh** and **Bihar**. **Gram Sabha efficacy** is crippled by **low turnout** (**average 13%**) and a stark **gender gap** (**men 21% vs. women 7%**).
- **Administrative Encroachment:** Bureaucratic overreach through **Panchayat secretaries** and parallel bodies like **District Rural Development Agencies (DRDAs)** undermines elected representatives' decision-making.
- **Infrastructure Deficits:** Many **PRIs** face **poor infrastructure** (limited offices and internet) and a **shortage of trained staff**, creating bottlenecks in budgeting, planning, and implementation. Although **Rashtriya Gram Swaraj Abhiyan (RGSA)** addresses capacity building, its **coverage remains uneven**.

Measures to Strengthen PRIs in India

- **Implement Constitutional Mandate on Devolution:** States must fully devolve **Functions, Finances, and Functionaries (3Fs)** for all **29 Eleventh Schedule subjects**, as mandated by the **73rd Amendment Act, 1973** and reinforced by the **2nd Administrative Reforms Commission (ARC's)** call for clear activity mapping to prevent overlap.
- **Catalyze Fiscal Empowerment: PRIs** must significantly boost their **Own Source Revenues (OSR)** through enhanced **local taxation and fees**, while adopting technology like the **Samarth Panchayat portal** for efficient revenue management.
  - Innovative financing mechanisms, such as the **Social Stock Exchange**, are essential to reduce **bureaucratic dependency**.
- **Build Institutional Capacity and Accountability Mechanisms:** To bridge administrative gaps, training under the **Rashtriya Gram Swaraj Abhiyan (RGSA)** must be scaled up and **full-time, trained Panchayat secretaries** appointed.
  - Accountability should be institutionalized through **mandatory social audits** (like **Meghalaya's 2017 Act**), performance-based incentives, independent **State Election Commissions (SECs)**, and robust **grievance systems**.
- **Harness Technology and Ensure Social Inclusion:** Digital governance must be integrated through platforms like **eGramSwaraj, SVAMITVA,** and **Gram Manchitra** for transparent planning and property mapping.
  - To ensure **genuine women's leadership**, legal sanctions and sensitization are needed to combat the **Sarpanch Pati phenomenon**, while actively integrating **Women's Self-Help Groups (SHGs)** into **Panchayat processes.**
- **Citizen-Centric Governance: Gram Sabhas** must be revitalized through **mandatory regular meetings** and

digital tools like **SabhaSaar**, while expanding **model initiatives** like **Youth Gram Sabhas** to enhance **engagement.**

Examine the challenges faced by Panchayati Raj Institutions in India despite constitutional provisions for devolution.

Drishti Mains Question

Viksit Bharat Shiksha Adhishthan Bill 2025

The **Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025** was introduced in the **Lok Sabha** in the **Winter Session of Parliament** and referred to a **joint parliamentary committee**.

- The Bill aims to **revamp India's higher education regulation** to implement the **National Education Policy (NEP) 2020**.

Viksit Bharat Shiksha Adhishthan Bill, 2025

- **About:** It is a **proposed new law** to create a **unified regulatory architecture** for **higher education in India**, framed under **Entry 66** (determination of standards for higher education) of the **Union List** of the Constitution.
  - Its core purpose is to empower **Higher Educational Institutions (HEIs)** to achieve **excellence** through effective coordination and the determination of standards.
- **Need of the Bill:** To **overhaul** the higher education **regulatory framework** in line with **NEP 2020** by eliminating overlapping authorities, **simplifying regulation**, and **reducing compliance burdens** so institutions can focus on academic excellence.
- Proposed Major Changes:
  - **Establishes a New Apex Body**: The **Viksit Bharat Shiksha Adhishthan** will be set up as the **overarching authority**. The **Council of Architecture (CoA)** will function as a **Professional Standard Setting Body (PSSB)**, as envisaged in NEP 2020.
  - **Creates Three Specialized Councils**:
    - **Viksit Bharat Shiksha Viniyaman Parishad**: The **Regulatory Council** for coordination and maintenance of standards.
    - **Viksit Bharat Shiksha Gunvatta Parishad**: The independent **Accreditation Council**.
    - **Viksit Bharat Shiksha Manak Parishad**: The **Standards Council** for specifying minimum academic standards.
  - **Replaces Existing Bodies**: The Bill provides for **repealing the acts** governing the **University Grants Commission (UGC, 1956)**, the **All India Council for Technical Education (AICTE, 1987)**, and the **National Council for Teacher Education (NCTE, 1993)**.
    - All HEIs currently under these bodies will come under the **Viksit Bharat Shiksha Adhishthan** for standard-setting.

Significance of the Viksit Bharat Shiksha Adhishthan Bill, 2025

- **Regulatory Consolidation and Simplification:** By **repealing** the UGC (1956), AICTE (1987), and NCTE (1993) Acts, the Bill ends **fragmented,** contradictory regulation, replacing it with a **single, unified regulatory architecture**. This will drastically reduce **compliance complexity**, shifting the focus to **academic excellence** and implementing **Single Window Interactive Systems** for ease of operation.
- **Operational Clarity:** The Bill separates standard-setting, regulation, and accreditation into **three independent councils** under **one apex body**. This **structural division** enhances **objectivity**, reduces **conflicts of interest**, and improves the **credibility** and **effectiveness** of quality governance.
- **Transparency and Trust-Based Governance:** A public **digital disclosure portal** forms the cornerstone of the new framework, enabling stakeholders to make **informed decisions** based on accessible data. This move toward **public self-disclosure** strengthens **accountability** and promotes **peer competition** on quality metrics, creating strong incentives for continuous improvement.
- **Alignment with NEP 2020 & Viksit Bharat:** The Bill is the **primary legislative vehicle** to implement the **NEP 2020** higher education vision by embodying its principles of **autonomy**, **multidisciplinarity**, and Indian knowledge systems. It contributes to the **Viksit Bharat 2047 vision** by aiming to create a **high-quality knowledge economy** through boosting **research**, **innovation**, and the **Gross Enrolment Ratio (GER)**.
- **Enhancing Global Competitiveness:** The Bill mandates adapting **global best practices** to create **globally benchmarked institutions** and a **credible accreditation system**, aiming to elevate India's global education standing. It seeks to **reverse brain drain** by offering world-class domestic opportunities and **attracting international talent**, thereby boosting **India's soft power**.

Primary Challenges Facing India's Higher Education System

- **Low Gross Enrolment Ratio (GER): India** has the **world's 3rd-largest higher education system**, yet its **GER** of approximately **28%** is the **lowest among G20 nations**. Furthermore, it ranks **129th out of 146 countries** for **tertiary education enrollment** in the **World Economic Forum's Global Gender Gap Index 2024**.
- **Faculty Shortage and Vacancy Crisis:** Even prestigious institutions face major **faculty shortages**, with **IITs** having **40%** and **IIMs 31% vacancies**. Furthermore, only **36.7% of Indian HEIs** offer **postgraduate programs** and a mere **3.6% run PhD programs**, severely limiting the pipeline of **qualified teachers**.

- While **IIT Delhi** and **IIT Bombay** secured places within the **top 150**, **no Indian university** featured in the **top 100** of the QS Rankings 2024.

- **Inadequate R&D Investment:** India's research spending is approximately **0.7% of GDP**, trailing nations like **China (2.4%)** and the **US (3.5%)**. It also lags in **research quality**, as measured by **H-index scores** (for productivity and impact) and **citation counts**, and ranks **38th in the Global Innovation Index 2025.**
- **Poor Graduate Employability and Industry Disconnect:** India's overall employability was **50.8% in 2023**, while the **India Skills Report 2024** shows a **60–73% demand-supply gap** for key roles like **ML engineer, data scientist, DevOps engineer, and data architect**. In the Global Employability University Ranking and Survey 2025, only **10 Indian institutions** rank among the **top 250 universities** globally for graduate employability.
- **Outdated and Inflexible Curriculum:** India's higher education curriculum is **outdated, rigid, and disconnected** from **21st-century interdisciplinary skills**. Most **universities** lack **syllabi** for fields like **AI** and **data science**, and less than **5% of students** are exposed to **vocational education**—a stark contrast to the NEP 2020's **50% target by 2025**.

Steps to Revitalize India's Higher Education System

- **Enhancing Access and GER:** India should scale the **Multiple Entry and Exit (MEME)** framework, now in **153 universities for entry** and **74 for exit**, to enhance **student flexibility** and reduce **dropout rates**. It must also implement the **Academic Bank of Credits** and **UGC's Biannual Admissions** to boost **academic mobility**.
- **Faculty Development and Research Ecosystem:** To address faculty shortages and boost quality, India should launch a **National Mission for Faculty Development**, aligned with **global benchmarks** like the **Academic Performance Indicator (API)**.
  - Simultaneously, it must increase **R&D investment** from ~**0.7%** to at least **2% of GDP**, with strategic focus on **National Research Foundation (NRF)-led projects** in areas such as **AI**, **clean energy**, and **biotechnology**.
- **Equity, Access, and Inclusion: Equity** should be advanced through **digital access** and **literacy**, supported by the NEP 2020's **Gender Inclusion Fund**, **Special Education Zones**, and a strengthened **National Scholarship Portal** for SC, ST, OBC, and SEDG (Socio-Economically Disadvantaged Group) students.
- **Internationalization and Global Competitiveness:** Facilitate entry of World-Class Foreign Universities under the **GIFT City model** and through **MOUs** under **NEP 2020**. Promote **joint degrees**, **faculty exchanges**, and **cross-border research initiatives** via programs like **SPARC (Scheme for Promotion of Academic and Research Collaboration)**.
- **Skill Integration and Employability:** To enhance **employability**, **curricula** must be aligned with **Industry 4.0 skills**, while **innovation clusters** and **start-up cells** are established in every **university**, linked to the **Atal Innovation Mission** and **Startup India**. Furthermore, a **National Graduate Tracking System** should be created to monitor employment outcomes and inform timely curriculum updates.

Critically analyse the structural and systemic challenges confronting Indian higher education and propose holistic strategies for its revitalisation.

Drishti Mains Question

Good Governance Day

Good Governance Day, observed on **25th December**, commemorates the birth anniversary of **Atal Bihari Vajpayee** and underscores his ideals of **accountability, transparency, and inclusive governance**.

Good Governance

- **About:** According to **UNESCAP,** governance is the **process of decision-making and the manner in which decisions are implemented (or not implemented)**, while **good governance** refers to the **effective, fair, and accountable exercise of power** to manage economic, political, and social resources in the public interest for development.
  - It involves not just the **government**, but also **legislature, judiciary, civil society, private sector, media, and other formal and informal actors**.

Governance + Transparency + Accountability + Rule of Law → Good Governance

- **Core Characteristics of Good Governance:** According to global institutions like the UN and **World Bank**, good governance is characterised by:
  - **Participation:** Active involvement of citizens, including women and marginalised groups
  - **Rule of Law:** Fair, impartial laws enforced by an independent judiciary
  - **Transparency:** Free and accessible flow of information
  - **Responsiveness:** Timely and effective service delivery
  - **Consensus-Oriented:** Mediation of diverse interests for collective welfare
  - **Equity and Inclusiveness:** Equal opportunities for all sections of society

- **Effectiveness and Efficiency:** Optimal use of resources for desired outcomes
- **Accountability:** Answerability of government, private sector, and civil society

- **Significance:** Good governance **minimises corruption**, **protects human rights**, and **ensures transparent and accountable administration**, thereby **building public trust in institutions**.
  - It also **promotes equitable access to opportunities**, especially for the poor and vulnerable, and **accelerates inclusive and sustainable economic and social development** by reducing regional and social disparities.
  - It also reinforces **ethical governance values** such as **integrity, probity, compassion, fairness, and responsibility**, which are core to ethical public administration.

Good Governance Index (GGI)

- **About:** The DARPG introduced the GGI on **25th December 2019**, to evaluate governance performance across states and union territories and encourage improvements.
- **Coverage:** GGI 2020–21 assesses governance across **10 sectors and 58 indicators**.
- **Categories Under the GGI:** To ensure fair comparison, jurisdictions are grouped into four categories (Group A States, Group B States, North-East and Hill States, and Union Territories).
- **Top Performers in the GGI 2020–21:**
  - **Group A States:** Gujarat, Maharashtra, Goa
  - **Group B States:** Madhya Pradesh, Rajasthan, Chhattisgarh.
  - **North-East & Hill States:** Himachal Pradesh, Mizoram
  - **Union Territories**: Delhi.

India's Role in Promoting Good Governance

- **Digital and e-Governance Initiatives:** Platforms like **UMANG**, **DigiLocker**, **GeM**, and **e-Office** enable paperless, transparent, and time-bound service delivery while reducing discretion and corruption.
- **Transparency and Accountability Frameworks:** The **Right to Information Act 2005**, **Citizen Charters**, grievance redressal portals, and social audits strengthen public oversight and administrative accountability.
- **Performance Measurement and Monitoring:** Tools such as the **Good Governance Index (GGI)** benchmark governance outcomes across States, encouraging competitive **federalism and evidence-based reform**s.
  - **Department of Administrative Reforms & Public Grievances (DARPG) and National Centre for Good Governance (NCGG)** lead governance reforms, and strengthen institutional grievance redressal systems.
- **Administrative Capacity Building: Mission Karmayogi** and the **iGoT platform** focus on continuous skill upgradation of civil servants for a professional and future-ready bureaucracy.
- **Rural Development: DAY-NRLM** has mobilised over 10.29 crore rural households into SHGs, enabling access to finance and sustained livelihood support, while the **Lakhpati Didi initiative** signals a shift from subsistence to diversified, income-secure livelihoods.
  - Investments in **housing (PMAY-G)** and **connectivity (PMGSY)** have reduced isolation and expanded access to markets and services, while **skill development (DDU-GKY)** and **social security (NSAP)** provide a safety net for youth and vulnerable groups.
  - Digitalisation links rural producers to markets and improves **Panchayat transparency through eGramSwaraj and BharatNet.**
- **Independent Constitutional Bodies:** Institutions like **Comptroller and Auditor-General of India (CAG), Election Commission of India, UPSC, and Finance Commission** ensure financial accountability, free elections, merit-based recruitment, and fiscal federalism.
- **Citizen-Centric Service Delivery: National e-Governance Plan, Direct Benefit Transfer (DBT),** single-window clearances, and mobile-based platforms improve last-mile delivery and reduce leakages.
  - **MyGov Platform** encourages citizen participation in policymaking and feedback.
  - The adoption of **Sevottam Model** set service standards and institutionalized time-bound, accountable public service delivery.
- **Judicial and Legal Reforms:** Expansion of **e-Courts** and fast-track courts to improve access to justice and reduce pendency.

- **Decentralisation and Local Governance:** By strengthening Gram Panchayats, Self-Help Groups, and community-based institutions, governance is brought closer to citizens, enabling participatory planning and more responsive outcomes.

Major Challenges Related to Good Governance in India

- **Economic and Social Insecurity:** High unemployment (**5.2% in October, 2025**) and **inequality reduce citizen participation** and weaken trust in public institutions.
  - According to the **World Bank, India's Gini Index** stands at 25.5, making it the fourth most equal country in the world.
- **Ineffective Policymaking: Top-down policy design** often ignores local realities, leading to poor implementation and uneven outcomes.
- **Criminalization & Nexus:** The **Association for Democratic Reforms (ADR)** data shows that around 45% of MLAs across states have declared criminal cases against them.
  - The growing number of **legislators with pending criminal cases** creates **conflicts of interest,** while the **politician–bureaucracy–business** nexus distorts policy priorities, weakens institutions, and erodes democratic governance.
- **Institutional Corruption:** Corruption and weak institutional capacity reduce governance efficiency.
  - Nearly **20% of India's GDP is spent on public procurement**, which the **Central Vigilance Commission (CVC)** identifies as a sector highly vulnerable to corruption.
  - India ranked **96 out of 180 countries in the Corruption Perceptions Index (CPI) for 2024,** eroding public trust.
- **Judicial Delays:** Over **4 crore pending court cases** undermine the **rule of law** and timely justice delivery.
- **Poor Accountability Mechanisms:** Weak monitoring and grievance redressal affect the effectiveness of schemes such as **MGNREGA and Public Distribution System.**
  - The CAG flagged serious irregularities in **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** implementation, including fake bank details, duplicate photos, non-functional training centres, **and unpaid dues for over 34 lakh candidates.**
  - Together, these lapses point to weak oversight and corruption, undermining accountability, outcomes, and value for public money.
- **Political Resistance To Reforms:** Reluctance to **decentralise power** and strengthen local governance slows systemic reforms.
- **Trust Deficit:** Delays in welfare delivery and lack of transparency reduce citizens' confidence in governance systems.
- **Populism vs Structural Reform:** Political parties often **prioritise a *freebie (revadi) culture* to win elections,** diverting scarce public resources away from long-term investments in infrastructure, health, and education.

Measures to Strengthen Good Governance In India

- **Deepen Citizen Participation:** Move from *Jan Andolan* (people's movement) to **Jan Bhagidari** (active people's participation) and strengthen **Jan Chetna** (public Awareness) by institutionalising **social audits** across all major **Schemes.**
  - This can be done through regular public consultations, open feedback platforms, and deeper participatory governance at the grassroots level.
- **Focus on the Marginalised:** Realise **Sarvodaya through Antyodaya** by first uplifting the **most vulnerable.**
  - Prioritising women, SC/STs, minorities, the elderly, farmers, and aspirational districts ensures that inclusive social and economic justice becomes the **foundation for welfare of all.**
- **Empower Local Governments:** Promote **democratic decentralisation** by empowering Panchayats and Urban Local Bodies with adequate funds, functions, and functionaries (3Fs).
- **Simplify Governance Processes:** Re-engineer procedures through **single-windows** like **Kerala's FRIENDS (Fast Reliable Instant Efficient Network for Disbursement of Services),** time-bound service delivery laws, and robust feedback mechanisms to reduce citizen interface costs and curb corruption.
  - Strengthening the Sevottam Model and expanding e-governance can further improve efficiency, transparency, and quality of public service delivery.

Minimum Government + Maximum Governance → Citizen Empowerment → Good Governance

- **Promote Ethical Governance:** Enforce **zero tolerance for corruption**, uphold integrity norms, protect whistleblowers, and strengthen vigilance institutions to rebuild public trust.
  - Implement the 2nd Administrative Reforms Commission's focus on "Ethics in Governance"—moving from a "Culture of Secrecy" to a "Culture of Service."
- **Judicial Capacity Enhancement:** Under **e-Courts Phase III**, scale up AI-based case management and automated scheduling.
  - Virtual courts for petty offences can help reduce the backlog of pending cases and allow judges to focus on complex matters.
- **Gati Shakti for Bureaucracy:** Apply the **"Gati Shakti" (Integrated Planning) approach** to administrative workflows to break inter-ministerial silos and improve coordination, efficiency, and policy outcomes.

- Move from Rule based to Role based (from Babu culture to seva culture) approach (**Mission Karmayogi**).
- Introduce 360-degree appraisals (as suggested by the 2nd ARC) and lateral entry at mid-to-senior levels to bring in specialized domain expertise.

Key Facts About Atal Bihari Vajpayee

- **Early Life: Atal Bihari Vajpayee** was born on **25th December 25, 1924**, in **Gwalior, Madhya Pradesh**. Participated in the **Quit India Movement** (**1942**) during his student days.
- **Journalism and Political Journey:** Atal Bihari Vajpayee began his public life as a journalist before joining the **Bharatiya Jana Sangh** in 1951, the predecessor of the **Bharatiya Janata Party** (**BJP**), and went on to play a foundational role in shaping BJP and National Democratic Alliance (NDA) politics.
  - He is a veteran parliamentarian, he served as **Prime Minister three times** (**13 days** (**1996**), **11 months** (**1998–99**), and a **full term** (**1999–2004**)) and held key roles including **External Affairs Minister** and **Leader of the Opposition**.
  - **Awards and Honours:** He was conferred **Padma Vibhushan** (**1992**) **and Bharat Ratna** (**2015**) for his lifelong service to the nation. In 1994, he was named India's **'Best Parliamentarian.'**

Role in Nation-Building

- **Transformational Governance:** He delivered landmark reforms in **telecom** (**New Telecom Policy, 1999**), **power sector** (**Electricity Act, 2003**), **fiscal discipline** (**FRBM Act, 2003**).
- **Connectivity-led Development:** He viewed connectivity as a growth enabler, launching the **National Highways Development Project** (**NHDP**) and **Pradhan Mantri Gram Sadak Yojana** (**PMGSY**) to integrate markets, villages, and cities.
- **Human Capital and Social Upliftment:** Initiatives like **Sarva Shiksha Abhiyan** expanded primary education.
- **Science, Technology, and Strategic Autonomy:** Vajpayee asserted India's global standing through **Pokhran-II** (**1998**), and announced **Chandrayaan-I**, laying foundations for India's space and nuclear ambitions.
- **Foreign policy and global voice:** He elevated India's diplomacy with **balanced assertiveness**, advocated India's **UN Security Council** aspirations, and projected India's civilisational ethos—famously addressing the **UN General Assembly in Hindi**.

Good governance is as much about institutions as it is about citizen participation. Examine this statement in the Indian context.

Drishti Mains Question

Citizen-Centred Universal Health Coverage

A Lancet report outlines a roadmap for achieving citizen-centred Universal Health Coverage (UHC), aligned with India's vision of Viksit Bharat @2047.

Findings of the Report

- **Public Spending Stagnation**: Health expenditure remains under 2% of GDP, falling short of the 2.5% target set by the National Health Policy 2017.
- **Fragmented Care**: The system operates in silos, leading to fragmented care where patients navigate multiple providers for a single condition.
- **Input-Based Governance**: Rigid "line-item budgets" hinder local innovation and responsiveness to disease burdens.
- **Out-of-Pocket Expenditure (OOPE)**: OOPE makes up nearly 50% of health spending, one of the highest globally.
- **Primary Care Gap**: Insurance schemes are hospital-centric, leaving outpatient care largely unprotected.
- **Paradigm Shift**: Barriers to UHC have shifted from lack of will, funding, and infrastructure to uneven quality, fragmentation, and poor governance.
- **The "Missing Middle"**: The middle class faces high health costs, with limited support, unlike the poor (govt schemes) and the rich (private insurance).
- **Human Resource Valuation**: HR policies focus on degrees rather than competencies and values, underutilizing frontline workers like ASHAs.

Recommendations

- **Public Financing & Provision**: Health system should be publicly financed and provided, with the private sector complementing in tertiary care under strict regulation.
- **Global Budgets & Decentralization**: Shift to "Global Budgets" for districts, granting financial autonomy to local authorities based on health outcomes and needs.
- **Empower PRIs & ULBs**: Local health centers should be managed by PRIs and ULBs, with Kerala's model as an example of better accountability.
- **Empower Frontline Workers**: Treat ASHAs as core staff, not volunteers, and expand the cadre of Community Health Officers (CHOs) to reduce load on specialist doctors.
- **Technology as an Enabler**: Use a Federated Data Structure for patient data, with consent-based sharing. Implement ABDM, AI, and genomics for advanced diagnostics at the community level.
- **Citizen Engagement**: Create mechanisms for public participation like Jan Sunwais and Rogi Kalyan Samitis, and establish independent grievance redressal bodies at the district level.

The barriers to Universal Health Coverage in India are now more about governance than resources. Discuss

Drishti Mains Question

National Consumer Day and Consumer Commissions in India

National Consumer Day, observed on 24th December, highlights the importance of **consumer rights and protection in India.** It also draws attention to growing delays in **consumer commissions**, where rising case backlogs and structural gaps are undermining timely justice.

NOTE: National Consumer Day marks the President's assent to the Consumer Protection Act, 1986, which laid down key consumer rights such as the right to be informed, protected, heard, and seek redressal.

- The day aims to promote **consumer awareness and responsible practices**.
- The **2025 theme**, **"Efficient and Speedy Disposal through Digital Justice,"** highlights the push for **technology-driven and timely consumer grievance redressal**.

Consumer Commissions

- **About:**
  - Consumer Commissions are **quasi-judicial bodies** established under the Consumer Protection Act of 1986 (now **Consumer Protection Act (CPA), 2019)** to resolve disputes between consumers and sellers or service providers.
  - They aim to provide **speedy, affordable, and effective justice** and protect consumers from unfair trade practices, defective goods, and deficient services.
- **Types of Consumer Commissions in India:** The CPA, 2019 promulgates a three-tier quasi-judicial mechanism for redressal of consumer disputes namely **district commissions, state commissions and national commission**, each with **defined pecuniary jurisdiction.**
  - The District and State Consumer Commissions are set up by State Governments with Central approval, while the National Commission is established by the Central Government.
  - These bodies offer an alternative dispute-resolution mechanism and do not replace civil courts.
- **Judicial Pronouncements:**
  - **Indian Medical Association vs. V.P. Shantha (1995):** The Supreme Court held that the services that are being provided by medical practitioners will fall within the ambit of the Consumer Protection Act, 1986.
  - **Ambrish Kumar Shukla vs. Ferrous Infrastructure (2016):** Clarified pecuniary jurisdiction, considering the total claim value (product cost and compensation) for determining the court level.
  - **Ganeshkumar Rajeshwarrao Selukar & Others vs. Mahendra Bhaskar Limaye & Others:** The Supreme Court (SC) of India urged the Centre to set up permanent adjudicatory bodies for consumer disputes, emphasizing that consumer rights are constitutionally protected and need a stable framework due to gaps in implementing the CPA, 1986.

Consumer Commission	Pecuniary Jurisdiction	Composition	Appellate Authority
District Consumer Disputes Redressal Commission	Up to Rs **50 lakh.**	President (District Judge or equivalent) and Members.	Appeals lie to the State Commission.
State Consumer Disputes Redressal Commission	Above Rs **50 lakh and up to Rs 2 crore.**	President (Either a sitting Judge or a retired Judge of a High Court) and Members.	Appeals lie to the National Commission.
National Consumer Disputes Redressal Commission (NCDRC)	Above **Rs 2 crore.**	President (sitting or a retired Judge of the Supreme Court or a sitting or a retired Chief Justice of a High Court) and Members.	Appeals lie to the Supreme Court.

Causes of Delay in Consumer Commissions in India

- **Rising Case Backlog:** As of January 2024, **5.43 lakh cases** were pending across district, State, and national consumer commissions.
  - In 2024, **1.73 lakh new cases** were filed, while only **1.58 lakh** were disposed of, adding nearly **14,900 cases** to the backlog.
- **Severe Manpower Shortages:** A large number of posts of **Presidents and Members** remain vacant in State and district consumer commissions, significantly reducing functional bench strength and slowing case disposal.
- **Frequent Adjournments:** The **Consumer Protection Act (CPA), 2019** mandates disposal of cases within 3–5 months and discourages adjournments unless sufficient cause is shown and reasons are recorded in writing.
  - However, cases are **frequently adjourned due to time constraints, non-appearance of parties,** and incomplete records, leading to routine delays despite clear legal provisions.
- **Weak Enforcement of Orders:** Poor enforcement of final orders often forces consumers into **execution proceedings**, while **non-compliance by companies** leads to **re-litigation**, increasing case pendency.
  - **CAG and Department of Consumer Affairs reports** have flagged **low recovery rates of compensation awards** as a key concern.

- **Inadequate Infrastructure and Logistics:** Limited courtrooms, insufficient support staff, and weak digital case management through **E-Daakhil portal** slow hearings and case tracking.
- **Lack of Specialised Expertise:** Cases involving insurance claims, medical negligence, or financial products require expert opinions and technical reports, extending timelines.
  - Members often lack subject-specific training, leading to repeated clarifications and dependence on external experts.
- **Strategic Delays by Opposite Parties:** Well-resourced companies sometimes seek repeated adjournments to exhaust individual consumers financially and mentally.

Measures to Strengthen the Effective Functioning of Consumer Commissions in India

- **Fast-track Appointments:** Fill vacancies through time-bound selection processes and consider creating a **dedicated consumer judiciary cadre** to ensure continuity and expertise.
- **Mandatory Case-flow Management:** Introduce **case-age benchmarks** (6 months, 1 year, 2 years) with compulsory priority listing of long-pending matters, similar to High Court case-flow rules.
- **Full integration Digital Adjudication:** Expand **e-Jagriti** beyond filing to include **automated listing, document scrutiny, and compliance tracking**, reducing registry-level delays and repeated adjournments.
- **Mandatory Referral to Mediation:** Operationalise **consumer mediation cells** at district level and mandate referral at the admission stage for low-value and service-related disputes to reduce caseload.
- **Outcome-based Performance Monitoring:** Publish **quarterly disposal and pendency reports** for each commission to introduce transparency and administrative accountability.

Consumer commissions were envisaged as instruments of social justice. Critically assess whether they are fulfilling this mandate today.

Drishti Mains Question

Supreme Court Verdict on DTAA

SC has ruled that **Tiger Global's** USD 1.6-billion stake sale in Flipkart to Walmart (2018) is **taxable in India**, denying the benefits of the **India–Mauritius Double Taxation Avoidance Agreement (DTAA)** and enforcing the **General Anti-Avoidance Rule (GAAR)**.

Key Facts of the Tiger Global Case

- **Key Legal Dispute:** Tiger Global, a prominent **venture capital investor**, sold its Flipkart stake for **USD 1.6 billion** to Walmart in 2018, leading to a **legal tussle** with **Indian tax authorities** over **capital gains tax** liability.
  - **India's SC** overturned the August 2024 **Delhi High Court** (HC) judgment, which had quashed an **Authority for Advance Rulings (AAR) order** denying **DTAA benefits**.
    - ❖ AAR is a **quasi-judicial body** that provides **binding rulings** on specific tax questions, offering taxpayers **clarity before transactions** to reduce uncertainty and potential litigation.
- **Supreme Court's Legal Reasoning:** The **SC** held that **DTAA benefits** cannot be claimed mechanically and rejected reliance on **Tax Residency Certificates (TRCs)** alone, as the **India-Mauritius DTAA** applies only where **assets are directly owned** by a **Mauritian entity**. It emphasized **economic substance**, **control**, and **management**, concluding the entities' **"head and brain"** lay **outside Mauritius**, particularly in the **USA**.
  - A **TRC** is issued by a country's **tax authority** to confirm an entity's **tax residency** for a specific period. It is essential for claiming **DTAA benefits**, such as **avoiding double taxation**.
- **Role of AAR and High Court:** The **AAR's 2020 order** denied **DTAA grandfathering benefits**, ruling the **investment structure** was prima facie for **tax avoidance**, a finding later struck down by the Delhi HC as **arbitrary**. The **SC reversed** the Delhi HC, restoring the AAR's **substance-over-form approach**.
  - **Grandfathering in tax** is a legal provision that **protects existing investments** from new tax laws by allowing them to be taxed under **older, more favorable rules**. Under the **India–Mauritius DTAA**, it protected **capital gains from investments made before 1st April, 2017**, which were **taxed only in Mauritius**—that is, **0% tax in India**—even after the treaty was amended.
- **Implications:** The **ruling** signals a **major shift**, ending **automatic DTAA claims** based solely on **residency certificates**. Investors must demonstrate **genuine economic substance**, **autonomous decision-making**, and **commercial rationale** for DTAA benefits.
  - Investors face **elevated tax litigation risk,** with tools like **tax insurance** expected to become **scarcer and costlier**.
  - The **decision** arrives amid a **broader slowdown** in **Indian startup funding**, which fell to **USD 10.5 billion in 2025**, a 17% decline from 2024, with notable drops in **seed-stage (down 30%)** and **late-stage funding (down 26%)**.

Double Taxation Avoidance Agreement (DTAA)

- **About:** A DTAA is a **bilateral** (or occasionally multilateral) agreement entered into between two sovereign countries to prevent or mitigate **double taxation** on **income or capital gains** arising from **cross-border activities**, where an **individual or entity** could be **taxed** both in their **country of residence** and the **country where the income is sourced**.
- **Key Relief Mechanisms: DTAAs** provide **relief** primarily through **two methods**: the **Exemption Method** (**income taxed in only one country**) and the **Credit Method** (**resident country grants a credit for taxes paid in the source country**).
- **Indian Context & Procedure: India** has an extensive network of **over 90 DTAAs**. To **claim benefits**, a **taxpayer** must furnish a **TRC** from their **country of residence**, along with other required declarations.
- **DTAA Misuse and Redressal: India** has faced **DTAA misuse** through **treaty shopping**, **round-tripping**, and **shell companies** in jurisdictions like **Mauritius**, **Singapore**, and **Cyprus**.
  - To counter this, the government **amended** key DTAA treaties, introducing **source-based taxation** and **Limitation of Benefits** (**LOB**) **clauses** to require substantive economic presence.
  - Domestically, the **GAAR** was implemented in **2017** to **deny treaty benefits** for arrangements primarily aimed at **tax avoidance**.

General Anti-Avoidance Rule (GAAR)

- **About:** GAAR is an **anti-tax evasion measure** that empowers **Indian authorities** to **deny tax benefits** for arrangements whose primary purpose is **tax avoidance**, prioritizing the **economic substance** of **transactions** over their **legal form**.
- **Objective**: India's **GAAR came into effect on 1st April 2017,** with the **objective** of curbing **aggressive tax planning** and **treaty shopping**.
- **Triggering Conditions**: **GAAR** applies where the **main purpose** is to obtain a **tax benefit** and meets **any one test**:
  - **Commercial Substance Test:** Absence of real operations, personnel, or decision-making authority
  - **Rights and Obligations Test:** Artificial creation of rights or obligations to secure tax benefits
  - **Misuse or Abuse of Law:** Exploitation of loopholes in treaties or domestic law
  - **Non-arm's-length test:** Deviation from normal commercial practices.
- **Consequences of Invocation**: If applied, **authorities** can deny **treaty benefits** (like **capital gains exemptions**), disregard **intermediary entities**, **recharacterize transactions**, **reallocate income to India**, and levy **tax**, **interest**, and **penalties**.
- **Supremacy over Treaties**: A critical feature is that under **Indian law**, **GAAR overrides tax treaties**, meaning **treaty benefits** can be denied if **GAAR is triggered**—a position now firmly upheld by the **Supreme Court**.

UGC New Rules Against Caste Discrimination

SC has issued an interim stay on the University Grants Commission (Promotion of Equity in Higher Education Institutions) Regulations, 2026, citing concerns of potential division of society and undermining campus unity.

Key Provisions of the Regulations, 2026

- **Broad Coverage of Caste-Based Discrimination:** The regulations define **caste-based discrimination** as any unfair or biased treatment against **Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs)**, thereby explicitly extending legal protection to OBCs and correcting a major omission in the earlier draft framework.
- **Expanded Definition of Discrimination:** Discrimination is defined as any **unfair, biased, or differential treatment**, whether explicit or implicit, on grounds such as **caste, religion, race, gender, place of birth, or disability**, including acts that impair equality in education or violate human dignity.
- **Mandatory Equal Opportunity Centres (EOCs):** Every higher education institution is required to establish an **Equal Opportunity Centre (EOC)** to promote equity, social inclusion, and equal access, and to address complaints related to discrimination on campus.
  - Each institution must form an **Equity Committee** under the EOC, chaired by the head of the institution, with mandatory representation from **SCs, STs, OBCs, persons with disabilities, and women**, ensuring inclusive decision-making.
- **Reporting and Compliance Framework:** EOCs must submit **bi-annual reports**, while institutions are required to file an **annual report** on equity-related measures to the **UGC**, strengthening institutional accountability.
  - The regulations place a clear duty on institutions to **eradicate discrimination and promote equity**, with the **head of the institution** made directly responsible for effective implementation and compliance.
- **National-level Monitoring Mechanism:** UGC will establish a **national monitoring committee** comprising representatives from statutory bodies and civil society to oversee implementation, review complaints, and suggest preventive measures, meeting at least twice a year.

- **Penalties for Non-compliance:** Institutions violating the regulations may face **debarment from UGC schemes**, prohibition on offering degree, distance, or online programmes, or even **removal from UGC recognition**, making the rules enforceable rather than advisory.

Impact of Caste-Based Discrimination on Access to Education

- **Threat to Constitutional Values**: Undermines equality, dignity, and fraternity, weakening faith in affirmative action and democratic institutions.
- **Restricts Entry into Quality Institutions**: Poor schooling outcomes and entrenched prejudice limit SC/ST/OBC representation in elite schools and colleges.
  - Traps communities in **low-income jobs**, reducing education's role as a social equalizer.
- **Psychological Exclusion**: Stigma attached to "reserved category" identity causes anxiety, low self-esteem, and poor academic performance.
  - **Thorat Committee (2007)** noted how segregation in hostels and other spaces isolates marginalized students, **creating "ghettos" on campuses**.
- **Failure of Grievance Redressal**: SC/ST Cells in many universities are dysfunctional or lack autonomy, prioritizing the institution's reputation over justice for victims.
- **Higher Dropout Rates**: Caste discrimination, **combined with financial, social, and psychological pressures**, leads to higher dropout rates among marginalized groups.

Measures to Dismantle Institutional Casteism in Education

- **Social Audits**: Annual NCSC audits of "Zero Discrimination" compliance in Central Universities.
- **Curriculum of Inclusion**: Include Dalit history & literature across disciplines.
- **Mentorship Circles**: Institutionalize mentorship programs (e.g., Sathi initiative) to bridge cultural gaps.
- **Faculty Sensitization**: Mandatory **"Unlearning Caste"** workshops to address caste bias and micro-aggressions.
- **Special Recruitment Drives (SRD)**: Urgently fill SC/ST faculty vacancies to ensure diversity & deter discrimination.

Discuss the significance of the UGC (Promotion of Equity in Higher Education Institutions) Regulations, 2026 in addressing caste-based discrimination in India's higher education system.

Drishti Mains Question

Demographic Winter and India's Narrowing Demographic Dividend

China's population declined for the **fourth consecutive year in 2025**, falling by **3.39 million to 1.405 billion**, with births hitting a historic low of **7.92 million**, signalling a deepening **demographic winter**.

- This highlights important lessons for **India**, which despite being the most populous country, is witnessing a **faster-than-expected decline in its Total Fertility Rate (TFR)**.

Demographic Winter

Describes a **severe, long-term population decline due to persistently low birth rates** (below **replacement level of ~2.1 children per woman**) and subsequent population aging, leading to a shrinking workforce, increased elder dependency, and strained social systems.

Implications

- **Inverted Population Pyramid:** Fewer births combined with ageing population, shrinking workforce, and **rising dependency ratio, deepening the demographic winter.**
  - Fewer workers supporting a growing elderly population **increases pressure on pensions, healthcare**, and social security systems.
  - Government spending on healthcare and old-age support rises while tax revenues stagnate or decline.
- **Economic Slowdown:** Lower consumption, reduced innovation, and weaker productivity growth can trap the economy in **long-term stagnation.**
- **National Security Concerns:** A smaller youth population can affect military recruitment and long-term strategic capacity.
- **Social Strain:** Ageing societies face increased **loneliness, intergenerational inequality,** and challenges in sustaining community and family support systems.

Total Fertility Rate and Replacement Level

- **Total Fertility Rate (TFR)**: TFR represents the average number of children a woman is expected to have over her reproductive lifespan (15–49 years), based on prevailing age-specific fertility rates.
- **Replacement Level**: A TFR of **2.1 is considered the replacement level**, where each generation replaces itself without significant population growth or decline.

India's Demographic Scenario

- **TFR Below Replacement Level:** According to the **Sample Registration System Statistical Report 2023,** India's **TFR** has declined to **1.9 at the national level**, with **rural India touching the replacement rate of 2.1 for the first time**, while urban TFR stands much lower at **1.5**.
  - According to the **NFHS-5 (2019-21)**, India's TFR has dropped to **2.0 children per woman,** which is below the replacement level of **2.1**.
  - This means a generation is not producing enough children to **replace itself,** eventually leading to **population stabilization and decline (expected around 2060-2070).**

- **North-South Divide:**
  - **Southern India (Kerala, Tamil Nadu):** These states have TFRs comparable to developed nations (1.6 - 1.7), largely due to **early and effective population control** measures, and are now facing an ageing population similar to China.
  - **Northern India (Bihar, UP):** These states still have high TFRs (above 2.4), providing the bulk of India's young workforce.
    - ❖ Migration from **North to South will become critical for filling labor gaps**.
- **Closing Window of Demographic Dividend:** India has a "**youth bulge**" with a **median age of 28.4 years** (compared to China's around 40).
  - However, this window is short. The working-age population is projected to **peak by 2041**, while the elderly (60+) will rise sharply from **149 million (10.5%)** today to **347 million (20.8%) by 2050**.
  - Without rapid **skill development and job creation**, India's **demographic dividend** risks turning into a **demographic disaster**.

Population Policy and Measures in India

India was the first country to launch a National Family Planning Programme in 1952. Since then, its approach has evolved from clinic-based targets to a voluntary, rights-based model focused on reproductive health, women's empowerment, and informed choice rather than coercion.

- **Policy Framework:**
  - **National Population Policy, 2000:** Provides the framework for population stabilisation by meeting unmet contraceptive needs, reducing fertility, achieving replacement-level TFR (2.1) *(attained nationally by 2020–21)*, and targeting a stable population by 2045.
  - **National Health Policy 2017:** Reinforces population goals through improved reproductive, maternal, newborn, child, and adolescent health services.
- **Key Measures:**
  - **Mission Parivar Vikas:** Targets high-fertility districts to improve access to family planning services.
  - **Compensation Scheme for Sterilization Acceptors:** Provides compensation for loss of wages to the beneficiaries for sterilization.
  - **Doorstep Delivery: ASHAs** supply contraceptives at home.
  - **Awareness Campaigns: World Population Day/Fortnight** and **Vasectomy Fortnight.**
  - **Family Planning Logistics Management Information System** (**FP-LMIS**): Ensures last-mile availability of family planning commodities across all the levels of health facilities.

Challenges Facing India's Demographic Double-Edged Sword

- **Jobless Growth Paradox:** Despite fast GDP growth, job creation lags. Youth unemployment (15-29 years) remains high at 10-15% (PLFS 2024–25), risking social unrest and instability.
- **Degree-Skill Mismatch:** Many graduates lack industry-ready skills. The India Skills Report 2025– 45% of graduates lack skills required by the modern economy.
- **The "Two Indias" Problem:** North-South TFR divergence will drive inter-state migration, but lack of portable social security and uniform labor protections risks exclusion, regional tensions, and "sons-of-the-soil" politics.
- **Low Female Labour Force Participation:** Participation has improved from 23.3% to 41.7% (2017-2024) but remains below China (~60%) & Vietnam (~70%).
- **Unprepared "Silver Economy":** India's 60+ population is projected to double to ~230 million by 2036, raising the old-age dependency ratio. The support ratio has fallen from 14:1 (1997) to 10:1 (2023), and is expected to drop to 4.6:1 by 2050.

Steps India must Adopt to Convert its 'Demographic Potential' into 'Economic Power'

- **Skilling for Industry 4.0**: Establish Sector Skill Councils to align academic curriculum with industry needs (e.g., AI, Green Hydrogen) & promote continuous upskilling through platforms like SWAYAM.
- **"Make in India" for the World**: Shift focus to **Labor-Intensive Manufacturing** (Textiles, Leather, Food Processing) to absorb rural youth. **Modify PLI schemes** to offer higher incentives for job-creating industries.
- **Women-Led Development**: Invest in the **Care Economy**. Scale up SHGs to empower rural women as micro-entrepreneurs.
- **Bridging the North-South Divide**: Develop a **National Migration Policy** for social security portability and accelerate **"One Nation, One Ration Card"** and portable health benefits (Ayushman Bharat) for migrants.
- **Preparing for the "Silver Economy"**: Create policies to re-employ retired seniors in mentorship or consultancy roles.
- **Global Skill Corridors**: Sign Migration and **Mobility Partnership Agreements (MMPAs)** with aging nations to export trained Indian caregivers & nurses, positioning India as the **"HR Capital of the World."**

"Demography is destiny, but it is not a guarantee."How can India avoid the 'middle-income trap' and convert its 'youth bulge' into a sustained geopolitical advantage?

Drishti Mains Question

Unlawful Activities (Prevention) Act 1967

SC denied bail in the 2020 Delhi riots case, citing the broad definition of "terrorist act" under section 15 of UAPA, 1967, **renewing concerns over its expanded scope**.

UAPA, 1967

- **About:** India's **principal anti-terror & national security law** to curb activities threatening the sovereignty, unity & integrity of India.
  - The law traces its origins to the **National Integration Council formed under Jawaharlal Nehru**, which led to the **16th Constitutional Amendment (1963)** imposing restrictions on free speech, assembly & association for national integrity.
  - **Enacted in 1967**, it originally targeted unlawful activities, not terrorism, amid post-Independence secessionist movements **& anti-national movements**.
- **Evolution:**
  - **2004 Amendment**: Introduced **terrorism** via **Chapter IV (Sections 15–23)**; expanded "unlawful activity" to acts causing disaffection against India.
  - **2008 Amendment**: Post **26/11 attacks**, broadened Section 15 ("**by any other means**"); **anticipatory bail barred**, regular bail tightened, custody periods extended, presumption of guilt introduced (specified cases).
  - **2012 Amendment**: Included **economic security** (financial, food, energy, livelihood, environmental); **counterfeit currency** as terror act; liability extended to companies, trusts, societies.
  - **2019 Amendment**: Allowed **designation of individuals as terrorists**, not just organisations; enhanced **NIA powers**, including property seizure without state consent.
- **Definition of Terrorism:**
  - Under **Section 15, UAPA, 1967**, a "terrorist act" includes acts intended to threaten **unity, integrity, sovereignty, security, or economic security of India**, or to **strike terror** among people in **India/in any foreign country**, using weapons, hazardous substances, or **"any other means."**
  - Punishment ranges from **minimum 5 years' imprisonment to life**, and **death or life imprisonment** if death results.
  - The **broad wording** allows acts causing fear/disruption to be prosecuted as terrorism.

Arguments in Favor of UAPA	Arguments Against UAPA
■ **Protection of National Security**: Enables **preventive action** against threats to sovereignty, integrity & economic security.	■ **Article 21 Violation**: Allows prolonged detention, **bail denial** & **reversed presumption of innocence**, limiting personal liberty.
■ **Preventive Detention as a Security Tool**: Allows detention to **pre-empt imminent threats**– riots, radicalisation, or extremist networks.	• **SC in NIA v. Zahoor Ahmad Shah Watali (2020)**: Courts discouraged from **examining evidence** during bail, weakening judicial oversight.
■ **Alignment with International Conventions**: Complies with **UN conventions** International Convention for the Suppression of Terrorist Bombings (1997) & International Convention for the Suppression of the Financing of Terrorism (1999), and **UNSC resolutions**.	■ **Arbitrary Designation of Individuals as Terrorists**: Individuals can be labelled **"terrorists" without conviction**, harming reputation & privacy.
■ **Deterrence Against Terror Activities: Stringent punishments** act as a deterrent to terror involvement.	■ **Overbroad Definition of Terrorism:** Terms like **"likely to threaten"** or **"likely to strike terror"** lack legal certainty & proportionality. **UN Special Rapporteurs (2020)** found UAPA incompatible with **ICCPR** & **UDHR** due to unclear definition of terrorism.
■ **Financial Disruption**: Targets terror funding, money laundering & counterfeit currency operations.	■ **Discretionary Police Powers**: Enables **search, seizure & arrest** on personal knowledge, with **limited judicial oversight**.
	■ **Criminalisation of Dissent & Free Speech**: **Peaceful protests** & **political speech** risk being labelled threats, undermining **Article 19**. Fear of **arrest, incarceration** & **stigma** deters **activism, journalism** & **political participation**.

Reforms Needed to Strengthen the UAPA

- **Clarify Definitions**: Narrow terms like ***terrorist act, unlawful activity***, and ***conspiracy*** to avoid misuse.
- **Reforming Stringent Bail Provisions**: Amend stringent provisions to uphold **presumption of innocence** under **Article 21**, with **Article 20(3)** reinforcing fair trial protections.
- **Ensuring Speedy Trials**: Set **strict timelines**; only **<3% conviction rate (2015–2020)** (PUCL, 2022).
- **Introducing a Compensation Framework**: Victims of **wrongful arrest/detention** must be compensated; **Rudul Sah v. State of Bihar (1983)** recognised this, requiring codification under **UAPA**.

- **Strengthening Oversight & Transparency**: Ensure parliamentary review, public data & clear agency guidelines.

Suggest reforms to ensure that anti-terror laws remain effective without undermining democratic freedoms.

Drishti Mains Question

Governor's Rule in Chakma Autonomous District Council

The **Governor of Mizoram** has extended **Governor's Rule in the Chakma Autonomous District Council (CADC)** for another **six months**, citing continued political instability despite the State Cabinet opposing the extension.

- Governor's Rule was first imposed in the **CADC** in **July 2025** due to prolonged political instability.

Chakma Autonomous District Council (CADC)

- It was constituted in 1972 under the **Sixth Schedule of the Indian Constitution** to protect the political and cultural interests of the **Chakma people** in Mizoram.
- It exercises legislative, executive, and judicial powers over designated subjects within its jurisdiction.
- **The Chakma People:** They are the **second-largest Scheduled Tribe in Mizoram after the Mizo**, speaking **Chakma** (**Changma Bhajchare**).
  - They are a **Buddhist community** traditionally practising **Jhum cultivation** and are settled across the **Chittagong Hill Tracts** and parts of **northeast India** (primarily Mizoram, Tripura, and Arunachal Pradesh).

Key Facts About the Autonomous District Council

- **Constitutional Basis:** Autonomous District Councils (ADCs) are established under the **Sixth Schedule read with Article 244(2)** to provide self-governance to tribal areas in **Assam, Meghalaya, Tripura and Mizoram (AMTM)**.
  - The arrangement seeks to protect tribal land, culture and customary laws while operating within India's federal framework, reflecting **asymmetric federalism**
- **Administrative Structure:** Sixth Schedule areas are organised into **Autonomous Districts**, which may be further divided into **Autonomous Regions**. Each district has a **District Council**, and each region a **Regional Council**.
  - The **Governor** has the authority to create, alter or reorganise these units, indicating strong executive oversight.
- **Composition and Tenure:** An ADC has a **maximum of 30 members—26 elected** and **up to 4 nominated by the Governor**. Elected members hold office for **five years**, while nominated members serve **during the pleasure of the Governor**.
  - The **Bodoland Territorial Council, Assam** is an exception with **46 members**.
- **Legislative Powers:** District and Regional Councils can legislate on **land, forests (excluding reserved forests), inheritance, marriage and social customs, and regulation of non-tribal moneylending and trade**.
  - All such laws require the **assent of the Governor**, limiting absolute autonomy.
- **Applicability of Laws:** Central and State laws **do not apply automatically** to Sixth Schedule areas. In **Assam's autonomous districts under the Sixth Schedule**, applicability is decided by the **Governor (or the Council for specific subjects).**
  - In **Meghalaya, Tripura and Mizoram**, **Central laws require Presidential notification**, while **State laws require Governor's notification**.
- **Governor's Administrative Powers:** The Governor may **appoint a commission of inquiry** into ADC administration and, based on its recommendations, **dissolve a District or Regional Council** and assume its functions temporarily. Such intervention, though constitutionally valid, is expected to respect the **federal spirit**.
- Under the Sixth Schedule, the Governor may **appoint a commission of inquiry** into ADC and, based on its findings, **the Governor may dissolve the District or Regional Council and assume its functions temporarily**.
  - Although constitutionally permitted, this intervention often referred to as **Governor's Rule in Autonomous District Councils** is expected to be exercised in consultation with the State Government and in a manner consistent with the federal spirit of the Constitution.
- **Judicial Powers:** ADCs may establish **village councils or courts** to try cases between Scheduled Tribe members.
  - However, they cannot try cases involving the **death penalty, life imprisonment or imprisonment of five years or more**, unless empowered by the Governor. The **High Court's jurisdiction** is defined by gubernatorial rules.
- **Significance:** ADCs enable **tribal self-rule and protection of customary institutions**, making them central to inclusive governance in the North-East.

Year-End Review 2025: Ministry of Home Affairs

2025 was a **watershed year** for the **Ministry of Home Affairs**, marked by strong action on **internal security** and key **reforms** towards a **Safe, Secure & Viksit Bharat**.

Key Achievements in the Year 2025

- **Near Elimination of LWE**: Major operations at **Karreguttalu Hill (Chhattisgarh)**; **Operation Black Forest** eliminated top Maoist leader **Nambala Keshav Rao (Basavaraju)**.

- Most-affected districts reduced to **3 in 2025** from **36 in 2014**; Promotion of tribal festivals like **Bastar Pandum** & **Bastar Dussehra**.

- **Strengthened Counter-Terrorism**: **Operation Sindoor** & **Operation Mahadev** launched after **Pahalgam terror attack**; terror camps and perpetrators neutralised.
  - New **Multi-Agency Centre (MAC)** inaugurated in **Delhi**; **BHARATPOL portal** launched with **CBI** for **INTERPOL** cooperation.
- **Criminal Justice & Cyber Security**: **4-pronged strategy** (Convergence, Coordination, Communication, Capacity); adopted; **e-Zero FIR** launched via **I4C** for cyber financial crimes.
  - New **National Forensic Sciences University (NFSU) campuses** and **Central Forensic Science Labs (CFSLs)** inaugurated in **Raipur** & **Kolkata**.
- **Narcotics Control**: **1.37 lakh kg** of drugs worth **Rs 4,800 crore** destroyed; key seizures in **Operation Crystal Fortress** – 300 kg at sea, 328 kg meth in Delhi.
  - **Border Management**: **Vibrant Villages Programme-2** approved with **Rs 6,839 crore** outlay.
  - **Immigration Reforms**: **Immigration and Foreigners Bill, 2025** piloted; new **OCI Portal** & **FTI program** launched.
- **Proactive Disaster Governance**: Shift to **'Zero Casualty'** model; **Rs 4,645 crore** approved, including **Urban Flood Risk Management** in **11 cities**.
- **Promoting Cooperative Federalism**: **Bharatiya Bhasha Anubhag** created; **Zonal Councils** revitalised, resolving **80%+ inter-state issues**.
- **Census & Inclusive Governance: Census 2027**– to be held in **two phases**; includes **Caste Census**; voter list purification via **SIR**.
- **Key Bills**: **130th Constitution Amendment Bill** introduced to **bar jailed individuals** from holding **constitutional posts**.

How do the reforms in criminal justice, cyber security, and forensic science initiated in 2025 aim to create a more victim-centric and efficient legal system?

Drishti Mains Question

Strengthening State PSCs

Vice-President of India stressed urgent reforms in **SPSCs** due to **delays, paper leaks, and integrity concerns**.

State Public Service Commission (SPSC)

- **Constitutional body** under **Articles 315–323 (Part XIV)**. Ensures **merit-based recruitment** to state civil services (state-level UPSC). **GoI Act, 1935** established **Federal PSC**, **Provincial PSCs** and **Joint PSCs.**
- **Chairman + members** (**Tenure - 6 years or 62 yrs** (whichever is earlier)) appointed by **Governor**. Half the members must have at least **10 years of service** experience.
- **Removal**: By **President**; **SC inquiry mandatory** in misbehaviour cases (**inquiry by SC).**
- **Safeguards for Independence:**
  - Service conditions **cannot be worsened** after appointment.
  - Salaries charged to **Consolidated Fund of State**.
  - **No reappointment**; strict **post-retirement restrictions**.
- **Functions of an SPSC:** Conduct **state service examinations**. Advise on **recruitment, promotions, transfers, disciplinary matters**.
  - Submit **annual report** to Governor → State Legislature.
  - Legislature may **extend jurisdiction** to local bodies.
- **Joint State Public Service Commission (JSPSC): Created** by **Parliament for two or more states** (e.g. **Punjab & Haryana**).
  - **Members & service conditions** determined by the **President**.

Limitations of SPSC's Authority	Major Challenges	Suggestions
■ **Matters Outside Jurisdiction:** Matters related to **reservation for backward classes** and **SC/ST claims in appointments**. ■ **Advisory role**; recommendations **not binding**. ● Governor can **exclude posts** from consultation. ■ **SC ruling (1957)**: Non-consultation doesn't invalidate decisions.	■ **Question paper leaks** (NCRB: ~**2,000 exam malpractices in 2018**). ■ **Delayed recruitments** due to litigation. ■ **Corruption scandals** (e.g., **Vyapam Scam (2013)**). ■ **Political influence** in appointments. ■ **Weak infrastructure & manpower** (flagged by **CAG**). ■ **Low transparency & accountability** (RTI delays, poor disclosures).	■ **Time-bound recruitment** with mandatory annual exam calendars. ■ **State Examination Security Authority (SESA)** for secure exams. ■ **Collegium-based appointments** to ensure independence. ■ **Regular CAG audits** of SPSCs. ■ **Capacity building** and **real-time public dashboards** for transparency.

Examine the constitutional role and functions of State Public Service Commissions in India.

Drishti Mains Question

Economic Scenario

Rising State Borrowings and Their Impact on Bond Yields

A sharp rise in **State borrowings** is complicating **RBI's efforts to lower interest rates**, as heavy debt issuance keeps **bond yields elevated**, weakening **monetary transmission** despite **repo rate cuts**.

- **Bond Yield**: Return earned on a bond, expressed as a %age of its price, mainly through **interest (coupon)** payments. Indicates **borrowing costs** & **market interest rates**, and acts as a **benchmark** for interest rates across the economy.
  - **Bond**: A debt security where an investor lends money to an entity (e.g., government/corporation) for a set period, receiving **regular interest** & **principal at maturity**.

Factors Affecting Bond Yield:

- **Interest Rate Policy**: **RBI rate cuts** → yields fall; **rate hikes** → yields rise.
- **Inflation Expectations**: Higher expected inflation → **higher yields** for real return protection.
- **Government Borrowing**: Large issuances → **increased supply** → **yields rise**.
- **Economic Growth Outlook**: Strong growth → **higher credit demand** → **yields increase**.
- **Global Factors**: Influenced by **US Treasury yields**, **global liquidity**, **foreign capital flows**.
- **Credit Risk**: Higher risk perception → **higher yields** demanded by investors.

- **Yield Curve**: Graph showing **bond yields across different maturities**; reflects expected returns over time.
  - **Inverted yield curve** (long-term yields < short-term) is a **leading indicator** of **economic slowdown/recession**.
- **Bond Yield Vs. Bond Price**: Bond prices & bond yields move in opposite directions.
  - **When interest rates fall**: New bonds have **lower coupons** → existing **high-coupon bonds** become attractive → **prices rise**, **yields fall**.
  - **When interest rates rise**: New bonds offer **higher coupons** → existing bonds lose appeal → **prices fall**, **yields rise**.

- **Borrowing Scale (FY 2025–26)**: **States**: Gross – ₹**12.5 trillion**, Net – ₹**9 trillion**; **Centre**: Gross – ₹**14.6 trillion**, Net – ₹**10.3 trillion**. Indicates **shift in public borrowing pattern**
- **Economic Impact**: Raises long-term interest rates, steepens yield curve. Weakens RBI's monetary transmission. Fiscal coordination challenges in federal structure

Employment and Social Trends 2026 Report

The **ILO Employment and Social Trends 2026** report estimates **global unemployment** at **4.9% in 2025**.

Key Highlights of the Report

- **Stalled Progress on Employment Quality**: Slow progress; **extreme working poverty** fell only **3.1%age points** (2015–2025) to **7.9% (284 million)**; in **low-income countries**, **68%** in extreme/moderate poverty
- **Rising Informality**: **Increased by 0.3%age points** (2015–2025); **2.1 billion** informal workers by 2026
- **Unemployment & Jobs Gap**: **4.9%** unemployment in 2025; **186 million** unemployed (2026 forecast); **408 million** jobs gap. **Employment Growth in countries**– declining in **high-income**, **0.5%** in upper-middle-income, **3.1%** in low-income countries
- **Gender & Youth Gaps**: Women = 2/5th of global employment; **24.2%**age points lower LFPR than men. **Youth unemployment**– **12.4%** in 2025; **257 million NEETs**
- **Insufficient Productivity & Labour Income**: Low productivity growth in low-income countries **Labour income share** – **52.6% (2025)**, below **2019 level** → wage growth lags productivity

Findings Related to India

- **Economic Growth**: Among **highest growth** in Asia-Pacific region; drives **Southern Asia GDP**
- **Manufacturing Share**: **3%** of global manufacturing (USD terms); vs **China 27%**, **US 17%**
- **Renewable Energy Strategy & Employment**: Large-scale capacity; rising **renewable energy jobs** (with Japan, S. Korea)
- **Green Talent Gap**: **High demand**, low supply in India and **Asia-Pacific**

ILO: UN specialized agency. Promotes social & economic justice through internationally recognized human & labour rights

- **Key Reports:** Employment and Social Trends, **World Employment and Social Outlook**, Global Wage Report, World Social Protection Report, and Social Dialogue Report.

Guidelines for Virtual Digital Assets

The **Financial Intelligence Unit**–India (FIU-IND) has introduced stringent new **Anti-Money Laundering (AML)** and **Know Your Customer (KYC)** guidelines for **Virtual Digital Assets (VDAs)** service providers to curb financial crimes in India's **cryptocurrency ecosystem.**

New FIU-IND Guidelines for Virtual Digital Assets

- **Enhanced Verification**: Mandatory **live selfie** with **liveliness detection** (eye-blink/head movement) and **geographic tracking** (latitude, longitude, timestamp, IP) during **user onboarding** to prevent static/**deepfake** fraud.
- **Multi-Layer KYC**: Requires **PAN** + **secondary ID** (**Aadhaar**/ Passport/Voter ID), **OTP verification** for email/mobile, and **"penny-drop"** bank account confirmation via a **Rs 1** transaction.
- **Risk-Based Monitoring**: KYC updates every **6 months** for **high-risk clients** and **annually** for others; enhanced due diligence for entities linked to **tax havens**, **FATF grey/black lists**, politically exposed persons (PEPs) or non-profit organisations (NPOs).
- **Crackdown on Opaque Instruments**: Strongly discourages Initial Coin Offerings (ICOs) and Initial Token Offerings (ITOs) and prohibits facilitation of **anonymity-enhancing crypto tumblers** and **mixers**.
  - Crypto tumblers and mixers are **services** that enhance transaction privacy by **pooling** and **scrambling funds** from multiple users, then **redistributing** them to **break** the **traceable link** on the public **blockchain ledger**.
- **Regulatory Compliance**: **Crypto exchanges** must register as **PMLA reporting entities**, maintain 5-year client/transaction records, and report suspicious transactions to the FIU.
  - A cryptocurrency exchange is a digital platform that allows users to **buy, sell, and trade cryptocurrencies** for other digital assets or traditional fiat money. E.g., **Coinbase**.

Virtual Digital Assets (VDAs)

- **About: VDAs** are **digitally represented values** using **cryptographic technology** that have been formally defined and regulated in India to address taxation, financial integrity, and **money-laundering risks** amid their rapid growth.
- Key Types of VDAs:
  - **Cryptocurrencies**: Digital currencies used as a **medium of exchange**.
  - **Non-Fungible Tokens (NFTs)**: **Unique digital assets** representing ownership of art, collectibles, or virtual goods.
  - **Utility Tokens**: Provide access to **specific services or platforms** within a blockchain ecosystem.
  - **Asset/Security Tokens**: Represent **ownership or stake** in real-world assets.
- **Legal Definition in India:** Statutorily defined under **Section 2(47A)** of the **Income Tax Act, 1961**, inserted by the **Finance Act, 2022**.
  - Includes **any information, code, number, or token** (excluding **Indian and foreign currency**) generated through **cryptographic means**, representing **digital value**.
  - Explicitly covers **Non-Fungible Tokens (NFTs)** and **any other digital asset** notified by the Central Government. Primarily encompasses **cryptocurrencies (Bitcoin, Ethereum)**, **NFTs**, and similar tokens.
- Regulatory and Taxation Framework in India:
  - **Taxation**: **30% flat tax** on income from transfer of VDAs (effective from **1st April 2022**). **No deductions allowed** except **cost of acquisition**; **losses cannot be set off or carried forward**.
    - ❖ **1% TDS** applicable on specified transactions under **Section 194S** of the Income Tax Act, 1961.
  - **Anti-Money Laundering Oversight**: Since **March 2023**, VDA activities are covered under the **Prevention of Money Laundering Act, 2002 (PMLA)**. **Crypto exchanges and wallet** providers are treated as reporting entities and must register with FIU-IND.

Financial Intelligence Unit – India (FIU-IND)

- **About: FIU-IND** is India's **central agency** responsible for **receiving, analysing, and disseminating financial intelligence** to combat **money laundering** and terrorist financing in India.
- **Institutional Status:** Functions under the **Department of Revenue, Ministry of Finance,** and derives its powers from the **Prevention of Money Laundering Act, 2002** (**PMLA**). Reports directly to the **Economic Intelligence Council** (**EIC**), chaired by the **Finance Minister.**
- **Regulatory Role in Crypto Sector:** The **FIU-IND** is the **single-point regulator** for cryptocurrency exchanges under the **PMLA**, requiring **mandatory registration**, **KYC compliance**, and **reporting of suspicious transactions**. Crypto is **not legal tender** in India but is **taxable** under the Income-Tax law.

Decade of the Startup India Initiative

On the occasion of **National Startup Day (16th January 2026)**, Prime Minister highlighted **a decade of the Startup India Initiative** at Bharat Mandapam, New Delhi, marking India's transformation from a policy-led push for entrepreneurship in 2016 to one of the world's largest **startup ecosystems**, aligned with the vision of **Viksit Bharat 2047**.

Startup India Initiative

- **About:** Launched on **16th January 2016**, the **Startup India Initiative** aims to support entrepreneurs, strengthen the **startup ecosystem**, and shift India from a job-seeking to a **job-creating economy**.
  - A startup is a small, new, or young company founded by entrepreneurs to introduce a **new product or service, disrupt an existing market, or even create a new one.**
  - The Startup India Initiative is implemented by a dedicated Startup India team under the **Department for Promotion of Industry and Internal Trade (DPIIT)**.

- **Key Objectives:**
  - **Nurture Innovation:** To create a conducive environment for the development and scaling of innovative products and solutions.
  - **Promote Entrepreneurship:** To simplify the regulatory burden and support entrepreneurs at every stage of their journey.
  - **Enable Investment:** To facilitate access to funding and capital for startups.
  - **Economic Growth:** To drive sustainable economic growth and generate large-scale employment opportunities.
- **Major Schemes & Support Pillars:**
  - **Fund of Funds for Startups (FFS):** A flagship initiative of **DPIIT** under the **Startup India Action Plan**, managed by **Small Industries Development Bank of India (SIDBI)**, with a **Rs 10,000 crore** corpus to support SEBI-registered AIFs that invest in startups. This expands domestic risk capital and strengthens the entrepreneurial ecosystem.
  - **Credit Guarantee Scheme for Startups (CGSS):** Enables collateral-free loans to startups through eligible financial institutions and is operationalised by **National Credit Guarantee Trustee Company (NCGTC).**
  - **Startup India Seed Fund Scheme (SISFS):** A **Rs 945 crore** corpus providing financial assistance for early-stage requirements like proof of concept, prototyping, and market entry.
  - **Startup India Hub:** A **single-window digital platform** that connects startups with **investors, mentors, incubators, academic institutions, corporates, and government bodies**, enabling collaboration across India's entrepreneurial ecosystem.
  - **States' Startup Ranking Framework (SRF):** Assesses **States and Union Territories** on startup-friendly policies and implementation, promoting **competitive federalism** by classifying them as Best Performers, Top Performers, Leaders, Aspiring Leaders, and Emerging Startup Ecosystems.
  - **Mentorship & Networking:** Initiatives like the **Mentorship, Advisory, Assistance, Resilience, and Growth (MAARG) Portal** and the **Startup India Investor Connect Portal bridge** the gap between founders, mentors, and investors.
- **Impact & Achievements (as of Dec 2025):** India has over **2 lakh DPIIT-recognised startups**, placing it among the largest startup ecosystems globally.
  - Nearly **44,000 startups registered with the government in 2025,** the highest annual addition since the launch of Startup India.
  - While major hubs such as Bengaluru, Hyderabad, Mumbai, and Delhi-NCR continue to lead, nearly **50% of startups now originate from Tier II and Tier III cities, reflecting deepening decentralisation.**
  - The ecosystem has also seen sharp unicorn (a startup valued at USD 1 billion or more) growth, **rising from 4 unicorns in 2014 to over 120**, with a combined **valuation exceeding USD 350 billion.**

Challenges Faced by Startups in India	Suggestions
■ **Infrastructure Constraints**: High **operational costs**, poor **internet**, **logistics**, and **power supply**. ■ **Consumer-Centric Bias vs Deep-Tech**: Focus on **consumer services** (fintech, food delivery). **Underdeveloped deep-tech** sectors (EVs, semiconductors, AI). ■ **Segmented Demand Structure**: **Rich** provide capital, **middle-income** are core consumers, **poor** supply labour but remain **un-monetisable**. Drives preference for **scalable consumer models**, limiting **high-tech innovation**. ■ **Limited Domestic Venture Capital**: **Risk-averse** environment limits **long-term, high-capital** investments in **deep-tech**. Increased dependence on foreign capital. ■ **Funding Slowdown & Closures**: **5,000+ startup closures** (esp. in **Maharashtra**). **Seed funding** down **25%**, D2C funding down 18% (2024). VC focus on **low-risk, quick-return** sectors (e.g., **e-commerce**) limits deep-tech funding. ■ **Low R&D Intensity**: **R&D spend ~0.64% of GDP**. Emphasis on **basic research** over **commercial innovation** hinders deep-tech growth. ■ **Exit & IPO Challenges**: Underperforming IPOs, high valuations & **profitability concerns** reduce **exit options**, increase **investor caution**, and slow **capital inflows**.	■ **Deepen Domestic Risk Capital**: Allow **pension funds**, **insurance companies**, **sovereign funds** to invest in **startups**, especially **deep-tech** and **long-gestation** sectors. ■ **Strengthen Industry–Academia Linkages**: Foster collaboration with **ISRO**, **DRDO**, **IITs**, **IISc** for applied research & commercialisation. Align **Skill India** & **Atal Tinkering Labs** with **AI**, **data analytics**, **deep-tech**; prevent **brain drain**. ■ **Boost Applied R&D & Mission-mode Funding**: Offer **outcome-based grants** via IndiaAI Mission, India Semiconductor Mission, National Quantum Mission for high-risk innovation. ■ **Support Deep-Tech Scale-up**: Provide **patient capital** & **testing infrastructure** for **AI**, **EVs**, **robotics**, **space**, and **clean energy** startups. ■ **Simplify Regulations**: Ensure **predictable tax policies**, **faster IPR processing**, and **stronger exit options** (IPOs, acquisitions, secondary markets). ■ **Promote Green & Sustainable Innovation**: Support startups in **electric mobility**, **clean energy** & **climate tech**, aligned with **Mission LiFE**.

Despite rapid growth, India's startup ecosystem faces structural challenges. Analyse these challenges and suggest measures to overcome them.

Drishti Mains Question

NITI Aayog Report on Convergence of MSME Schemes

NITI Aayog's report **"Achieving Efficiencies in MSME Sector through Convergence of Schemes"** recommends integrating **central & state data** and unifying **18+ schemes** to streamline delivery and strengthen MSME support.

MSMEs

- **Definition**: Classified by **investment** and **turnover** under **Micro, Small and Medium Enterprises Development (MSMED) Act, 2006**; revised norms effective **1st April 2025**.
- **Spending**: Govt. allocation rose to **₹22,094 crore (2023–24)** from **₹6,717 crore (2019–20)**.
- **Economic Role**: Contribute **27–30% to GDP;** employ **62% workforce** (~28.13 crore); account for **~45% of exports**
- **Growth & Performance:** The MSME sector grew at an average of **8.6% (2000–2016)**, outperforming the industrial sector (**7.6%**) and can produce **6,000+ products**.
- **Formalisation Initiatives: 90%+ operate informally**, with only **9% formalised**. The **Udyam Registration Portal** supports self-registration, while the **Udyam Assist Platform (UAP)** integrates **Informal Micro Enterprises**.
  - Currently, **3.94 crore MSMEs** are on the Udyam Portal and **2.71 crore IMEs** on UAP.
- **Composition & Regional Presence:** As of **Oct 2024**, **25% MSMEs** are in manufacturing, **75% in services**, with **51% in rural** and **49% in urban areas**
- **Key Organizations Attached to Ministry of MSMEs:**
  - **Office of the Development Commissioner (DC-MSME)**: Implements policies, advises on policy, supports tech upgrades, and provides training.
  - **KVIC**: Promotes **khadi & village industries**, rural employment, self-reliance, and training.
  - **Coir Board**: Promotes **coir exports**, research, and worker welfare.
  - **National Small Industries Corporation (NSIC)**: Supports MSMEs via **marketing, credit, raw materials**, and tech services.
  - **National Institute for MSME**: Offers **entrepreneur training** and capacity-building for MSMEs.
  - **Mahatma Gandhi Institute for Rural Industrialisation (MGIRI)**: Promotes **sustainable rural industrialisation**, empowers artisans, and fosters innovation.

Need for the Convergence of Schemes for MSMEs	Key Recommendations of the NITI Aayog's Report
■ **Overlapping Schemes**: Multiple ministries run similar programmes (e.g., coir, leather, handicrafts), leading to **uncoordinated delivery** & **resource wastage**. ■ **Enhance Efficient Resource Use**: Enables **better planning, pooled central and state funds**, and **shared infrastructure**, avoiding **duplication** & improving **cost-effectiveness**. ■ **Simplified Access For Beneficiaries**: Creates a **single platform** for scheme access, reducing **confusion**, improving **clarity** & increasing **beneficiary uptake**. ■ **Improve Governance & Delivery**: **Information convergence** enables **better tracking** and informed policymaking. **Unified monitoring** with shared resources enhances accountability & transparency. ■ **Align with Best Practices**: Supports **SDG 17** (Partnerships for the Goals) through **multi-sectoral collaboration**. Aligns with past **committee recommendations** (e.g., PM's Task Force) advocating a **single delivery platform**.	■ **Centralized Digital Portal**: AI-powered platform integrating **schemes, compliance, finance, and market intelligence**. Modules– Information, process, compliance, market research. ■ **Convergence of Cluster Development Schemes**: Integrate **SFURTI** with **MSE-CDP**. Create a **dedicated sub-scheme** for **traditional industries**. Propose **unified governance**, **consolidated funding** & **earmarked resources** to preserve crafts and enhance efficiency. ■ **Convergence of Skill Development Programmes**: Proposes a **three-tier structure**– Entrepreneurship & business skills; MSME technical skills; Training for rural & women artisans ■ **Marketing Assistance Wing**: Establish a dedicated wing with **domestic and international arms**. ■ **Integration of ASPIRE with MSME Innovative**: Integrate **ASPIRE** as a special category within **MSME Innovative** for **agro-rural enterprises**. Continue existing ASPIRE funding & earmark future **MSME Innovative budgets** for **agro-rural incubators**.

New classification of MSME

Type	INVESTMENT		TURNOVER	
	Current	Revised	Current	Revised
MicroEnterprise	Rs 1cr	Rs 2.5cr	Rs 5cr	Rs 10cr
Small Enterprise	Rs 10cr	Rs 25cr	Rs 50cr	Rs 100cr
Medium Enterprise	Rs 50cr	Rs 125cr	Rs 250cr	Rs 500cr

Source: Budget 2025-2026, Speech of Nirmala Sitharama, Union Minister of Finance February 1, 2025.

Examine the significance of the MSME sector for India's economy and the rationale of the MSMEs scheme convergence for strengthening the MSME sector in India.

Drishti Mains Question

Digital Transformation of India's Dairy Sector

The **National Dairy Development Board (NDDB)** has spearheaded the **digital transformation** of **India's dairy sector** by implementing **integrated platforms** and **innovative tools** to improve efficiency, transparency, traceability, and farmer welfare.

Steps Taken for Digitalizing India's Dairy Sector

- **National Digital Livestock Database:** The **National Digital Livestock Mission (NDLM)** was launched to create a unified ecosystem called **Bharat Pashudhan**. It issues a **unique**

12-digit "Pashu Aadhaar" for all livestock, with over **35.68 crore tags** generated to serve as the primary key for health and productivity transactions.

- **Automatic Milk Collection System (AMCS):** It **digitizes daily milk collection** by recording quantity, quality, and fat content, automates farmer payments, and provides **real-time SMS alerts** to farmers and data insights to **cooperatives**. Covering over **26,000 Dairy Cooperative Societies**, it benefits **17.3 lakh milk producers** in 12 states/UTs.
- **NDDB Dairy ERP (NDERP):** This comprehensive enterprise resource planning (ERP) platform covers **Finance**, **Inventory**, **Sales**, **Manufacturing**, **HR**, and **Payroll** for **dairy operations**, accessible via **web** and **mobile apps (mINDERP)**. Integrated with AMCS, it provides an **end-to-end digital solution** from cow to consumer, including mass-balancing in production to reduce processing losses.
- **Information Network for Animal Productivity & Health (INAPH):** Captures real-time data on **breeding, nutrition, and health services** at the farmer's doorstep, enabling monitoring and assessment of livestock development programs.
- **Semen Station Management System (SSMS):** It manages the entire **bull lifecycle**, **semen production**, quality control, biosecurity, and farm/fodder management, along with the distribution of **Frozen Semen Doses (FSDs)**. It is linked with **Information Network for Semen Production and Resource Management (INSPRM)** and **INAPH** to ensure real-time data sharing, traceability, and standardized operations across 38 semen stations.
- **Internet-based Dairy Information System (i-DIS):** It is a **centralized platform** for data collection, sharing, and analysis across milk unions, federations, and allied units, tracking **procurement**, **sales**, **manufacturing**, **distribution**, and input supply to create a national cooperative dairy industry database.
- **Milk Route Optimisation using GIS:** A **free, web-based dynamic GIS tool** provides route planning and optimisation for milk collection and distribution, reducing **transportation distance**, **fuel costs**, and time to improve operational efficiency for cooperatives.

Status of Dairy Sector

- **Global Leader**: India is the **largest milk producer since 1998** (**25% of global output**).
- **Milk Production**: **247.87 MTPA (2024–25)**, up **3.58%** from previous year.
- **Per Capita Availability**: Rose from **319 g/day (2014–15)** to **485 g/day (2024–25)**.
- **Top States**: **UP (15.66%)**, **Rajasthan (14.82%)**, **MP (9.12%)**, **Gujarat (7.78%)**, **Maharashtra (6.71%)** → Together contribute **54.09%** of national production.
- **By Cattle Type**: **Exotic/Crossbred**: +4.97%, **Indigenous**: +3.51%, **Buffaloes**: +2.45%.
- **Dairy's Share in Agri GDP**: **40% of total output** from agriculture-related sectors (2022–23).

Challenges in India's Dairy Industry

- **Climate Impact**: Heatwaves (2024 warmest year) caused **10–30% yield drop** in North India; **Lumpy Skin Disease** led to **10% output loss**; **mastitis = ₹14,000 crore/year** loss.
- **Rising Costs**: **Cattle feed up 246%** in 30 years; milk is a **top food expense** (₹314/month rural, ₹466/month urban), squeezing farmer margins.
- **Low Yields & Unorganised Sector**:
  - Crossbred: **8.55 kg/day**, Indigenous: **3.44 kg/day**
  - Punjab vs WB: **13.49 vs 6.30 kg/day**
  - **>70% milk in unorganised sector** → poor quality, cold chains, and credit access.
- **Genetic Risks**: Overuse of **crossbreeding (up to 96% in Kerala)** threatens **native breeds** and sustainability; **sex-sorted semen** raises **unproductive female disposal** issues.
- **Methane Emissions**: Livestock = **32% of human-caused methane**, adding to **climate burden**.

Solutions to Improve India's Dairy Sector

- **Genetic Boost**: Use **SS semen**, **IVF (33–35 calves/year)**, and **ET (12 calves/year)** for indigenous high-yield breeds like **Gir, Kankrej**.
- **Better Nutrition**: Promote **legumes, grains, feed additives** to cut methane; expand **TMR plants**, use **biogas from captured methane**.
- **Digital Tools**: Deploy **IoT collars**, **AI scanners**, and **automated milking machines**; scale **Pashu Aadhaar** for full traceability.
- **Infrastructure & Market Access**:
  - Install **solar chilling units**,
  - Use **quality testing tools**,
  - Strengthen **SPS standards** to tap **premium global markets**.

Examine the role of digital technologies in improving efficiency and transparency in India's dairy sector.

Drishti Mains Question

Gati Shakti Cargo Terminals and India's Logistics Transformation

Gati Shakti Cargo Terminals (GCTs) have emerged as a central driver behind **India's logistics costs falling to 7.97% of GDP**, highlighting the impact of **PM Gati Shakti National Master Plan** in creating an integrated, efficient, and multimodal logistics ecosystem.

Gati Shakti Cargo Terminals (GCTs)

- **About:**
  - **GCTs** are modern multi-modal railway cargo hubs developed under the **GCT Policy, 2021** of the **Ministry of Railways**, designed to integrate rail with road, ports, and airports.
- **Need for GCTS:**
  - Earlier, freight movement in India was scattered across different transport modes without seamless linkages, resulting in inefficient handling and longer turnaround times, high logistics costs, congestion, and higher emissions
  - **GCTs address this gap** by acting as strategic nodes in the logistics chain, connecting multiple modes of transport and significantly reducing cargo handling time, costs, and environmental impact.
- **Operational Features:**
  - The **Engine-on-Load (EOL) system enables trains to depart immediately** after loading or unloading.
  - GCTs integrated with mechanised loading systems, silos, and modern cargo-handling infrastructure significantly **reduce detention time and ensure optimal utilisation of railway assets.**
- **Sustainability and Cost Efficiency:**
  - Rail transport is **cleaner and more cost-efficient** than road transport, with **costs less than half** and **nearly 90% lower carbon emissions**.
  - Since **2014**, shifting freight to rail has moved **2,672 million tonnes** of cargo and saved **143.3 million tonnes of CO_2**, supporting India's **decarbonisation goals**.
- **Key GCTs Driving Logistics Growth:**
  - The **Manesar (Haryana) GCT**, India's largest automobile terminal, can handle **4.5 lakh vehicles annually** and is linked through the **Haryana Orbital Rail Corridor**.
  - In the **Northeast**, the **Moinarband and Cinnamara terminals in Assam** strengthen regional trade by handling petroleum, food grains, fertilisers, and containers, with more terminals under construction.
  - The **New Sanjali GCT in Gujarat**, built on private land along the **Western Dedicated Freight Corridor**, represents a major step toward high-speed, green logistics.
- **Progress Under GCTs:**
  - Indian Railways has approved 306 GCTs, with a combined capacity of 192 million tonnes per annum; 118 are already commissioned.
  - Freight revenues from GCTs grew fourfold between 2022–23 and 2024–25, reaching Rs 12,608 crore.

Gati Shakti Multi-Modal Cargo Terminal (GCT) Policy, 2021

- The **GCT Policy** aims to **accelerate modern cargo terminal development, encourage private participation**, and **strengthen India's freight ecosystem**, while aligning infrastructure growth with industry demand to position India as a **global logistics hub**.
- It provides **cost exemptions, freight rebates, railway-supported infrastructure**, and **commercial use of surplus land under Rail Land Development Authority (RLDA)**, helping create a **seamless multimodal logistics network**.

Logistics Landscape in India

- **India ranks as the 4th largest economy globally**, reinforcing the scale and complexity of its logistics needs.
- Logistics contributes **13–14% of GDP** and supports livelihoods for **over 22 million people**, making it a core economic pillar.
  - It acts as the **backbone of Make in India**, enabling manufacturing expansion and **global value-chain integration**.
- India improved to **38th rank in the World Bank Logistics Performance Index (2023)**, with a target of **top 25 by 2030**.
- **Inland waterways cargo reached 145.5 million tonnes (2024–25)**, reflecting growing multimodal transport use.
  - The number of **operational national waterways increased from 24 to 29**, expanding low-cost, green logistics options.
- The Logistics sector employs over 22 million people and is creating millions of new jobs.

Key Challenges in India's Logistics Sector

- **High logistics costs**: India's logistics cost is estimated at 7.97% of GDP in 2023-24 higher than **developed economies**, making Indian exports less competitive.
  - Higher freight cost impacts sectors like **textiles and auto components**, reducing price competitiveness abroad.
- **Road Dominance & Congestion:** India relies heavily on road transport (60–65% of freight), which is **inefficient compared to rail.**
  - Highways often **face congestion, poor maintenance, and frequent toll delays,** leading to slower turnaround times.
- **Rail Capacity Constraints:** Although cheaper, **rail freight suffers from capacity shortages** and prioritizing passenger traffic.
  - The lack of "last-mile" connectivity to railway sidings often forces businesses back onto roads.
- **Port Inefficiencies:** While **turnaround times have improved,** Indian ports still lag behind **global competitors in draft depth (ability to handle mega-ships)** and evacuation speed, leading to high detention and demurrage charges.

- **Compliance Burden:** Despite the success of GST (Goods and Services Tax), **interstate movements can still be slowed** by varying state-level documentation requirements and "checkpost" mentalities in enforcement.
- **Fragmentation:** The sector is **highly fragmented, with millions of small fleet operators** owning fewer than five trucks.
  - This makes it difficult to standardize pricing, quality, or compliance across the industry.
- **Technology & Digitalization Gaps:** While platforms like **ULIP and LDB** exist, adoption is uneven among small players.
  - Small transporters still rely on manual documentation despite e-way bills.
- **Environmental sustainability challenges:** Road-heavy freight causes high emissions. Road transport presently accounts for **12% of India's energy-related CO2 emissions** and is a key contributor to urban **air pollution.**

Measures to Strengthen India's Logistics Sector

- **Accelerate Infrastructure Development:** Fast-track **DFCs** and multimodal projects; adopt **PM GatiShakti–style monitoring** for all major logistics assets.
  - *Example:* **Mumbai Trans Harbour Link (2024)** improved access to **JNPT** and cut transit time.
- **Improve Last-mile Connectivity:** Prioritise links to **ports, industrial hubs, and economic corridors** to reduce delays and costs.
- **Streamline Regulations:** Implement **single-window clearances** nationwide; expand **faceless customs assessment** and build on **e-SANCHIT** to digitise all approvals.
- **Promote Technology Adoption:** Incentivise **AI, IoT, blockchain** via tax benefits; expand **ULIP** coverage; support logistics startups with data access and pilots.
- **Enhance skills:** Align training with industry needs; expand specialised institutes; partner with **e-commerce firms** for last-mile training; launch a **national logistics certification**.
- **Upgrade Warehousing Chains:** Create a **national warehousing grid**; incentivise **Grade-A warehouses** and cold storage; mandate quality standards.
- **Promote green logistics:** Introduce **logistics-specific carbon credits**; tax breaks for green tech; develop **green freight corridors**; roll out a **green logistics certification**.

"Gati Shakti Cargo Terminals represent a paradigm shift in India's freight logistics." Examine their role in reducing logistics costs and promoting sustainability.

Drishti Mains Question

Year-End Review 2025: Department of Expenditure

The **Department of Expenditure (DoE)**, Ministry of Finance, has demonstrated **transformative fiscal management** through large-scale digitization of benefits, strategic capital infusion to states, and comprehensive policy overhauls.

Key Achievements of the Department of Expenditure

- **Scaling DBT for Transparency:** The **Public Financial Management System (PFMS)** has become the backbone for **966 Direct Benefit Transfer (DBT)** schemes in 2025-26, enabling **Rs 2.87 Lakh Crore** in direct, real-time payments to **beneficiaries** via **210.56 crore transactions** (till 31st Dec, 2025).
  - Enhanced **citizen-centric governance** through DBT Open House sessions and regional conclaves, and strengthening **Centre-State collaboration** for transparent fund management.
- **Boosting State Capital Investment:** Implemented the **'Scheme for Special Assistance to States for Capital Expenditure (SASCE)'**, increasing its **outlay** from Rs 12,000 crore (2020-21) to **Rs 1,50,000 crore (2025-26)**.
  - Disbursed **Rs 4,49,845 crore** to **states** since **inception (2020-21)** to enhance productive capacity and crowd-in **private investment**.
  - Launched in **2020–21** amid the **Covid-19** pandemic, **SASCE** provides **50-year interest-free loans** to states specifically for **capital expenditure**, boosting **economic recovery**, as capital spending has a high GDP multiplier effect of **Rs 3 for every Rs 1 spent**.
- **Enabling State Borrowings with Reform Incentives:** Fixed the Net **Borrowing** Ceiling (NBC) for **states** at **3% of GSDP** for **2025-26** as per the **15th Finance Commission** (FC).
  - Created a **performance-linked incentive** for additional borrowing of **0.5% of GSDP** tied to **power sector reforms**, driving efficiency, **DBT for subsidies**, and reduction in distribution losses.
- **Modernizing Public Procurement Frameworks:** Comprehensively revised **procurement manuals** (Goods, Consultancy & Non-Consultancy Services, Works) to enhance **ease of business**, and introduce modern practices like **reverse auctions** and performance security reforms.
- **Managing Finance Commission Grants & Disaster Funds:** Implemented the **15th FC awards**, releasing grants for **Post-Devolution Revenue Deficit**, **Local Bodies**, and Health Sector.
  - Released over **Rs 18,000 crore** as **Central share** of **State Disaster Response Fund** and over **Rs 5,200 crore** for **State Disaster Mitigation Fund** in 2025-26.
  - **National Disaster Risk Management Fund (NDRMF)**, **National Disaster Mitigation Fund (NDMF)**, **Prime**

Minister's National Relief Fund (PMNRF), among others, help in disaster management.

- **Grievance Redressal:** Streamlined resolution of over **150,000 grievances** annually via an automated **Customer Redressal Management (CRM)** system.
- **Pay Reforms:** Constituted the **8th Central Pay Commission** to **review and revise** pay structures for central government employees and pensioners.

Borrowing Provisions

- **Chapter II** of **Part XII** of the Constitution of India deals with **borrowing** by the **Union** and the **States**. It contains **two key** provisions:
  - **Article 292** governs borrowing by the **Government of India** (the Central Government), authorizing it to borrow upon the security of the **Consolidated Fund of India**, subject to such limits as may be fixed from time to time by Parliament by law.
  - **Article 293** governs borrowing by the States.
- **Article 293** (**3**) expressly requires that a **State**, if it remains **indebted** to the Central Government (or has any outstanding loan/guarantee from the Centre or its predecessor), must obtain the **prior consent** of the Government of India before raising any further loan.

Current Debt Structure

- For the **central government**, the **debt-to-GDP ratio** is estimated to be **57.1**% in 2024–25 and **56.1**% in 2025–26. The **government** aims to bring it down to **50 ± 1% by 2030–31**.
- At present, the **state governments** account for **nearly one-third** of total General Government debt and contributed to **over 50**% of the rise in **overall public debt** between 2014–15 and 2019–20.

Examine the role of the Scheme for Special Assistance to States for Capital Expenditure in boosting economic growth.

Drishti Mains Question

Gross Domestic Product and Net Domestic Product

The **Ministry of Statistics and Programme Implementation (MoSPI)**, through the **National Statistics Office**, has released the **First Advance Estimates of Gross Domestic Product (GDP) for Financial Year (FY) 2025–26**, projecting a **robust 7.4% growth in real GDP**.

- Alongside, India is planning to shift from **GDP** to **Net Domestic Product (NDP)** as the primary measure of economic activity, in line with the **United Nations' System of National Accounts (SNA) 2025**, with implementation expected from **2029–30**, to better reflect the **real cost of production**.

Gross Domestic Product (GDP)

- **About: GDP** is the total monetary value of all **final goods and services** produced within a country's borders during a specific period (usually a year or a quarter).
- **Types of GDP:**
  - **Nominal GDP:** Measured at **current market prices**, without adjusting for inflation. Useful for same-year comparisons but **not reliable across years**.
  - **Real GDP:** Adjusted for inflation using the **GDP deflator**. Reflects the **actual quantity of goods and services produced**. It enables comparison of economic growth over time.
- **GDP Computation Methodology in India:**
  - **Before 2015:** India computed GDP with **2004–05 as the base year**, and measured GDP at **factor cost**, excluding indirect taxes and subsidies.
    - ❖ Sectoral coverage was narrower, and labour income was estimated uniformly without distinguishing worker types.
  - **After 2015:** GDP computation shifted to a **2011–12 base year**, and adopted **GDP at market prices**, including taxes and subsidies. Labour income estimation improved through **effective labour input**, and coverage expanded in **agriculture and financial services**.
- **Potential GDP**: It is the maximum sustainable output an economy can produce using all its resources (labor, capital, technology) efficiently, without causing accelerating inflation.
- **Significance:** It is a key indicator of **economic size, productivity, growth, and macroeconomic performance**. GDP growth rate reflects the **pace of economic expansion or contraction**.
- **Base year Revision**: India is revising its GDP base year from **2011–12 to 2022–23** to better reflect current economic realities, with the **revised GDP series scheduled for release in February 2027**.
  - The revised GDP series will continue to follow **SNA 2008**, while the **NDP shift aligns with SNA 2025**.

Limitations of GDP

- **Non-adjustment for Capital Depreciation:** GDP measures gross output and does **not deduct depreciation of physical capital** such as machinery, infrastructure, and buildings, thereby overstating the net income generated by the economy.
- **Exclusion of Environmental Costs:** GDP treats resource extraction and pollution-intensive activities as value addition, without **accounting for depletion of natural capital or environmental degradation,** despite their adverse implications for long-term economic welfare.
  - GDP focuses on **short-term economic output** and neglects **intergenerational costs,** making it an inadequate measure for assessing sustainable and inclusive long-term development.

- **Underrepresentation of Unpaid Work:** Non-market activities such as **household labour, care work, and large segments** of the informal economy are either **undervalued or excluded,** leading to an incomplete estimation of total economic activity.
- **Insensitivity to Income Distribution:** GDP aggregates output without reflecting how income is **distributed across different sections of society,** allowing economic growth to coexist with widening income and wealth inequalities.
- **Emphasis on Output Quantity over Growth Quality:** GDP captures the volume of production **but fails to measure qualitative dimensions of development such as health outcomes, educational attainment,** social well-being, and environmental sustainability.
  - In 2025, India has become the **world's fourth-largest economy by nominal GDP** (USD 4.18 trillion), surpassing Japan. However, Japan remains far ahead in per-capita terms, with **India's GDP per capita** at USD 2,694 in 2024 compared to Japan's USD 32,487, highlighting a sharp gap in average income levels.
- **Inclusion of Defensive and Remedial Expenditures:** Expenditures on disaster recovery, pollution control, healthcare due to accidents, or crime prevention raise **GDP figures**, even though they represent costs incurred to mitigate social or environmental damage rather than genuine welfare gains.

Key Highlights of the First Advance Estimates of GDP for the FY 2025-26

- **Real GDP Growth:** Estimated at **7.4% in FY 2025–26**, compared to **6.5% in FY 2024–25**.
- **Nominal GDP Growth:** Estimated at **8.0%** in FY 2025–26.
- **Real GVA Growth:** Estimated at **7.3%**, driven mainly by **buoyant growth in the services sector**.
- **High-Growth Tertiary Segments:**
  - **Financial, Real Estate & Professional Services and Public Administration, Defence & Other Services:** Estimated growth of **9.9%** at constant prices.
  - **Trade, Hotels, Transport, Communication & Broadcasting:** Estimated growth of **7.5%** at constant prices.
- **Secondary Sector Performance: Manufacturing and Construction:** Estimated to grow by **7.0%** at constant prices.
- **Primary and Utilities Sector:**
  - **Agriculture & Allied Activities:** Estimated growth of **3.1%**.
  - **Electricity, Gas, Water Supply & Other Utility Services:** Estimated growth of **2.1%**, indicating moderate expansion.
- **Private Consumption: Private Final Consumption Expenditure (PFCE)** estimated to grow by **7.0%**, reflecting sustained household demand.
- **Investment: Gross Fixed Capital Formation (GFCF)** has been estimated to have 7.8% growth rate at Constant Prices during **FY 2025-26, compared to 7.1% growth rate in previous FY**.

Net Domestic Product (NDP)

- **About: Net Domestic Product (NDP)** is a measure of a country's economic output, representing the **value of all final goods and services produced within its borders in a given period,** minus the value of depreciation of capital assets.
  - **Under SNA 2025, NDP = GDP – (depreciation of fixed capital + depletion of natural resources)**, making it a more sustainability-aware indicator.
- **Significance:** Shows the **actual net income** generated by the economy rather than gross output.
  - Accounts for **wear and tear of physical capital** and **exhaustion of natural resources**.
  - Helps assess whether economic growth is **genuine or achieved by running down assets**.
  - Supports **long-term planning**, fiscal sustainability, and intergenerational equity.
- **NDP's Superiority Over GDP: Adjusts for depreciation**, while GDP ignores capital consumption.
  - **Internalises environmental costs** by deducting natural resource depletion under SNA 2025.
  - Provides a **more realistic measure of economic welfare** and productive capacity.
  - Prevents overestimation of growth by focusing on **net value addition**, not mere expansion of output.

United Nations' System of National Accounts (SNA) 2025

- The **SNA 2025** is a comprehensive international framework for compiling national accounts that replaces **SNA 2008** and moves beyond GDP to better capture **sustainability, distribution, and non-market activities**.
  - Under the SNA 2025, the **Reserve Bank of India's output** will be classified as **non-market activity**, and regulatory payments by banks will be treated as **transfers, not service fees**.
  - It introduces **natural capital accounting**, treating depletion of minerals, coal, oil, and gas as production costs while recognising **renewables as assets**, and adds **distributional accounts** showing income, wealth, consumption, and savings across household groups.
  - By incorporating **unpaid household and care work** in extended accounts, SNA 2025 enhances policy relevance by linking economic growth with **equity, ecological balance, and inclusiveness**.

Critically examine the limitations of GDP as a measure of economic welfare in the Indian context.

Drishti Mains Question

Achieving Sustainability in Rice Production

India became the world's largest rice producer in 2025, surpassing China, and now accounts for 40% of global rice exports, raising concerns over rice's water intensity and virtual water export.

Key Facts Regarding Rice

- **Staple Food**: Consumed daily by **~65% of Indians**; covers **~25% of cropped area**.
- **Top Producers**: **India (1st)**, followed by **China (2nd)** and **Bangladesh (3rd)**.
- **Climatic & Soil Needs**
  - **Kharif crop**: Sown **June–July**, harvested **Sept–Oct**.
  - Needs **>25°C**, optimal **30°C day/20°C night**, tolerates up to **40°C** briefly.
  - Requires **high humidity** and **>100 cm rainfall**.
  - Prefers soil with **pH 5.5–6.5**, **good drainage & water-holding capacity**.
- **Cropping Intensity: 2–3 crops/year** in **southern states & West Bengal** (Aus, Aman, Boro).
  - **Top producers (2025–26)**: **Uttar Pradesh**, **Punjab**, **West Bengal**.
- **Cultivation Techniques: Traditional Transplantation**: Nursery to field (25–35 days); **Labour & water-intensive**, **high yield**.
  - **Direct Seeding of Rice (DSR)**: Seeds drilled directly using machines; Saves **water & labour**; suitable for **clay-rich soils** with **good water retention** & **available iron**.

Concerns Associated with Rice Cultivation

- **Water Intensive**: Needs **3,000–4,000 L/kg**; major aquifers in **Punjab & Haryana over-exploited**; raises **inter-generational equity** issues.
- **Environmental Impact**: **Methane emissions** from paddies (10–20% agri GHGs); **stubble burning** worsens air pollution & **arsenic-contamination of groundwater**.
- **Health Risks**: **Arsenic uptake** from groundwater + **pesticide use** → **cancer, toxicity** (e.g., Bihar hotspots).
- **Economic Burden**: **Costly borewells/pumps** → farmer debt; **Punjab subsidy**: ₹39,000/ha; leads to **soil nutrient depletion**.
- **Climate Threat**: **Yield losses (6–10%)** from heat & erratic rain; trapped in **energy–water–climate cycle**.
- **Global Impact**: As **40% of world rice exports**, India's production drop may **hit global food security**.

Steps Needed for Sustainable Agriculture

- **Subsidy Reform**: Shift from input subsidies to **direct income & eco-service payments** (water saving, soil carbon, crop diversity).
  - Ensure **MSP & procurement** for **millets, pulses, oilseeds**.
- **Water & Tech Efficiency**: Promote **SRI**, **drip/sprinkler irrigation**, **genome-edited crops** (e.g., drought-tolerant Kamala rice).
  - Use **precision irrigation + digital tools** (AI weather, soil sensors) to cut **30–40% water use**.
- **Policy & Governance**: Ban **new borewells in critical zones**; encourage **participatory groundwater management**.
  - Strengthen **FPOs/cooperatives** for cost reduction and planning.
- **Climate Resilience**: Promote **crop diversification, agroforestry**, **soil health cards**, and **residue management**.
- **Farmer Support & Risk Mitigation**: Provide **loans for sustainable tech**, expand **PMFBY**, and boost **food processing, cold chains, rural infrastructure** to reduce losses and generate jobs.

India's dominance in global rice production has intensified groundwater stress. Examine the causes and suggest sustainable policy solutions.

Drishti Mains Question

Report on Trend and Progress of Banking in India 2024-25

The **Reserve Bank of India (RBI)** released its **Report on Trend and Progress of Banking in India 2024-25** highlighting key trends in the Indian banking sector.

Key Highlights of the Report

- **Resilient Banking Sector:** The **Gross Non-Performing Asset (GNPA) ratio** fell to a multi-decadal low of **2.2% (March 2025)** and further to **2.1% (September 2025)**.
  - The **Capital to Risk-Weighted Assets Ratio (CRAR)** stood at **17.4%** ensuring the system can absorb **potential shocks**.
  - **Scheduled Commercial Banks (SCBs)** recorded double-digit balance sheet **expansion (11.2%)** and net profits rose to **Rs 4 lakh crore**.
- **Banking Frauds:** While the number of **fraud cases** declined, the total amount involved tripled to **Rs 34,771 crore in 2024-25**.
  - **Card/Internet** frauds were most frequent (**66.8% of cases**), but **advances-related (loan)** frauds constituted the **highest value (33.1% of amount)**.
  - **Private Banks** reported most **frauds by volume (59.3%)**, while **Public Sector Banks** bore the **highest financial impact** (70.7% of the total amount involved).
- **Strong Performance of NBFCs**: **Non-Banking Financial Companies (NBFCs)** recorded robust **credit growth of 19.4%** and account for about a **quarter of SCB credit**.
  - **NBFCs** maintained strong **capital buffers (CRAR of 25.9%)** and saw improved asset quality.
- **Mixed Picture for Cooperative Banks: Urban Cooperative Banks (UCBs)** showed improvement in growth, asset quality (GNPA fell to 6.2%), and **profitability**.

- **Rural Long-Term Cooperatives** (like State co-operative agriculture and rural development banks) continued to face **severe stress**, with **GNPA ratios** alarmingly high at **over 38%**.

- **Positive Macroeconomic Context:** The **report** views India's current macroeconomic phase positively, with **inflation** at multi-year lows and **growth exceeding 8%**, creating a conducive environment for **financial stability**. However, it calls for vigilance due to **global uncertainties**.
- **Regulatory Concerns and Priorities:** The **RBI** flagged several **emerging risks** and outlined its regulatory focus:
  - **Climate Risk:** Warned that both **physical** and **transition climate risks** pose **material threats** to financial stability, terming climate finance a "**national imperative**."
  - **Consumer Protection:** Expressed concern over **misselling of financial products** and plans to issue **harmonised guidelines** for advertising and recovery practices.
  - **Technological Challenges:** Emphasised the need for **ethical AI use**, guarding against **algorithmic bias**, and managing risks from technological disruption and competition from non-banks.

Reports Released by RBI: Annual Report, Financial Stability Report (FSR), Monetary Policy Report, Report on Currency and Finance

Discuss the significance of the Reserve Bank of India integrating climate risk into its financial stability framework. What challenges might be faced in its implementation?

Drishti Mains Question

Year End Review-2025: Ministry of Micro, Small & Medium Enterprises

The year **2025** marked a period of transformative progress for India's **Micro, Small, and Medium Enterprises (MSME) sector**, reinforcing its **pivotal role** in employment generation and **equitable economic development**.

Major Achievements in the Year 2025

- **Massive Formalization:** Over **7.30 crore enterprises** registered on the **Udyam Registration Portal** and **Udyam Assist Platform (UAP)** by **December 2025**.
- **Robust Credit Support: Prime Minister's Employment Generation Programme (PMEGP)** generated estimated employment for over **87 lakh persons** since inception, assisting **10.71+ lakh** micro-enterprises.
  - **Credit Guarantee Trust for Micro and Small Enterprises (CGTMSE)** approved **over 29 lakh guarantees** worth **Rs 3.77 lakh crore**, with **enhanced coverage to Rs 10 crore**.
  - **Self-Reliant India (SRI) Fund** provided **equity funding of Rs 1,823 crore** to 682 MSMEs.
- **Infrastructure & Artisan Support: PM Vishwakarma Scheme** achieved its target of **30 lakh beneficiary** registrations, sanctioning **Rs 2,257 crore** in collateral-free loans (2025).
  - **Raising and Accelerating MSME Performance (RAMP)**, a **World Bank-supported scheme**, approved Rs 3,211.75 crore for states/UTs.
  - The **Micro and Small Enterprises Cluster Development Programme (MSE-CDP)** and a **dedicated scheme for the North Eastern Region (NER)** promoted industrial clusters and infrastructure.
- **Market Access & Inclusive Procurement:** Public Procurement Policy mandate of **25% procurement from MSEs** was exceeded, achieving **43.58% in 2024-25**.
  - **National SC/ST Hub (NSSH) scheme** increased procurement from SC/ST MSEs from **Rs 99.37 crore (2015-16)** to **Rs 3,731.47 crore (2024-25)**.
- **Technology & Skill Upgradation: MSME Champion Scheme** (including **Zero Defect and Zero Effect (ZED), LEAN,** and Innovative components) saw **~2.7 lakh MSMEs** register for **ZED certification** and received **52,369 ideas** under **Hackathon 5.0**.
  - **New Technology Centres (TCs)** and **Extension Centres (ECs)** were established, skilling thousands.
  - Launched the **Online Dispute Resolution (ODR) Portal** for delayed payments. The **CHAMPIONS Portal** achieved a **99.38% grievance redressal rate**.
- **Khadi, Coir & Internationalization: Khadi and Village Industries (KVI) sales** crossed Rs 1.27 lakh crore (till Nov 2025).
  - Signed **bilateral MoUs** with **Mauritius, Thailand, Slovakia, and Malaysia**, and held Joint Working Group meetings with Japan and Taiwan.

Year End Review-2025: Ministry of Petroleum & Natural Gas

In 2025, the **Ministry of Petroleum & Natural Gas** implemented a multi-pronged strategy to secure **affordable, sustainable energy** by expanding infrastructure, promoting cleaner fuels, and strengthening strategic reserves for **energy security**.

- **Energy Security** refers to the **uninterrupted availability of energy sources** at an **affordable price** for a **nation**, ensuring its economic stability, national security, and sustainable development.

Key Achievements in the Year 2025

- **Clean Cooking Access: Pradhan Mantri Ujjwala Yojana (PMUY)** reached ~**10.35 crore beneficiaries**; **25 lakh new connections** approved for FY 2025-26 while simplified 'Deprivation Declaration' eased enrolment.

- **Rs 300/cylinder subsidy** for **PMUY beneficiaries** boosted average refill consumption to **~4.85 per annum** in FY 2025-26, indicating sustained LPG adoption.

- **Marketing Infrastructure Expansion: >90,000 retail outlets digitised**; **>8,400 CNG stations** & **~1.57 crore PNG connections** established; 25,429 km gas pipeline operational (another 10,459 km under execution).
- **Clean Mobility & Fuels: >27,400 electric vehicles (EVs)** charging stations set up; **4,000 Energy Stations** planned as multi-fuel hubs (1,064 already operational).
- **Gas Grid & Tariff Reform:** Unified Pipeline Tariff regime (**One Nation, One Grid, One Tariff**) covers **~90% of pipelines**, reducing **regional cost disparities**.
- **Biofuels & Sustainable Aviation Fuel (SAF): Ethanol blending** reached **19.24% in** Ethanol Supply Year (ESY) 2024-25.
  - **Compressed Bio-Gas (CBG) blending** mandated from **FY 2025-26**; **Sustainable Aviation Fuel (SAF)** roadmap set with **1-5% blending targets** from **2027**.
- **Upstream Reforms: Oilfields (Regulation & Development) Amendment Act, 2025** and **Petroleum & Natural Gas Rules, 2025** enacted. Under the **Hydrocarbon Exploration Licensing Policy (HELP), 2016**, blocks covering **over 3.78 lakh sq km** were awarded, attracting committed investments of about **USD 4.36 billion**.
- **Strategic Reserves:** Phase-II of **Strategic Petroleum Reserves (SPR) facilities** advanced, bolstering **energy security** against **supply shocks**.
  - India's SPR facilities are located at **Visakhapatnam (Andhra Pradesh)**, **Mangaluru (Karnataka)**, and **Padur (Karnataka)**. **Phase II** includes a new facility at **Chandikhol (Odisha)** and an **expansion at Padur**.

Principal Challenges in Achieving Energy Security for India

- **High and Rising Import Dependence: India** imports around **85% of its crude oil** and **50% of its natural gas**, with **domestic crude production** falling to **28.7 MT in FY25**, (from 29.4 MT in FY24) creating a **critical vulnerability** to global price shocks.
  - This risk was exemplified when the **2022 Ukraine crisis** spiked **Brent crude** to **USD 130/barrel**, severely worsening **India's trade deficit** and **inflation**.
- **Geopolitical Vulnerability:** India's purchase of **Russian oil** led to **severe economic consequences**, including **EU sanctions** on **Nayara Energy**, **US sanctions** on **Russian firms**, and a **25% tariff and surcharge** imposed by the **US**.
  - The majority of **India's crude imports** originate in the **volatile Middle East**, transiting through **chokepoints** like the **Strait of Hormuz** and facing **disruptions** such as the **suspended Chabahar port project**.
- **Critical Minerals Dependency:** India is **100% import-dependent** for **10 critical minerals** including **lithium, cobalt, and nickel** necessary for energy transition. This creates **severe vulnerabilities** for its **clean energy, EVs, defense**, and **semiconductor sectors**, as **China** controls over **90% of rare earth processing,** 95% of graphite processing, and 79% of refined cobalt production.
- **Renewable Energy Infrastructure Bottlenecks:** India's **non-fossil fuel capacity** reached Around **217 GW** by **January 2025**, but faces **critical constraints** from transmission delays, corridor congestion, and subdued demand.
  - Over **60%** of large-scale solar and wind projects are concentrated in just **3 states—Gujarat, Rajasthan, and Tamil Nadu**, increasing exposure to **extreme weather** and geopolitical tensions like war or hybrid threats.
- **Strategic Petroleum Reserves Inadequacy:** India's combined oil storage and **Strategic Petroleum Reserves (SPR)** can sustain about **77 days of requirement**, which is **13 days short** of the **International Energy Agency (IEA)'s** compulsory **90-day mandate**. Its quantified **storage capacity** is a low **39 million barrels**, far below **China's 550 million** and **Japan's 528 million barrels**.
- **Global Competition for Resources:** China's state-backed contracts in **Africa** and **Latin America** and the **EU's hydrogen imports strategy** intensify **global competition** for **critical minerals** and **future fuels**. **India's limited strategic acquisitions overseas**, especially compared to China's Sinopec and CNPC, weaken its leverage in these energy markets.

India's Energy Source

- **Traditional Dependence (Pre-2005):** Over **70% of crude imports** came from **West Asia**, primarily **Saudi Arabia, Iraq, Iran, Kuwait, and the UAE**.
- **Initial Diversification (2005-2015): Sourcing** broadened to include **African nations** (**Nigeria, Angola**) and **Venezuela**, though **West Asia** still dominated (~**60% share in 2011-12**).
- **Impact of Sanctions on Iran: UN and US sanctions** post-2010 led to a sharp decline in **Iranian oil imports**, from ~**11%** (**2011-12**) to under **7% by mid-2010s**, despite a brief resurgence after 2016.
- **Major Shift Post-2022:** Following the **Ukraine conflict**, **Russia** emerged as **India's top supplier**, its share jumping from <**2%** (**2021-22**) to ~**36%** (**2023-25**), driven by significant **price discounts**.
- **Current Import Basket:** Sources are now more **balanced**: **Russia** (~**35%**), **West Asia** (**40-45%**), **Africa** (**8-10%**), and the **Americas** (**10-12%**).

Steps to Strengthen Energy Security for India

- **Boost Domestic Production:** Fully implement the **Oilfields (Regulation & Development) Amendment Act, 2025** to streamline clearances and **expand Mission Anveshan** for

exploration in frontier basins like **Krishna-Godavari** and the **Andaman islands**. Additionally, deploy **Enhanced Oil Recovery (EOR)** and **Artificial Intelligence** in **mature fields** such as **Mumbai High** to improve recovery rates.

- **Diversification of Energy Imports:** To reduce Middle East reliance, India should lock long-term contracts with **new suppliers** like **Guyana, Brazil, and Kazakhstan**, and revive **Iranian imports** via a **rupee-rial mechanism** if sanctions ease.
  - It must also utilize **pipelines** bypassing the Strait of Hormuz, including the **UAE's Habshan-Fujairah pipeline** and **Saudi Aramco's East-West pipeline**, to reduce **supply vulnerabilities** during regional conflicts.
- **Accelerate Clean Energy Transition with Storage:** Integrate a **4-hour battery storage mandate** into new solar/wind bids and scale up the **National Green Hydrogen Mission** while developing **hydrogen-ready pipelines**.
  - Concurrently, increase **ethanol blending to 30%** by 2030 using 2G/3G feedstocks and enforce **Compressed Biogas blending mandates** in city gas distribution networks.
- **Building Critical Mineral Self-reliance:** India must accelerate the **National Critical Minerals Mission (NCMM)**, build **domestic refining capacity** via **PPPs**, and forge strategic partnerships with **Australia** and **Argentina** to secure **supply chains**. It should also establish a **national stockpile** and promote a **circular economy** through **advanced recycling** for long-term resource security.
- **Geostrategic Energy Diplomacy:** Champion the **International Solar Alliance (ISA)** and **One Sun One World One Grid (OSOWOG)** initiative for cross-border renewable trade. Simultaneously, deploy **Small Modular Reactors** with partners like the **USA**, **France**, and **Russia** to reduce **fossil fuel reliance** and build long-term resilience.

"Energy security is as much a geopolitical challenge as an economic one." Examine this statement in the context of India's energy policies in 2025.

Drishti Mains Question

Infrastructure Bonds

State-run **Bank of India (BoI)** has raised **₹10,000 crore through infrastructure bonds**, witnessing strong investor demand as bids worth over **₹15,300 crore** were received against a base issue size of ₹5,000 crore.

Infrastructure Bonds

- Infrastructure Bonds ar**e long-term debt securities** — a way for governments or companies to borrow money from investors to fund large infrastructure projects (like roads, airports, power plants, railways, water systems, etc.).
- When someone invests in these bonds, they're essentially lending money to the issuer and in return receive fixed interest (coupon) payments and your principal back at maturity.
- **Maturity/Tenure:** RBI permits banks to issue infrastructure bonds with a minimum maturity of seven years, with typical terms often extending to 10-15 years.
- **Public Sector Banks (PSBs) remain the dominant issuers** of infrastructure bonds due to regulatory incentives.

Different Types of Infrastructure Bonds

- **Government Infrastructure Bonds**: Issued by the Central or State Governments or their agencies to finance public infrastructure projects. Example: bonds issued by NHAI or state infrastructure development corporations.
- **Bank-Issued Infrastructure Bonds**: Issued by banks (mainly Public Sector Banks) to raise long-term funds for infrastructure lending. These bonds are **exempt from SLR and CRR**, making them attractive for banks.
- **Institutional Infrastructure Bonds**: Issued by financial institutions such as **IREDA, PFC, REC, IRFC**, etc., specifically created to finance infrastructure sectors.
- **Special Category**
  - **Green Infrastructure Bonds**:Issued to fund environmentally sustainable projects such as renewable energy, clean transport, and climate-resilient infrastructure.

Reasons for Banks' Issuance of Infrastructure Bonds

- **Better match for long-term infra loans:** Infra projects need 10–20 year funds, while bank deposits are mostly short term. Long-term infra bonds give banks stable, long-duration money and reduce asset–liability mismatch.
- **Regulatory benefits lower cost:** RBI allows such bonds with CRR/SLR exemptions (subject to conditions), so they are cheaper than deposits since less money is locked in non-earning reserves.
- **Supports government infra push:** Infra bonds help banks fund large pipelines in roads, housing, and urban projects without stressing deposit-based funding or crossing exposure limits.
- **Strengthens bank balance sheets and markets:** They diversify funding beyond deposits and increase bank participation in the bond market, aiding development of the long-term debt market.

Advantages for Investors

- **Stable Returns:** Fixed coupons mean relatively predictable income, which appeals to conservative and long-term investors such as retirees, pension funds, and insurers.

- **Diversification:**
  - As debt instruments often backed by sovereign or quasi-sovereign entities, they can help diversify a portfolio away from pure equities and reduce overall volatility.
- **Nation-building Angle:**
  - Investors effectively participate in financing roads, rail, power, and other critical assets, aligning personal investments with national development objectives.

Risks Associated with Infra Bonds

- **Interest rate risk:** Rising market interest rates can reduce the attractiveness of fixed-rate infra bonds.
- **Liquidity risk:** Long tenures and limited secondary market trading may make early exit difficult.
- **Credit risk:** Bonds issued by lower-rated or private entities may face higher default risk.
- **Inflation risk:** Fixed returns may not keep pace with high inflation over long periods.

Difference Between Infrastructure Bonds and InvITs

Aspect	Infrastructure Bonds	Infrastructure Investment Trusts (InvITs)
Nature	Debt instrument (loan given to issuer)	Trust-based investment vehicle
Returns	Fixed interest (coupon) income	Periodic cash distributions (interest + dividends)
Risk Level	Relatively low (especially PSU/government-backed)	Moderate; depends on project performance
Tenure	Long-term (7–20+ years)	No fixed maturity (market-linked)
Capital Appreciation	Limited	Possible, along with income
Liquidity	Limited secondary market liquidity	Listed InvITs traded on stock exchanges
Tax Treatment	Interest is taxable as per slab	Tax-efficient components (interest, dividend, capital gains taxed differently)
Regulation	RBI (for banking norms) and SEBI (for listing/disclosure)	SEBI (InvIT Regulations, 2014)
Suitable For	Risk-averse investors seeking stable income	Investors seeking higher returns with moderate risk

Shrinking Clusters of India's Exports

The **Reserve Bank of India Handbook of Statistics on Indian States 2024–25** shows that India's export growth is increasingly **concentrated in a few States,** raising concerns that exports may now reflect existing regional advantages rather than driving broad-based development.

RBI's Findings Regarding India's Export Structure

- **Concentrated in Just a Few States:** Nearly **70% of India's exports** now come from just **five States**: Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Uttar Pradesh.
  - Five years ago, this share was about **65%**, showing a clear rise in concentration.
- **Core-Periphery Pattern**: The export engine is being powered by a **shrinking cluster of states**, leading to an increasingly lopsided export geography.
  - Coastal belts in the south and west are integrating tightly into global supply chains, while the demographic heartlands of the north and east are effectively "decoupling" from India's trade engine.
- **Rising Market Concentration**: The **Herfindahl-Hirschman Index (HHI) for India's exports** is increasing, signaling a rise in market concentration and a top-heavy export structure.
  - The lagging regions are not catching up, further deepening this divide.

India's Export Landscape

- India's exports hit a record **USD 825.25 billion in 2024–25** and rose to **USD 418.91 billion in April–September 2025**, the highest-ever first-half performance, driven mainly by strong **services exports** and resilient **non-petroleum merchandise exports**.
- Key sectors such as **electronics, engineering goods, pharmaceuticals, marine products and rice**, along with robust demand from the **USA, UAE, China, Spain and Hong Kong**, sustained this momentum, as **India targets US$ 2 trillion in total exports by 2030**.
- Overall, India's global export share grew from 1.2% in 2005 to 2.4% in 2023.

Challenges Arising from the Concentration of Exports in a Few States

- **Breakdown of the Export–employment Link:** Export expansion no longer translates into mass industrial employment.
  - **Annual Survey of Industries (ASI) 2022–23 data** shows fixed capital investment growing by **about 10.6%**, while employment increased by only **7.4%**, indicating capital deepening.
  - With fixed capital per worker rising to **Rs 23.6 lakh**, factories are becoming **more capital-intensive and less labour-absorbing**, meaning exports increasingly generate **value without creating proportional employment**, weakening their traditional role in driving structural transformation.

- Manufacturing's share in total employment has stagnated at **11.6 - 12%** despite record exports, indicating that export growth is concentrated in **capital-intensive hubs** rather than creating jobs in **labour-surplus hinterland States**.

- **Spatial Lock-in of High-growth Export Sectors:**
  - Under the PLI scheme, electronics exports grew by **over 47% year-on-year**, yet remain concentrated in specific districts such as **Kancheepuram and Noida**.
  - The complexity and logistics precision required by these supply chains prevent their diffusion to less-developed regions, reinforcing export concentration.
- **Financial Drain from Poorer States:**
  - RBI data on **Credit–Deposit (CD) ratios** reveals a stark divide. Export powerhouses like Tamil Nadu and Andhra Pradesh record **CD ratios above 90%**, indicating strong recycling of local savings into local industry.
  - In contrast, Bihar and eastern Uttar Pradesh have **CD ratios below 50%**, showing that **savings mobilised in poorer States are lent out to industrialised coastal regions,** creating a **perverse capital outflow.**
  - The failure of the hinterland to converge with growth centres reflects weak state capacity and shallow financial depth, reinforcing regional inequality.
- **Weak State and Human Capital Deficits:**
  - Low-export States suffer from persistent deficits in skills, health, infrastructure, and institutional capacity.
  - These constraints limit their ability to **participate in high-complexity global value chains,** making it difficult for them to upgrade their export baskets or attract global capital, and thereby perpetuating regional divergence.
- **Vulnerability to Global Trade Slowdown:**
  - The global window for low-skill, labour-intensive industrialisation used by countries like **Bangladesh and Vietnam** to integrate into world trade is rapidly closing.
  - Global capital is no longer chasing just low-cost labor (the hinterland's advantage). It now seeks "**high economic complexity",** with **World Trade Organization (WTO) data** indicating merchandise trade volume growth slowing to **0.5–3%** and **UN Trade and Development (UNCTAD) 2023** showing that the top **10 exporters control around 55% of world trade**.
  - In such a context, India's reliance on a narrow set of export States increases vulnerability to region-specific shocks.

Measures to Drive a Sustainable Transformation in India's Export Sector

- **Strengthen Lagging State Capacity**:
  - Use **PM Gati Shakti** to close infrastructure gaps in low-export States through integrated planning of roads, railways, ports, and logistics.
  - Expand **Industrial Corridor Projects** and ensure their spread beyond coastal States into the hinterland.
  - Improve port-led development through **Sagarmala** and inland connectivity via **Bharatmala**. Reduce transaction costs using the **National Logistics Policy** and **Unified Logistics Interface Platform (ULIP)**.
- **Rebalance Export Policy for Employment:**
  - Under **Export Promotion Mission (EPM),** reorient **Production Linked Incentive (PLI schemes** to include explicit weightage for **employment intensity**, not just output or investment.
  - Encourage labour-absorbing sectors such as **textiles, food processing, footwear, and MSME manufacturing** alongside high-tech sectors.
- **Human Capital Aligned with Export Needs:** Align **Skill India Mission**, **PM Kaushal Vikas Yojana (PMKVY)**, and **Samarth (for textiles)** with export-oriented value chains.
- **Improve Access to Finance in Low-export States**:
  - Address low Credit–Deposit ratios through **MUDRA**, and **Stand-Up India** to improve MSME credit flow.
  - Use **Development Finance Institutions (DFIs)** and credit guarantees to crowd in private investment in lagging regions.
  - Leverage **Districts as Export Hubs (DEH)** to identify district-specific export potential and reduce over-concentration. Link **One District One Product (ODOP)** with export facilitation, branding, and global market access.
- **Align trade policy with regional convergence:**
  - Use **Export Promotion Capital Goods (EPCG)** and **Remission of Duties and Taxes on Exported Products (RoDTEP)** to incentivise firms locating in backward regions.
  - Encourage states to develop region-specific export strategies aligned with local capabilities.
  - Integrate export assessment with outcomes under **Aspirational Districts Programme** to track inclusive development.

"India's export growth increasingly reflects existing regional strengths rather than driving inclusive development." Critically examine.

Drishti Mains Question

OMO Purchases and Dollar–Rupee Swap

The **Reserve Bank of India (RBI)** has announced a **dual intervention** comprising **Open Market Operation (OMO)** purchases of government securities and a **Dollar-Rupee buy/sell swap auction**.

Open Market Operations (OMOs)

- **Open Market Operations** refer to the **buying and selling of government securities** by the **Reserve Bank of India (RBI)** in the open market to regulate **liquidity** and **money supply** in the economy.
  - **Types:**
    - ❖ **OMO Purchase:** RBI buys G-secs → injects rupee liquidity (expansionary).
    - ❖ **OMO Sale:** RBI sells G-secs → absorbs rupee liquidity (contractionary).

Rupee–Dollar Swap Operations

- A Rupee–Dollar swap is a foreign exchange tool used by the RBI in which it exchanges US dollars for rupees with banks, with an agreement to reverse the transaction at a future date.
- **Structure:**
  - **Buy/sell swap:** RBI buys dollars now (gives rupees) and agrees to sell the same dollars later → injects rupee liquidity now, withdraws it at maturity.
  - **Sell/buy swap:** RBI sells dollars now (absorbs rupees) and buys them back later → sucks out rupee liquidity now, re-injects later.

Rationale for the RBI's Use of Both Instruments

- The RBI uses **both tools simultaneously** because they **serve different but complementary purposes** in managing liquidity, interest rates, and exchange rate stability.
- **Short-term vs durable liquidity management:** OMO helps RBI **fine-tune liquidity permanently**, while rupee–dollar swaps provide **durable but reversible liquidity** for longer periods.
- **Separation of objectives:** Using swaps allows RBI to inject rupee liquidity **without directly altering domestic bond yields**, while OMO directly influences the **government securities market**.
- **Managing forex volatility alongside liquidity:** Rupee–dollar swaps help **stabilise the exchange rate** and optimise forex reserves, while OMO focuses purely on **domestic monetary conditions**.
- **Flexibility in monetary policy transmission:** Together, they give RBI **greater operational flexibility** to control liquidity surplus/deficit without overusing a single instrument.
- **Objectives**: It aims to ease domestic liquidity, manage the **inflated dollar rupee forward premium**, and **support the RBI's foreign exchange reserves**, which have been **depleted** due to its recent market interventions.
  - A **forward premium** means the **future exchange rate** is higher than the **current rate**, showing the market expects the **rupee to weaken**.
  - A persistently **high** forward premium prompts **importers to rush for dollars**, further **pushing up** the premium and creating a **negative sentiment loop** around the rupee.
- **Forex Pressure:** This action follows substantial dollar sales by the RBI (e.g.,a net USD 11.88 billion in October 2025) to arrest the rupee's fall amid pressure from factors like U.S. tariffs.

India's Power Sector Milestones 2025

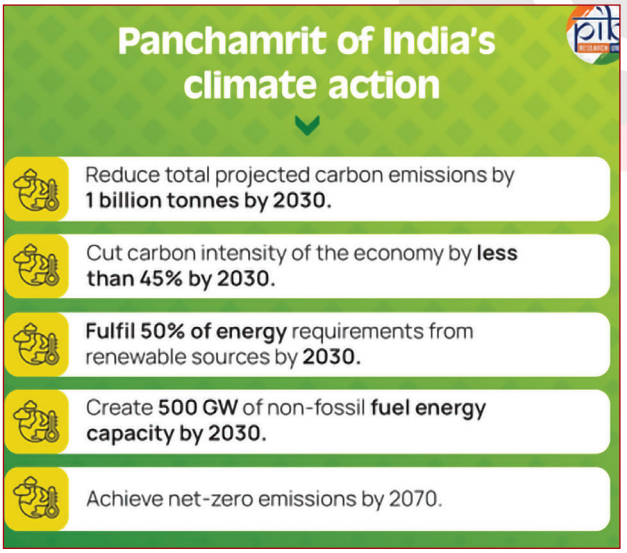
The year **2025** proved to be a landmark period for the **Ministry of Power**, as India's power sector **achieved record milestones**, establishing a strong foundation for **sustainable growth** and enhanced **energy security**.

Key Achievements of the Ministry of Power in the Year 2025

- **Record Supply & Reliability:** Successfully met an all-time peak power demand of **242.49 GW** in FY 2025-26, reducing **national energy shortages** to a mere **0.03%** from **4.2% in 2013-14**. It significantly increased **rural and urban power availability** to 22.6 and 23.4 hours, respectively.
  - India's power sector is poised for massive growth with a projected **investment** of **USD 450 billion by 2032**.
- **Massive Capacity Expansion:** Total **installed power generation capacity** surged to around **509 GW** (as of November, 2025), a **104.4% increase** since 2014, with **55.57 GW added in 2025**.
  - **Renewable energy** capacity additions since 2014 stand at **178 GW**, including **130 GW solar** and **33 GW wind**.
- **Thermal & Coal Security:** Awarded **13.32 GW** of new **coal capacity** in FY 2025-26, with total capacity at **226.23 GW**. **Coal stocks** were maintained at robust levels (**51.7 metric ton (MT)**, supported by the **revised SHAKTI Policy 2025** to enhance **coal allocation** and **energy security**.
- **Storage & Transmission Push:** Set targets for **57 GW of Pump Storage Projects (PSP)** by 2031-32 and **43,220 MWh of Battery Energy Storage System (BESS)** under **Viability Gap Funding (VGF)** Schemes.
  - The **National Electricity Plan (2023-32)** aims to expand the **transmission network** to **6.48 lakh Circuit Kilometers (ckm) by 2032** and approved **25.8 GW of RE-linked Inter State Transmission projects** in **2025**.

- Currently, India's national power transmission network stands at around **5 lakh ckm**.

- **Distribution Reforms & Consumer Focus:** Under the **Revamped Distribution Sector Scheme (RDSS)**, sanctioned **19.79 crore prepaid Smart meters**, reducing **AT&C losses** to **16.16%** and the **Average Cost of Supply (ACS)** and the **Average Revenue Realized (ARR) gap** to **Rs 0.11/kWh**.
  - It also provided **electricity connections** to **13.65 lakh households** under **PM-JANMAN** and **DA-JGUA (Dharti Aaba Janjatiya Gram Utkarsh Abhiyan)** initiatives.
- **Energy Efficiency & Carbon Market Launch:** Introduced the **Carbon Credit Trading Scheme (CCTS)** for compliance (covering **Aluminium, Cement etc.**) and **offset mechanisms**.
  - Expanded the **Standards & Labelling programme** to **41 appliances** and launched the **ADEETIE (Assistance in Deploying Energy Efficient Technology in Industries and Establishments) scheme** for **MSME** energy efficiency.
- **Critical Regulatory Reforms:** Late Payment Surcharge Rules, 2022 drastically reduced **legacy dues of DISCOMs** from **Rs 1,39,947 crore** to **Rs 8,005 crore**. The **Electricity (Amendment) Rules, 2025** allowed consumer-owned energy storage.
- **Climate Commitment Achieved:** Achieved its **Nationally Determined Contributions (NDCs) target** of **50%** cumulative non-fossil electric capacity nearly five years early, with the share rising from **32% in 2014** to **51% by October 2025**.



Examine the role of the Indian Carbon Market and the Carbon Credit Trading Scheme (CCTS) in driving industrial decarbonization and positioning India in the global green finance landscape.

Drishti Mains Question

Limits of Household Stability

As the **Union Budget** 2026 approaches, India's **macroeconomic indicators present a picture of aggregate stability and relative strength** amidst global uncertainty.

- However, a deeper analysis of the **Reserve Bank of India's (RBI) Financial Stability Report (2025)** and **Annual Report 2024–25** reveals a concerning structural shift that **households are saving less, borrowing more, and increasingly absorbing economic risks** that were previously shared by the State.

Concerns Regarding the Household Stability

- **Declining and Volatile Household Savings:** Net financial savings recovered to **7.6% of GDP in the last quarter of 2024-25**, but this came after a compression to about 3-4% of GDP in the preceding quarter.
  - Such volatility weakens households' capacity to absorb income, health, or employment shocks.
- **Rising Household Debt:** Household debt increased from about **36% of GDP in 2021 to 41.3% in March 2025**.
  - According to the **RBI's Annual Report 2024–25,** real income growth remains uneven, income gains are concentrated in **formal sectors**, while informal and self-employed workers face stagnant or volatile earnings, constraining consistent savings.
- **Borrowing Driven Consumption:** Stable consumption despite weak income growth **indicates rising reliance on credit.**
  - Private consumption contributes nearly **60% of GDP**. Dependence on debt-supported consumption increases the risk of abrupt spending contraction during economic stress.
  - Debt-financed consumption **offers limited adjustment space during downturns and heightens vulnerability** to interest-rate changes.
- **Faster Growth of Financial Liabilities:** While gross household financial assets stood at **106.6% of GDP**, liabilities rose to **41.3% of GDP** by March 2025. Faster liability accumulation explains the compression of net financial savings.
- **Rising Exposure to Unsecured Retail Credit:** Rapid growth in **unsecured personal loans** and credit cards increases household vulnerability, as these loans carry higher interest rates and limited repayment flexibility during stress periods.
  - A rising share of fresh savings is offset by new borrowing, reducing households' ability to manage shocks from unemployment, inflation, or medical emergencies.
- **Fiscal Consolidation Shifting Risk to Households:** Budgets 2024–25 show States and the Union **prioritising capital expenditure while compressing revenue spending.** With

30–32% of State revenues locked into salaries, pensions, and interest, fiscal space for income support has shrunk.

- While this investment-led strategy boosts medium-term growth, it does little to **cushion short-term income shocks,** leading to a quiet shift of economic risk from governments to households.

Implications of Volatile Household Savings

- **Macroeconomic Implications:**
  - **The "Savings-Investment" Gap:** A decline in household savings compels the government and the private sector to depend more on **Foreign Portfolio Investment (FPI) and external borrowing**; however, with **FPIs aggressively exiting India and withdrawing a record ₹1.66 lakh crore in 2025**, this reliance heightens vulnerability to external shocks and financing stress.
    - ❖ This increases India's vulnerability to global "shocks" (like Fed rate hikes) and worsens the **Current Account Deficit (CAD)**.
  - **Fiscal Deficit Crowding Out:** With lower domestic savings available, the government may find it harder to fund its **fiscal deficit at low interest rates.**
    - ❖ This could lead to higher borrowing costs for the state, "crowding out" private investment.
- **Financial Systemic Implications:**
  - **Bank Funding Stress:** Shift from deposits to mutual funds/equities increases dependence on costly, volatile wholesale funding, compressing NIMs.
  - **Asset Quality Risks:** Growth of unsecured retail credit raises default risk during slowdowns due to lack of collateral.
  - **Market Volatility:** SIP-driven equity exposure without deposit buffers may trigger panic withdrawals during market crashes.
- **Socio-Economic Implications:**
  - **Demographic Dividend Risk:** High EMIs reduce spending on education and nutrition, hurting long-term productivity.
  - **Rising Inequality:** "K-shaped" trend—wealthier households gain from markets, while poorer groups borrow to sustain consumption, widening inequality.

Steps to Improve the Household Savings

- **Recalibrate Inflation Targeting:** Update the CPI basket to reflect rising education and healthcare costs, protecting real household purchasing power.
- **Incentivise Financial Savings:** Enhance tax benefits for long-term savings instruments (PPF, long-term deposits) to curb excessive risk-taking.
- **Boost Real Wage Growth:** Create quality formal jobs; strengthen manufacturing via PLI schemes for stable income growth.
- **Strengthen Social Safety Nets:** Expand public healthcare and insurance (e.g. Ayushman Bharat) to reduce health-related borrowing.
- **Financial Regulation & Literacy:** RBI to tighten macro-prudential norms (higher risk weights on unsecured loans) to prevent household debt traps.

How does declining household savings affect macroeconomic stability and external sector sustainability in India?

Drishti Mains Question

Central Bank Digital Currency

RBI has proposed placing the linking of **BRICS countries' CBDCs on the agenda for the 2026 BRICS summit (hosted by India),** building on a 2025 BRICS declaration in Rio de Janeiro that called for interoperability of members' payment systems to improve cross-border transactions.

- **CBDC**: A digital form of a country's fiat currency, issued & backed by its central bank. Unlike cryptocurrencies, **CBDCs are centralized, stable, and function as legal tender**.
- **Functioning**: CBDCs use cryptography for security, with encryption and digital signatures for **transaction protection & privacy methods like zero-knowledge proofs**.
- **Objective**: To modernize payment systems, counter the rise of private digital currencies, and create efficient, inclusive financial systems.
- **Key Characteristics:**
  - **Issuer & Backing**: Issued by the central bank, backed by the government, not by private entities.
  - **Digital Nature**: Exists electronically, recorded on centralized or distributed ledgers, enabling direct digital payments.
  - **Purpose & Availability**: Complements physical cash and bank deposits, serving as a payment method, unit of account, and store of value.
- **Types: Retail CBDC**– For public daily payments like transfers & purchases. **Wholesale CBDC**– For banks & institutions, used in interbank settlements and large transactions.
- **Distinction from Existing Digital Money**: Most digital money today is a liability of commercial banks, while a CBDC is a direct claim on the central bank, offering higher safety and liquidity.
- **Global Context:** The Bahamas launched the first nationwide CBDC, **Sand Dollar (2020), followed by Nigeria's eNaira.** 90%+ of central banks are exploring CBDCs, with ~60% testing or piloting them.
- **BRICS CBDCs**: **Brazil**: Drex (advanced pilot); **Russia**: Digital Ruble (limited commercial use); **India**: e-Rupee (7 million retail users); **China**: e-CNY (widespread pilot); **South Africa**: Research stage.

International Relations

India-EU FTA

India and the **European Union** (EU) have concluded negotiations for a comprehensive **Free Trade Agreement (FTA)**, marking a transformative step in their **economic relations**. The **EU** is India's **22nd FTA partner.**

- The concluded India–EU FTA will now undergo **language finalisation** and **legal scrubbing**, followed by translation and ratification by all **27 EU Member States** and the **European Parliament** before it enters into force.

Key Highlights of the India–EU FTA

- **European Union Commitments**
  - **Comprehensive Market Access:** The **European Union** committed to open **97% of its tariff lines**, covering **99.5% of India's exports** by **value**, offering India one of the deepest preferential market access arrangements it has ever received.
  - **Labour-Intensive Sector Advantage:** Key employment-generating sectors such as **textiles**, **apparel**, **leather**, **footwear**, marine products, gems and jewellery, toys, and sports goods, currently facing **EU duties of 4–26%**, will enter the EU market at zero duty, covering exports **worth about USD 33 billion**.
  - **Services Market Liberalisation:** The EU made binding commitments across **144 services subsectors**, including IT/ITeS, digital services, professional services, education, and business services, ensuring regulatory certainty and non-discriminatory treatment for Indian service providers.
  - **Farm Exports:** The FTA provides India preferential access to the EU market for key **agricultural** and **processed food exports**, improving their **competitiveness**. This is expected to boost **farmer incomes**, promote **value-added agri-exports**, and strengthen **rural** and **women-led livelihoods**.
  - **Professional Mobility Framework:** The FTA establishes a clear framework for **temporary movement** of **professionals** such as **intra-corporate transferees**, **contractual service suppliers**, and **independent professionals** along with provisions for dependents, students, and future social security arrangements.
  - **Regulatory and Standards Cooperation:** Enhanced cooperation on **Sanitary and Phytosanitary (SPS)** and **Technical Barriers to Trade (TBT)** was agreed upon to reduce **non-tariff barriers**, enable conformity assessment recognition, and improve market predictability.

India-EU Relations

- **Historical Foundation:** Bilateral relations date to **1962**. The relationship was institutionalized by a 1993 Joint Political Statement and a 1994 Cooperation Agreement, upgraded to a '**Strategic Partnership**' in **2004**.
- **Institutional Architecture:** The bilateral relationship is guided by the '**India–EU Strategic Partnership: A Roadmap to 2025**'. The multi-tiered institutional architecture is presided over by their **annual Summits**, which began with the inaugural one in **Lisbon in June 2000.**
- **High-Level Engagements:** Characterized by frequent leaders' meetings on sidelines of **G20**, and **G7 summits**. **Both** established the **India–EU Trade and Technology Council** (**TTC**) in **2022** as a key strategic mechanism.
- **Economic & Trade Relations:** The **EU** is **India's largest** goods trading partner (**USD 135 billion in FY 2023–24**). Bilateral trade in **services** was at a **record USD 53 billion in 2023. EU investments** in India exceed **USD 117 billion**.
- **Strategic & Security Cooperation:** India and the EU have strengthened naval cooperation through joint exercises like **Maritime Partnership Exercise with EUNAVFOR Atalanta** (**Operation Atalanta**). The EU joined the **Indo-Pacific Oceans Initiative** (**IPOI**) in **2023** and is an **Indian Ocean Rim Association** (**IORA**) dialogue partner.
- **Climate & Connectivity Initiatives: India – EU Clean Energy and Climate Partnership** (**CECP**) established in 2016 focuses on clean energy and climate-friendly technologies. The **EU** is a partner to the **International Solar Alliance** and a member of **Coalition for Disaster Resilient Infrastructure** (**CDRI**).
  - Both sides launched an **India–EU Connectivity Partnership** in **2021** and are **co-partners** in the **India-Middle East-Europe Economic Corridor** (**IMEC**).
- **Multifaceted Sectoral Cooperation:** Extensive collaboration in Science & Technology (India is an associate member of CERN), Space (ISRO launched ESA's Proba-3 Mission in 2024), Digital transition, Water (India–EU Water Partnership), and Migration (Common Agenda on Migration and Mobility).

India's Commitments

- **Calibrated Tariff Liberalisation: India** committed market access on **92.1% of its tariff lines**, covering **97.5% of EU exports**. Critical sectors including **dairy**, **cereals**, **poultry**, **soymeal**, and select agricultural products remain **protected**, while **automobiles**, **wines**, and **spirits** are subject to **gradual liberalisation** to shield **MSMEs** and farmers.

- **Services Sector Opening: India** opened **102 services subsectors**, including telecom, financial, maritime, environmental, professional, and business services, providing EU firms a **stable** and **predictable operating environment**.
- **MSME-Friendly Rules of Origin:** Product-specific rules of origin aligned with **global value chains** were adopted, allowing **self-certification** through **Statements of Origin** and special flexibilities for MSME-dominated sectors such as **shrimps**, **prawns**, and **downstream aluminium products**.
- **Balanced IPR and Digital Trade Framework: India** reaffirmed **TRIPS-compliant intellectual property protection** while safeguarding **public interest**, protecting the **generic pharmaceutical industry**, recognising the **Traditional Knowledge Digital Library**, and balancing **cross-border digital trade** with **data localisation** and **digital sovereignty**.

Concerns Associated with the India–EU FTA

- **EU's Regulatory Onslaught as Non-Tariff Barriers (NTBs):** The EU's inclusion of **environmental** and **labor standards** in trade agreements raises concerns about **green protectionism**, where such norms may function not as neutral regulations but as de-facto non-trade barriers.
  - **Carbon Border Adjustment Mechanism (CBAM):** This **carbon tax** directly impacts key Indian exports like **steel**, **aluminium**, and **chemicals**. From 2026, Indian steel exports could face a **20–35% tax equivalent**, potentially **wiping out gains** from tariff elimination.
  - **EU Deforestation Regulation (EUDR):** The **EUDR** bans imports of commodities like **coffee**, **rubber**, and **wood** produced on **land deforested after 2020**. Small Indian farmers must **geotag plots** and prove **traceability**, a compliance burden unaffordable for most smallholders.
  - **Corporate Sustainability Due Diligence (CSDDD):** Effective from **2027**, this directive forces **companies** to **audit their value chains** for **human rights** and **environmental risks**. **Indian manufacturers** are concerned about sharing **sensitive supplier data**, viewing it as a **business risk**.
  - **Industrial Accelerator Act:** This proposed act may introduce **local content norms** (minimum domestic value addition). This would put **pressure on imports**, including from **India**.
- **Asymmetry in Market Access and Tariff Concessions:**
  - **Pre-existing Low EU Tariffs:** Over **75% of India's exports** to the **EU** already attract **less than 1% tariff** without the **FTA**. Therefore, the significant **market access gains** for **Indian goods** are limited.
  - **High Indian Tariffs:** India's **average tariffs (10–12%)** on **EU goods** are much higher than the **EU's (3–4%)** on **Indian goods**. **India** will have to offer **deep tariff cuts** on a broad range of European goods, while the relative gain in EU market access is smaller.
  - **Competition from Zero-Duty Countries:** Competitors like **Bangladesh**, **Vietnam**, and **Ethiopia** already have **zero-duty access** to the EU via other schemes, putting Indian exports at a potential disadvantage even with the FTA.
- **Lack of Parity and Carve-outs:** The **EU** has granted **exemptions** and **carve-outs** to the **US** from some environmental regulations. Indian experts argue that giving **large polluters** a **carve-out** while pushing **developing countries** like **India** to comply risks dampening any **tariff advantage**. **India** has likely pushed for **parity** on such **exemptions**.
- **EU's Concerns Regarding Indian Local Laws**: The **EU** views **India's Quality Control Orders (QCOs)—mandatory standards** requiring **facility audits**—as major **non-tariff barriers**. The **EU** stridently opposes these, arguing they **obstruct market access**.

Measures to Strengthen India-EU Economic Relations

- **Proactively Address the Core Asymmetries:** To counterbalance trade asymmetry, India must aggressively **leverage** its access to **144 services subsectors** and **professional mobility**, while attracting **EU manufacturing investment** to ascend the **value chain**.
- **Mechanisms for Dialogue & Dispute Prevention:** Establish the proposed **'Rapid Response Forum'** to promptly tackle new **non-tariff barriers** such as **EU regulations** and **QCOs** through **senior-level intervention**, preventing **disputes** from escalating.
- **Equitable Carve-outs and Transition Periods:** To protect **competitive sectors** like steel and aluminium, **India** must secure **exemptions** from regulations like **CBAM** similar to those granted to the **US** Simultaneously, it should negotiate **extended transition periods** for rules such as EUDR and CSDDD to ease adaptation.
- **Build Strategic Partnership Beyond Trade:** Integrating the trade agreement with the IMEC corridor will build **resilient supply chains** and cut **logistical costs**. Simultaneously, strengthening **Indo-Pacific collaboration** through the **IPOI** and **TTC** creates **shared geopolitical stakes** that sustain the **long-term partnership**.

India–UAE Engagement Amid Regional Flux

The **President** of the **United Arab Emirates** (UAE) paid an **official visit** to India amid regional flux, during which both countries agreed on a wide range of **bilateral agreements and outcomes** spanning **defence, space cooperation, and LNG**.

Key Highlights of the UAE President's visit to India

- **Trade Ambition**: Building on the **2022 CEPA**, bilateral trade reached **USD 100 billion in FY 2024–25**; leaders set a target to **double** bilateral trade to **USD 200 billion by 2032**.
- **Economic & Investment Initiatives**: Directed officials to connect **MSMEs** and expedite **Bharat Mart**, **Virtual Trade Corridor**, and **Bharat-Africa Setu** initiatives.
  - India invited **UAE sovereign wealth funds** to participate in the **National Investment & Infrastructure Fund (NIIF)**.
  - Both sides welcomed discussions for a **UAE partnership** in **Gujarat's Dholera Special Investment Region**, envisioning infrastructure like an airport, port, township, and MRO (Maintenance, Repair and Operations) facility.
- **Energy & Nuclear Cooperation**: Signed a **10-year LNG supply agreement** (starting from 2028). Agreed to explore partnership in advanced nuclear technologies, including **Small Modular Reactors (SMRs)**, following India's **SHANTI Act, 2025**.
- **Technology & Innovation**: Agreed to deepen cooperation in **AI** and **emerging technologies**, including a **supercomputing cluster** and exploring **data centres** in India. Directed teams to explore establishing **'Data Embassies'** under **mutual sovereignty** arrangements.
- **Counter-Terrorism**: Reiterated unequivocal **condemnation of terrorism**, including **cross-border terrorism**, and agreed to continue cooperation within **FATF** against **terror financing**.
- **Food Security & Culture**: Reaffirmed commitment to enhancing cooperation in **food security** and decided to establish a **'House of India'** in Abu Dhabi as a symbol of friendship.
- **Education & Connectivity**: Encouraged greater **university linkages** and **student exchanges**; welcomed work to integrate India's **Digilocker** with UAE platforms for academic **document authentication**. Aimed to interlink national payment platforms for **cross-border payments**.
- **Defence & Security**: Acknowledged **defence cooperation** as a **core pillar**, welcomed recent **military exchanges and exercises** (e.g., **Zayed Talwar** naval exercise), and noted the signing of a Letter of Intent for a Strategic Defence Partnership.

❍ **Shifting Geopolitical Landscape that Prompted India-UAE Meeting**
- UAE-Saudi Tensions; Saudi-Pakistan-Turkey Axis; Iran Crisis; and Board of Peace Initiative.

India-UAE Bilateral Relations

- **Economic & Commercial Ties:** Bilateral trade has surged from **USD 180 million** in the **1970s** to **USD 100 billion** in **2024–25**, elevating the **UAE** to **India's 3rd-largest trading partner** (after US and China) and **2nd-largest export** destination. **UAE investments** in India stand at **USD 20–21 billion**, with a **USD 75 billion** infrastructure commitment.
- **Energy Security:** As India's **4th-largest crude oil** source and **major supplier** of LNG and LPG, the **UAE** is **pivotal to India's energy security**. This is underscored by petroleum products constituting **41.4% of total bilateral trade**, valued at **USD35.10 billion** till FY 2021–22.
- **Financial Integration:** The introduction of **India's RuPay card** and **Unified Payments Interface (UPI)** in the **UAE** underscores growing financial collaboration. This was formalized by the 2023 **Local Currency Settlement (LCS) System** MoU, promoting **Indian Rupee** and **AED (United Arab Emirates Dirham)** for cross-border transactions, which is already in use for trade in **gold**, **crude oil**, and **food products**.
- **Defence and Security Cooperation:** UAE-India defence cooperation has strengthened through **counter-terrorism**, **intelligence sharing**, and **joint military exercises** like **Exercise Desert Cyclone**. This period also saw growing UAE interest in **Indian defence products** including the **BrahMos missile**, **Akash air defence system**, and **Tejas** fighter jet.
- **Cultural & People-to-People Links:** The **Indian diaspora** in the **UAE** numbecapproximately **3.5 million** (about 35% of UAE's population) contribute significantly through **remittances** (18% of India's total remittances). The **BAPS Mandir in Abu Dhabi** marks the **first traditional Hindu temple** in the UAE and symbolizes deepening ties.
- **Regional Stability:** The UAE's importance for **regional stability**—highlighted by its role in the **Abraham Accords** and its **normalisation of relations with Israel**—is critical for **India**, which is heavily dependent on **Gulf energy**. This **strategic role** is further reflected in multilateral frameworks like the **I2U2 grouping** and the **India-Middle East-Europe Economic Corridor (IMEC)**.

Challenges in India-UAE Relations

- **Regional Rivalries:** India must account for the **sharp escalation** in tensions between **Saudi Arabia** and the **UAE over Yemen**. The UAE backs the **Southern Transitional Council**, while Saudi Arabia supports the internationally recognised **Presidential Leadership Council**.

- India's diplomatic strategy must balance its **historical relations with Iran** amidst the ongoing **Iran-Arab tensions**, while carefully managing ties with the **UAE**.

- **Strategic Competition and External Influence:** The UAE's deepening **strategic and economic ties with China**, including in defence cooperation through deals like the acquisition of **Chinese L-15 aircraft**, pose a direct challenge as **China's "Cheque Book Diplomacy"** overshadows Indian ventures.
- **Concerns Over UAE's Pakistan Policy:** The UAE's substantial **financial assistance to Pakistan** (e.g., USD 3 billion pledge in 2019) raises **Indian concerns** about the potential misuse of funds, given Pakistan's history of **sponsoring cross-border terrorism against India**.
- **Structural Trade Barriers:** Trade remains concentrated in **traditional sectors** (gems & jewellery, petroleum, smartphones), showing **limited diversification** despite the **CEPA**. Key **Non-Tariff Barriers (NTBs)** such as mandatory **Halal certification**, **Sanitary and Phytosanitary (SPS)** measures, and **Technical Barriers to Trade (TBT)** impede Indian exports.
- **Future Economic Alignment:** The diverging **net-zero targets** (**UAE 2050**, **India 2070**) and India's push for **50% renewable energy by 2030** challenge the traditional hydrocarbon-based relationship, as the **UAE's oil export interests** potentially conflict with **India's green goals**.

Steps that India Should Take to Boost Cooperation with the UAE

- **Joint Green Energy & Sustainability Corridor:** Implement **India-UAE Green Energy Corridor** for joint renewable energy investments, **green hydrogen** technology transfer, and **desalination research**. A complementary **joint climate change research center**, focused on **desert ecology** and **sustainable urban development**, could leverage Indian expertise and UAE funding.
- **Leverage the UAE as a Gateway for Regional Integration:** India should leverage the UAE's position within the **Gulf Cooperation Council (GCC)** and the Greater Arab Free Trade Area (GAFTA) to advocate for similar **CEPA-style agreements** with other member nations.
  - It should also utilize the **UAE's role as a re-export hub** to integrate key Indian products—such as **handlooms, handicrafts, textiles, and pharma**—into supply chains accessing **African** and broader **Middle Eastern markets**.
- **Expand Investment Flows:** Facilitate UAE investments in priority **Indian projects** (e.g., **GIFT City**) while encouraging **reciprocal Indian investments** in UAE sectors; establish dedicated **bilateral investment task forces** to monitor and fast-track **high-value proposals**.
- **Strategic Dialogues and Joint Advocacy:** India must institutionalize **high-level reviews** with **clear timelines** via the **Joint Commission** to ensure diplomatic momentum, while advocating for **Kafala system** reforms to protect **Indian migrants' rights and welfare**, following Qatar's precedent (abolished in 2020).

"The India-UAE partnership is a cornerstone of India's extended neighbourhood policy." Elaborate.

Drishti Mains Question

India–Germany Relations

India and Germany have given fresh momentum to their **strategic partnership** during the German Chancellor's visit to India, marking **25 years of strategic partnership** and **75 years of diplomatic relations**.

Key Outcomes of the German Chancellor's Visit to India

- **Defence Industrial Cooperation:** A joint roadmap was agreed to promote defence co-development, co-production, and technology partnerships, with Germany committing to faster export clearances.
  - Germany expressed its intent to participate in Indian naval and air exercises such as **MILAN**, the **Indian Ocean Naval Symposium**, and **Tarang Shakti**.
  - In addition, both sides established a **Track 1.5 Foreign Policy and Security Dialogue**, enabling structured yet informal interactions between government officials and non-governmental experts to enhance strategic understanding and policy coordination.
- **Visa-free Airport Transit:** Indian passport holders will be allowed visa-free transit through German airports, easing travel and mobility.
- **Education and Skilling:** A higher education roadmap was adopted, German universities were invited to open campuses in India, and a **Centre of Excellence for Renewable Energy** skilling was announced.
- **Critical Minerals and Semiconductors:** Both sides agreed to cooperate on **critical minerals and semiconductor ecosystems** to strengthen supply-chain resilience.
- **Digital and Emerging Technologies:** The **Indo-German Digital Dialogue work plan (2026–27)** was finalised, covering AI, data governance, telecom, and **Industry 4.0.**
- **Indo-Pacific and Connectivity cooperation:** A bilateral dialogue mechanism on the Indo-Pacific was launched to support a rules-based regional order.
  - Reaffirmed commitment to a free and open Indo-Pacific and support for the **India–Middle East–Europe Economic Corridor (IMEC)**.

- **Global Governance Reforms:** India and Germany reaffirmed their commitment to reforming global institutions, including the UN Security Council, through the **G4 framework.**
- **Counter-terrorism Cooperation:** India and Germany **condemned all forms of terrorism,** including **cross-border terrorism,** reaffirmed cooperation against **United Nations-designated terrorist groups** under the **1267 regime**, welcomed **Mutual Legal Assistance Treaty ratification**, and agreed to deepen intelligence sharing, legal cooperation, and action against terror financing and safe havens.

Key Facets of India–Germany Relations

- **Economic and Commercial Relations:** Bilateral trade in goods and services between India and Germany crossed **USD 50 billion in 2024**, accounting for **over 25% of India–EU trade**.
  - Germany emerged as **India's 8th largest trading partner in 2024–25**, while India was **Germany's 23rd largest trading partner** in 2024, reflecting deepening economic integration.
  - The **Make in India Mittelstand (MIIM)** programme supports German SMEs and family-owned businesses to invest and manufacture in India.
- **Development Cooperation:** Under the **Green and Sustainable Development Partnership,** Germany has committed €1 billion annually till 2030 to support climate action, renewable energy, sustainable urban development, water, forests, and agriculture.
  - Both countries also cooperate through **Triangular Development Cooperation** to implement development projects in third countries aligned with the SDGs.
- **Defence:** India–Germany defence cooperation is anchored in the **2006 Defence Cooperation Agreement** and its **2019 implementation arrangement**, supported by regular high-level defence dialogues.
  - Military ties have deepened through naval port calls, **PASSEX exercises**. Air force cooperation has expanded via **Exercise Tarang Shakti**, reflecting growing interoperability and strategic trust.

Challenges in India–Germany Relations

- **Divergence on Russia and Strategic Autonomy:** Germany expects closer alignment on the **Russia–Ukraine conflict,** while India continues to pursue **strategic autonomy**, including energy and defence ties with Russia, limiting full political convergence.
- **Asymmetry in Defence Cooperation:** Defence ties are improving but remain constrained by India's **long-standing dependence on Russian equipment**, higher costs and conditionalities of German defence exports, and slow finalisation of major deals (e.g. submarines).
- **Uneven Scale of Economic Engagement:** Despite growth, bilateral trade is modest compared to Germany–China trade, creating a gap between **Germany's diversification ambitions** and the current depth of India–Germany economic integration.
  - Germany increasingly views **China as a systemic economic rival**, whereas India sees **China as a direct security and territorial threat**, leading to differences in threat perception that constrain **deeper strategic alignment in the Indo-Pacific.**
- **Slow Progress on India–EU Trade Framework:** Prolonged negotiations on **India–EU Free Trade Agreement** create uncertainty for long-term investment and supply-chain planning, affecting bilateral momentum.
- **Migration and Integration Challenges:** Although skilled migration and student mobility are rising, issues such as language barriers, recognition of qualifications, and social integration persist.

Steps to Enhance India-Germany Relations

- **Accelerate Economic and Trade Integration:** Push for early conclusion of the **India–EU Free Trade Agreement**, simplify regulatory processes, and strengthen supply-chain partnerships to reduce overdependence on China.
- **Enhance Climate and Green Transition:** Leverage the **GSDP** for green hydrogen, renewable energy, sustainable mobility, and climate-resilient infrastructure.
- **Promote SME and Mittelstand engagement:** Expand programmes like **Make in India Mittelstand** to attract German SMEs into Indian manufacturing and innovation ecosystems.
  - This would reduce Europe's China-dependence while embedding India deeper into **EU-centric value chains**, especially for ASEAN and Africa-facing exports.

- **Build a Shared Normative Alternative in Global Governance:** India and Germany should jointly champion a **value-based yet non-coercive model of global governance** that is democratic, inclusive, development-oriented, and respectful of sovereignty and diversity.
  - Such an approach would offer a **credible alternative to both authoritarian revisionism and Western unilateralism**, while enhancing their standing as responsible and stabilising global stakeholders.
  - Scale up India–Germany **Triangular Development Cooperation in Africa and Latin America** in sectors like renewable energy, healthcare, skilling, and digital public infrastructure.
- **Digital Public Infrastructure:** Promote interoperability between **India's Digital Public Infrastructure** (Aadhaar-like platforms, UPI, ONDC) and EU digital governance frameworks through the Indo-German Digital Dialogue.

Evaluate the role of India–Germany cooperation in promoting a rules-based order in the Indo-Pacific.

Drishti Mains Question

UN Flags Unaddressed Violence in Sri Lanka's Civil War

The **UN Human Rights Office** released a report titled ***"We lost everything – even hope for justice"***, highlighting **sexual violence by security forces** against **Tamil civilians** during **Sri Lanka's civil war**.

- **Systematic Sexual Violence**: Used by **State security forces** during the civil war to **intimidate, punish & control**, mainly targeting **Tamil civilians**, including Liberation Tigers of Tamil Eelam (LTTE) supporters (real or perceived).
- **No Accountability**: Post-2009, survivors face **denial of justice**, with **no investigations, prosecutions, or reparations**, fostering **impunity**.
- **Impact on Survivors**: Victims suffer chronic injuries, infertility, trauma, suicidal tendencies; under-reporting due to surveillance, stigma, intimidation.
- **UN Recommendations**: Recognize abuses as **war crimes/crimes against humanity**; urge formal apology, survivor-centred reforms, independent prosecutions, and support services.

Sri Lankan Civil War (1983–2009)

- **Ethnic Composition**: ~**75% Sinhalese** (**largely Buddhist**), ~**11% Sri Lankan Tamils** (**largely Hindu**); divisions over **language, religion & political power**.
- **Colonial Roots of Tension**: **British policies** favored **Tamils** in education & civil service; **Sinhala and Buddhism marginalized**, fueling later backlash.
- **Post-Independence Discrimination**: **Ceylon Citizenship Act** (**1948**); **Sinhala Only Act** (**1956**); University standardisation policies; State-sponsored Sinhalese settlements in Tamil areas
  - **Indian-origin Tamils**: Denied **citizenship**, rendered **stateless** due to **Sinhalese nationalism**.
- **Rise of Tamil Militantancy**: **Systematic discrimination** led to **radicalisation** of Tamil youth.
  - **LTTE** (**1976**), led by **Velupillai Prabhakaran**, sought a **separate Tamil homeland**. **Tamil United Liberation Front** (**TULF**) demanded **Tamil Eelam**.
- **Outbreak of Civil War** (**1983**): Triggered **Black July riots** after LTTE killed soldiers.
  - Result– **anti-Tamil pogroms**, **thousands killed**, leading to **three decades of armed conflicts**.
- **India's Involvement: Sirimavo–Shastri** (**1964**) & **Sirimavo–Indira Gandhi** (**1974**) Pacts offered **Indian citizenship to 6 lakh Indian-origin Tamils**. Poor implementation and civil war left many stateless.
  - India **supported Tamil militants** due to regional concerns.
  - **Indo–Sri Lanka Accord** (**1987**)–signed by **PM Rajiv Gandhi** and **President J. R. Jayewardene**. Led to deployment of **Indian Peace Keeping Force** (**IPKF**).
  - **Operation Pawan** (**1987–1990**) – India's **first major overseas peacekeeping mission**. Aimed to **disarm LTTE** & secure **Jaffna Peninsula**. Prevented LTTE from retaking Jaffna.
  - **PM Rajiv Gandhi assassinated in 1991** by **LTTE suicide bomber** as a fallout of India's intervention.
- **13th Amendment** (**Post-1987 Accord**): Aimed to **devolve powers** to **provincial councils**. Provinces got control over **education, health, agriculture, transport**.
  - **Land & police powers** retained by the **Centre**. **Partial devolution, Tamil-majority North & East saw prolonged central rule** remained under **central rule** for long.
  - **Opposition from Sinhala nationalists. Delays in provincial elections** weakened implementation.
- **Escalation Post-India Exit**: War intensified with **Eelam Wars** marked by suicide bombings, mass killings, military offensives. Major battles– **Jaffna, Elephant Pass, Mullaitivu**.
- **End of War** (**2009**): **Sri Lankan Army defeated LTTE** in **May 2009** and killed its; marked a decisive military victory.

US Retreat from Multilateralism

The US has withdrawn from **66 international organisations**, including **31 UN bodies**, under the **"America First"** policy. Withdrawal from key climate bodies like the **UNFCCC** may weaken **global climate governance** and limit **climate finance** for developing countries.

Implications of US Withdrawal from International Bodies

- **Geopolitical & Strategic Vacuum**: **China** expanding role in **UN technical bodies** (e.g., **ITU, FAO, ICAO**). US exit removes a key **veto-player**, not just a voice. **UNESCO withdrawal from UNESCO (2017; later reversed)** caused a **22% funding gap**.
- **Climate Governance & Finance:** Exiting **UNFCCC** removes US from **COP rule-making** despite being **largest historical emitter (24%)** and **12.7% current CO_2 emitter (2024)**.
  - Damages **global credibility**, risks encouraging **other reluctant countries**, and **weakens leadership** perception. **Adaptation finance gap** remains at **$310–365 billion/year**.
  - Reduced US funding worsens **North–South trust** & hardens **developing country negotiation stances**.
- **Peacebuilding & Human Security Spillovers**: Weakens **UN peacebuilding mechanisms**, risking future **security threats** and costly **military responses**.
  - Undermines efforts on **health**, **conflict prevention**, **climate displacement**—with up to **200 million climate-induced migrations by 2050**.
- **Economic/Trade Competitiveness**: **US exporters** face **climate-linked trade barriers** (e.g., carbon border taxes). Loss of influence in shaping norms raises the **cost of climate business** and risks **US industry isolation.**
- **Reduced Aid & Technical Support**: **Aid cuts** follow exits (e.g., **UNFPA defunding in 2017**) → impacts **reproductive health in Africa/Asia**.
  - Withdrawal from science/education bodies hinders **tech transfer** to the **Global South**.

Pax Silica and India

Major International Organizations & Agreements from which US has withdrawn: UNFCCC; IPCC; ISA; IUCN; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES); UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD+); UN Energy; Intergovernmental Forum on Mining, Minerals, Metals, and Sustainable Development; UN Population Fund (UNFPA); International Institute for Democracy and Electoral Assistance (IDEA); Global Counter-Terrorism Forum (GCTF)

India's Response to the US Withdrawal from Multilateral Institutions

- **Lead Climate Coalitions Proactively**: Shift from participation to **agenda-setting** in platforms like **ISA** & **CDRI** to sustain **global climate action**.
- **Secure Alternative Climate Finance**: Offset potential **US funding gaps** in **GCF** & **GEF** by targeting **EU, UK, Japan, Nordic countries,** leveraging blended finance from MDBs.
- **Build Resilience to Carbon Border Measures**: Prepare for **EU-style CBAM** by decarbonising steel, cement, aluminium. Accelerate **National Green Hydrogen Mission (2023)** and **Carbon Credit Trading Scheme (CCTS)**.
- **Become a Green Tech Hub & Exporter**: Expand **PLI schemes** for **solar PV, batteries, electrolyzers**. Export **IAEA-compliant SMRs** as **low-carbon baseload tech**.
- **Invest in Science, Technology, and Innovation**: Strengthen **climate science networks** and **tech transfer** in **GH2, battery storage, CCS**. Boost **public-private R&D** in **climate technology** for innovation & global competitiveness.

How does US disengagement from multilateral institutions reshape global geopolitics and climate finance architecture?

Drishti Mains Question

Pax Silica & India's Inclusion

US Ambassador Sergio Gor announced India will be invited to join **"Pax Silica"**, a **US-led coalition** for securing & strengthening the **critical minerals supply chain**.

Pax Silica

- **About:** US-led coalition to build a **secure, resilient, innovation-driven silicon & AI supply chain** with **trusted partners**. **First summit**– Washington D.C., **Dec 2025**.
- **Objective**: Reduce coercive **dependency on a single country**, protect **AI-critical materials**, and enable **tech development at scale**.
  - **China** refines **60%+ of lithium, cobalt, rare earths**; recent **export restrictions** triggered global **diversification efforts**.
- **Participating Nations**: Japan, Republic of Korea, Singapore, the Netherlands, UK, Israel, UAE, and Australia. **Home to key firms–** Sony, Hitachi, Fujitsu, Samsung, SK Hynix, Temasek, DeepMind, MGX, Rio Tinto, ASML.
- **Core Commitments**: Joint projects on **AI supply chain vulnerabilities** in:
  - Critical minerals; semiconductor design, fabrication, packaging; compute infrastructure; energy grids
- Protect **sensitive technologies** from **countries of concern**.

Pax Silica and India

- **Earlier Exclusion:** India lacks advanced edge technologies prioritised by Pax Silica and is not a major holder of critical minerals.
- India may join later, similar to its entry into the US-led Minerals Security Partnership (MSP)—joined in 2023, one year after launch, as the 14th member.

India's Initiatives to Support Silicon & AI Supply Chain

- **India Semiconductor Mission (ISM, 2021)**: **$10 billion** scheme to build indigenous semiconductor ecosystem. **10**

projects approved worth **Rs 1.6 trillion** investment (fabrication & packaging).

- **IndiaAI Mission (2024)**: **Rs 10,372 crore** plan focused on **LLMs** & **domestic AI capacity**. **GPUs capacity** expanded to **34,333 GPUs** (nearly doubled).
  - Supports **shared cloud-based compute platform** for training **foundational AI models** using Indian data & context.
- **National Critical Mineral Mission (NCMM)**: Aims for **self-reliance** in minerals for high-tech, clean energy, defence.
  - Covers **exploration to recycling**, promotes overseas acquisition, mineral parks, research, and a Centre of Excellence.
- **Minerals Security Partnership (MSP)**: **US-led** initiative for **secure critical mineral supply chains**. Ensures minerals are produced, processed, recycled for economic development.
  - Complements **NCMM** & **KABIL's overseas acquisitions**, aiding India in the **global critical minerals race**.

US Intervention in Venezuela and the Revival of the Monroe Doctrine

The US conducted a military operation in **Venezuela**, codenamed **Operation Absolute Resolve,** resulting in the capture of **President Nicolás Maduro,** his wife Cilia Flores, and other senior officials. The action, justified under a **"Trump Corollary" to the Monroe Doctrine (1823),** marks a sharp escalation in US interventionism in Latin America.

Monroe Doctrine

- **About:** The **Monroe Doctrine**, articulated by **President James Monroe** in 1823, laid down the following principles:
  - **Non-colonisation**: European powers should not establish new colonies in the Americas.
  - **Non-interference**: Any attempt by external powers to influence Western Hemisphere nations would be viewed as hostile to the US.
  - **US Restraint in Europe**: The US would not interfere in European wars or internal affairs.
- **Evolution:**
  - **Roosevelt Corollary (1904): President Theodore Roosevelt**, it expanded the Monroe Doctrine by asserting the **US right to exercise "international police power"** in Latin American countries to address **chronic wrongdoing, instability, or governance failures**, thereby justifying direct US intervention.
  - **Cold War Era:** Invoked to counter Soviet influence in Cuba, Central America, and South America.
  - **Post–Cold War:** Largely de-emphasised in favour of **multilateralism**, until its recent revival.
  - **Contemporary Phase:** Revived selectively to assert US strategic dominance in the Western Hemisphere, as seen in recent actions toward Venezuela.
    - "Trump Corollary" to the Monroe Doctrine is projected as a **restoration of US power and strategic priorities**, aimed at safeguarding American security interests in the **Western Hemisphere.**

Rationale Behind US Intervention in Venezuela

- **Narco-terrorism and Security Narrative:** US charged Maduro and senior officials with **narco-terrorism and drug trafficking**, portraying the regime as a direct security threat to the US and linking it to the **US fentanyl crisis,** thereby providing a legal-political justification for action.
- **Oil and Resource Geopolitics:** Venezuela possesses the **world's largest proven crude oil reserves** (over 300 billion barrels or a fifth of the proven oil reserves all over the world), yet it accounts for less than 1% of global oil production.
  - Years of **US sanctions, economic crisis, and infrastructure decay** have sharply limited output.
  - The US views control over Venezuelan oil infrastructure as critical for **energy security, price stability, and strategic leverage** in global energy markets
- **Countering Extra-Regional Powers:** Venezuela's deepening ties with **China, Russia, and Iran** were viewed as a challenge to US dominance in the Western Hemisphere, prompting Washington to reassert its primacy under a revived Monroe-style framework.
  - However, the US–Venezuela conflict has raised serious concerns in **Mexico, Colombia, and Cuba,** signalling a renewed phase of US interventionism in the region.
    - It highlights fears of **sovereignty erosion** through military pressure, sanctions, and under the pretext of counter-narcotics and security based justifications.

Use of Military Force Under International Law

- **General Prohibition:** Article 2(4) of the **United Nations Charter** prohibits states from using or threatening military force against another state's territorial integrity or political independence.
- **Self-defence:** Article 51 of the UN Charter allows force **only in response to an armed attack**, subject to **necessity and proportionality**, and actions must be reported to the **UN Security Council**.
- **Former Enemy States:** Article 107 of the UN Charter once allowed force against WWII enemy states, but it is now **obsolete**.
- **Collective Security:** Under Articles 24 and 25, the **UN Security Council** may authorise collective military action to address threats to international peace.
- **Humanitarian Operations:** The UN Security Council can authorise limited force in **peacekeeping or humanitarian missions**.

Impact of the US-Venezuelan Conflict on India

- **Minimal Trade Impact:** According to **Global Trade Research Initiative (GTRI)**, the conflict will have a **negligible impact on India's trade**, as bilateral commerce has already collapsed under US sanctions.
  - India's exports to Venezuela stood at just **USD 95.3 million in FY2025**, mainly pharmaceuticals.
- **Limited Energy Exposure:** India's crude oil imports from Venezuela fell by **81.3% in FY2025**, declining to **USD 255.3 million**, compared to USD 1.4 billion in FY2024.
  - As a result, the current conflict is **unlikely to materially affect India's energy security** in the short term.
  - If sanctions on Venezuela are eased or recalibrated, discounted Venezuelan crude could re-enter global markets, strengthening India's long-term crude supply diversification and procurement flexibility.
  - This would enhance India's bargaining power with West Asian suppliers and offer **an alternative amid US pressure to reduce reliance on Russian oil.**
- **Strategic Autonomy:** India has consistently advocated for **non-interventionism and regime change through democratic processes** rather than external military force.
  - The US action complicates India's balancing act between the **Global South (which opposes intervention)** and its strategic partnership with the US.

Venezuela

- **Location:** Northern South America; borders Guyana, Brazil, Colombia; coastline on Caribbean & Atlantic.
- **Capital:** Caracas; System: Federal multiparty republic.
- **Resources:** Rich in oil (largest proven reserves), gas, iron, gold, bauxite, diamonds; founding OPEC member.
- **Geography:** Andes, Llanos, Guiana Highlands, Lake Maracaibo, Orinoco River, Angel Falls (world's highest).
- **Ecology:** UNESCO sites: Canaima National Park, Angel Falls.
- **Disputes:** Essequibo region with Guyana; Maritime disputes with Colombia; Controls Margarita, Los Roques islands.

The revival of the Monroe Doctrine in the 21st century presents a challenge to the emerging multipolar world order. Discuss.

Drishti Mains Question

India's Foreign Policy Recalibration

The year 2025 emerged as a period of **shock and surprise** for **Indian foreign policy**, with India confronting **unforeseen international challenges** on multiple fronts, even as it recorded notable diplomatic successes.

Diplomatic Challenges India Confronted in 2025

- **Strained Relations with the United States:** Despite early optimism, India faced **punitive tariffs (up to 50%)**, sanctions-linked pressure (e.g., Nayara Energy) to curb **Russian oil imports**, and restrictive measures on **H-1B, student visas, and deportations**.
  - Trump's claims of mediating **Operation Sindoor**, engagement with **Pakistan's leadership**, and approval of **F-16 fighter jet upgrades** for Pakistan undermined India's stance on **cross-border terrorism**, and eroded **strategic trust**.
- **Regional Turmoil:** Relations with **Pakistan** worsened after the **Pahalgam terror attack**, escalation during **Operation Sindoor**, and Pakistan Army chief's **consolidation of power** as Field Marshal.
  - India also confronted **political upheaval in Nepal**, where **Gen Z-led protests** toppled the government, and **anti-India sentiment in Bangladesh** and instability under an **interim government**.
- **Instability in West Asia:** India's reluctance to criticise **Israel's strikes on Iran** caused discomfort within **SCO and BRICS**, where **Iran is a member**. Simultaneously, the conflict stalled the **India–Middle East Economic Corridor (IMEC)**, affecting India's **connectivity, trade, and regional influence** in **West Asia**.
- **Rise of Global Right-Wing Politics:** The **global trend** towards conservative, xenophobic politics, as seen in the **US, Europe, Japan, and Chile**, created a **less predictable** and **more transactional international order**, challenging **India's diplomatic playbook**. It may intensify **immigration restrictions**, xenophobia, and **job competition**, threatening Indian migrants' **security** and **opportunities**.
- **Energy and Climate Policy Dilemmas:** The **drop in oil prices** due to an **OPEC glut** threatened to undermine the **global push for renewable energy**, a sector where **India** has major **investments and commitments**.

India's Diplomatic Successes in 2025

- **Reset in Relations with Canada:** A major diplomatic achievement was the improvement in **India–Canada**

relations following earlier strains over the killing of a **Khalistani separatist**. India's **Prime Minister's** visit for the **G7 outreach,** and his engagement with Canada's **new Prime Minister,** facilitated the restoration of **visas, diplomatic staffing, and envoys**.

- **Strategic Engagement with Taliban:** High-level talks culminated in the **Taliban Foreign Minister's** official visit to **Delhi with full honors**. **India** allowed the **Taliban** to take over the **Afghan embassy** and reframed **Kabul** as **"the enemy's enemy,"** creating **strategic leverage** amid worsening **Pakistan–Afghanistan relations**.
- **Rapprochement with China:** In 2025, **India and China** pursued cautious re-engagement, reopening the **Kailash–Mansarovar pilgrimage**, restoring **visas and direct flights**, and resuming **hydrological data sharing**. India's **PM** met the Chinese and **Russian Presidents** at the **SCO summit** 2025 in **Tianjin**, China.
- **Strengthening Neighbourhood Partnerships:** India successfully deepened ties with **Bhutan, Sri Lanka, and the Maldives**. A notable achievement was **India's USD 450 million aid package** and **swift disaster response** to **Sri Lanka** after **Cyclone Ditwah**, which reinforced its **reputation as a reliable first responder** in the **region**.

Implications of International Challenges in 2025 on India

- **Erosion of Strategic Certainty:** The greatest strategic implication was the **shattered assumption** that the **US** would be a **predictable partner**. **Trump's transactional policies** directly threatened **core Indian interests** (**economic growth, terrorism, energy security**).
  - This forced a **fundamental re-evaluation** of India's foreign policy and accelerated **India's push for a multipolar engagement strategy**.
- **High Cost of Strategic Autonomy:** India's **balancing act** between **Russia and the West** proved materially costly, as seen with **sanctions on entities like Nayara Energy**. This highlighted the **limits of non-alignment 2.0** and prompted India for greater **domestic resilience**.
- **Forced Pragmatisation of Foreign Policy:** India's diplomatic engagements with the **Taliban, Canada, and China** were **pragmatic adaptations**, not **principled triumphs**. By prioritizing **national interest**, **India** set aside **normative positions**—engaging the **Taliban** despite **human rights concerns** and hosting **Putin** despite **Western criticism**.
- **Domestic-International Policy Linkage:** Trump's visa policies impacted **India's tech sector** and **middle class**, while **oil price volatility** affected **inflation** and **energy goals**. This brought **foreign policy** into **everyday domestic life**, directly linking the **government's popularity** to its **international actions**.
- **Challenges for Internal Security:** Chinese upgrades to **Lalmonirhat airfield** in Bangladesh near the **strategic Siliguri Corridor** and continued **Pakistani outreach** heighten India's traditional **two-front war concerns**. **Communal violence** and **radical groups** threaten **regional polarisation** and could support **separatist movements** targeting **India's Northeast**.

India's Strategy for Addressing Emerging Diplomatic Challenges

- **Double Down on Issue-Based Alignment: India** should pursue **discrete, issue-based cooperation** with the **U.S.** and the **Quad** on **maritime security** and **AI**, while insulating these from **trade** and **Russia disputes**.
  - It must solidify a **techno-economic partnership** with **Europe** via an **FTA** (likely to be signed in **January 2026**), focusing on **green tech** and **alternative supply chains**.
  - Concurrently, within **BRICS**, it should leverage its **presidency** for **practical gains** like **local currency trade** and connecting the **INSTC** with the **IMEC**.
- **Decouple Diplomacy from Major Power Rivalries: India** should maintain **border dialogue** and **functional ties** with **China** while positioning itself as a **democratic alternative tech hub**. Concurrently, it must build **resilient domestic strategies** in **semiconductors** and **critical minerals**.
- **Focus on Neighborhood:** Shift from **Neighbourhood First** to **Neighbourhood Stability,** prioritizing the **containment of internal neighbor turmoil** as a security threat.
  - This necessitates engaging **pragmatically** with **any electoral outcome** in the **region** and adopting a **two-track policy** toward **Pakistan,** i.e., a **firm public stance** against terrorism, combined with **confidential diplomatic channels** to maintain a stable, non-violent **status quo**.
- **Lead through Global Agenda-Setting:** Cement **India's role** as a **global bridge-builder** by championing an **equitable AI governance framework** at the **AI Summit 2026** as an **honest broker**. Revive the **IMEC corridor** as an **economic peace dividend** linked to **Gaza stability** and position **India** as a **neutral venue** for **Ukraine peace talks**, leveraging its **ties with all sides**.
- **Build Domestic Resilience:** The strongest **diplomatic foundation** is a **self-reliant economy**, using **FTAs** (e..g, **India and New Zealand FTA**) to **diversify exports and imports** against **external shocks**. Concurrently, **strategic unpredictability** necessitates **fast-tracking defense Atmanirbharta** to reduce **dependency on all major foreign suppliers.**

"The year 2025 marked a strategic inflection point for India's foreign policy." In light of this statement, analyze the key challenges and adaptations that defined India's diplomatic approach.

Drishti Mains Question

India and New Zealand FTA

India and **New Zealand (NZ)** announced the conclusion of talks on a **free-trade agreement (FTA)**, under which **New Zealand** will grant **zero-duty access** to **100% of Indian exports** and commit **USD 20 billion** in **foreign direct investment (FDI)** over the **next 15 years**.

Key Highlights of the India-New Zealand FTA

- **Trade Liberalization:** New Zealand's commitments include granting **zero-duty access on 100%** of Indian exports and **completely eliminating** the current **average tariff of 2.2%**.
  - **India's Commitments:** Liberalized duties across **70% of tariff lines** (covering **95% of NZ exports by value**). Immediate **duty elimination** on **30% of tariff lines** for products including wood, wool, and sheep meat.
    - ❖ Average tariff to drop from the **current 16.2%** to **13.18% initially**, then **10.3% in 5 years** and **9.06% by 10th year**.
    - ❖ **Nearly 30%** of tariff lines were **excluded** to protect India's dairy sector.
- **Investment Commitment:** New Zealand has committed to facilitating **USD 20 billion** in investment into India **over 15 years** backed by a **rebalancing mechanism** that allows **India to suspend FTA benefits** if the investment does not materialise within the stipulated period.
- **Mobility Provisions:** No numerical caps on **Indian students** in **New Zealand**. Guaranteed at least **20 hours of work per week** during study. **Extended post-study work visas** (up to 3 years for STEM graduates, 4 years for PhD holders).
  - A new **Temporary Employment Entry visa pathway** for up to **5,000 Indian professionals** at any time (for up to **3 years**). Covers **AYUSH, yoga,** Indian chefs, IT, engineering, healthcare, etc.
  - **1,000 working holiday visas** annually for young Indians.
- **Ambitious services liberalisation**: The agreement includes India's **most ambitious services offer**, covering **118 services sectors**, boosting **services trade** and **professional mobility.**
- **Trade expansion target**: The FTA aims to **double bilateral trade** from **USD 2.4 billion** to nearly **USD 5 billion** within **5 years**, strengthening **economic integration**.
- **Recognition of India's IPR:** New Zealand's current **GI law** permits registration only for **India's wines and spirits**, but it has now committed to **amending its law** to enable registration of **India's wines, spirits, and other goods**—on par with benefits granted to the **European Union**.

Significance of the India and New Zealand FTA

- **Strategic Economic Rebalancing**: **7th trade deal since 2021**, **3rd with Five Eyes nation** (after Australia, UK). Expands India's reach into **Pacific island economies**.
- **Sensitive Sector Protection**: **Dairy**, **onions**, **almonds**, and other key agri-items fully excluded.
- **Export Competitiveness**: **Textiles**, **leather**, **carpets**, **auto components** get **duty-free access** (earlier up to 10% tariff). **118 services sectors** opened—benefits **IT**, **engineering**, **healthcare**, **education**.
- **Managed Liberalization with Safeguards**: Tariff cuts over **10 years**; **Tariff-Rate Quotas (TRQs)** and **seasonal access** for **apples**, **kiwifruit**, **wine**.
- **Framework for Deeper Cooperation**: Focus on **supply chains**, **services**, **education**, **diaspora links**—beyond immediate trade volume.

Key Challenges Associated with India's FTAs

- **Threat to Domestic Manufacturing**: Cheap imports from **ASEAN, Australia**, etc., harming **MSMEs**, **textiles**, **dairy**, and **agriculture**. From **2017–2022**, **imports rose 82%**, **exports only 31%**.
- **Limited Gains in Services & Mobility**: FTAs fail to secure **market access** in services. Barriers include **strict visa rules**, **licensing issues**, and **movement restrictions**.
- **Non-Tariff Barriers (NTBs) & Standards**: Indian exports face **technical barriers to trade (TBT)**, **stringent standards**, **complex certification**, and **opaque regulations** despite tariff elimination.
- **Impact on Policy Sovereignty**: New FTAs include chapters on **investment**, **IPR**, **govt procurement**, **labour/environmental standards**. Risk of reduced **policy space** for **public interest laws** (e.g., **affordable medicines**, **local procurement**).

Strategies to Improve the Effectiveness of India's FTAs

- **Strategic Negotiation & Design**: Ensure **reciprocal access** in **services**, **digital trade**; link **goods concessions** to these. Protect **dairy**, **agriculture**, **MSMEs** via **tariff-rate quotas**, **seasonal tariffs**, **anti-dumping** tools.
- **Strengthening Domestic Competitiveness**: Invest in **logistics**, **ports**, **digital infra** to reduce trade costs. Promote manufacturing via **PLI** & targeted policies.
- **Leveraging New-Age Trade Elements**: Secure **data flows**, **green tech partnerships**, **carbon credit access**. Link FTAs to **binding investments** (India-NZ model) in **manufacturing**, **green energy**, **infrastructure**.
- **Strategic Geoeconomic Alignment**: Prioritize FTAs with **EU**, **Canada**, **Argentina**, **Chile**. Enable **friend-shoring** in **electronics**, **pharma**, **minerals**.
- **Address Non-Tariff Barriers (NTBs)**: Include enforceable chapters on **standards**, **sanitary rules** & **mutual recognition** to counter NTBs.

The protection of domestic agriculture, especially the dairy sector, has been a cornerstone of India's recent FTAs. Discuss the associated economic and political rationale.

Drishti Mains Question

Environment & Ecology

Snowfall Deficit in the Western Himalayas

Large parts of the **western Himalayas are experiencing an unusually dry and snowless** winter, with Uttarakhand, Himachal Pradesh, and Jammu & Kashmir recording severe rainfall deficits in December–January, raising concerns over **climate variability, water security, agriculture, and forest fires.**

Causes of Snowfall Deficit In The Western Himalayas

- **Weak and Moisture-Deficient WDs: Western Disturbances(WDs)** are the **primary source of winter snowfall in the Western Himalayas.**
  - In recent winters, including 2025–26, most **disturbances have been weak,** carrying limited moisture. Shallow **low-pressure systems have reduced vertical uplift,** resulting in short-lived precipitation events and poor snow accumulation.
  - Weak circulation in WDs reduced their **residence time**, limiting cloud formation and condensation, and thereby lowering snowfall and rainfall over the western Himalayas.
- **Altered Trajectory of WDs:** Several WDs have followed a **northward path at higher latitudes.**
  - This diversion has resulted in limited **snowfall over parts of Kashmir** while Himachal Pradesh and Uttarakhand remained largely dry, reducing the overall spread of winter precipitation.
- **Weakened Interaction With Moisture-Bearing Winds:** Normally, WDs interact with moisture-laden winds from the **Bay of Bengal and the Arabian Sea.**
  - In recent years, this **wind confluence has weakened**, reducing cloud formation and snowfall over the Himalayan region.
- **Changes In the Subtropical Westerly Jet Stream:** The **Subtropical Westerly Jet Stream** guides WDs toward the Indian subcontinent.
  - Its recent weakening and positional shifts **have pushed weather systems away from India** or caused them to lose **strength before landfall,** resulting in delayed and reduced snowfall.
- **Long-Term Climatic Variability: Global warming has increased winter temperatures** in mountain regions, raising the snowline altitude.
  - Consequently, **precipitation that would earlier fall as snow increasingly occurs as rain**, especially at lower and mid-elevations.
  - Repeated dry winters over the past decade indicate a **broader climatic shift.** Studies suggest a **marginal but consistent decline** in winter precipitation across parts of North India, **reflecting increasing climate variability** rather than a one-time anomaly.

Western Disturbances (WDs)

- WDs are large **eastward-moving rain-bearing wind systems or extra-tropical weather systems** that originate over the **Mediterranean Sea, Black Sea, and Caspian Sea.**
- They are **low-pressure systems** embedded in the **Westerly Jet Stream**. During winter, the **jet stream steers these disturbances eastward toward the Indian subcontinent.** While travelling across West Asia, Iran, Afghanistan, and Pakistan, they accumulate moisture.
  - When they finally encounter the Himalayan barrier, the **air is forced to rise, cool, and condense**, producing rainfall over the plains and snowfall **at higher altitudes**.
  - Due to this west-to-east progression, **Kashmir typically receives snowfall first**, followed by **Himachal Pradesh and Uttarakhand**, and occasionally **Nepal and parts of Northeast India**.

Implications of Delayed or Snowless Himalayan Winters

- **Threats to Water Security:** Snowfall in the Himalayas acts as a natural water reservoir, releasing water gradually through snowmelt.
  - Reduced snowfall adversely affects glacier mass balance and accelerates **glacial retreat**, threatening the long-term sustainability of Himalayan rivers such as the **Ganga, Yamuna, and Indus**, with serious implications for water availability downstream **during the summer months,** affecting both mountain regions and downstream plains.
- **Adverse Impact on Agriculture:** Winter rainfall and **early snowfall are crucial for rabi crops such as wheat and mustard**.
  - Early snow allows moisture to **percolate slowly into the soil, supporting crop growth.**
  - Delayed snowfall melts rapidly due to higher daytime temperatures, providing limited agricultural benefit.
- **Increased Forest Fire Risk:** The absence of snowfall reduces moisture in forest floors, making them **highly vulnerable to fires.**
  - Dry winters have increased forest fire vulnerability in the Himalayas, already evident in regions such as the **Valley of Flowers range and Nanda Devi National Park,** leading to ecological damage and added pressure on disaster management systems.

- **Ecological and Biodiversity Stress:** Himalayan ecosystems depend on predictable snow cycles for plant dormancy and wildlife survival.
  - Snowless winters disrupt these cycles, threatening **alpine biodiversity and destabilising fragile mountain ecosystems.**
- **Socio-economic Consequences:** Snowfall deficit affects winter tourism, horticulture, and livelihoods in Himalayan states.
  - Reduced snow cover **impacts apple cultivation and tourism-based income, increasing economic uncertainty** for local communities.

Steps to Address Snowfall Deficit in the Himalayas

- **Strengthen Snow And Weather Monitoring:** Expand high-altitude automatic weather stations under the **India Meteorological Department** in Uttarakhand, Himachal Pradesh, and Ladakh.
  - Integrate **satellite-based snow monitoring (INSAT, Cartosat)** to improve Western Disturbance forecasting and snowfall prediction.
- **Artificial Glaciers and Snow Storage:** Scale up artificial glacier and ice-stupa projects pioneered in Ladakh under the **2025 International Year of Glaciers' Preservation** to store winter water and release it during spring, offsetting reduced natural snowfall.
- **Catchment and Spring Rejuvenation:** Strengthen **spring-shed management** under programmes supported by **NITI Aayog** in Himalayan states to recharge groundwater, especially where **reduced snowmelt is affecting drinking water sources.**
  - "Dhara Vikas" model (successfully used in Sikkim) can be used as a precedent for spring rejuvenation in Uttarakhand/HP.
  - Strengthen glacier monitoring under the **National Mission on Sustaining the Himalayan Ecosystem (NMSHE)** and integrate findings into basin-level planning for rivers like the **Ganga and Yamuna**.
- **Climate-Resilient Rabi Agriculture:** Promote short-duration and drought-tolerant wheat and mustard varieties through **Indian Council of Agricultural Research**, and expand micro-irrigation to reduce dependence on uncertain winter rainfall.
- **Forest Fire Prevention:** Enhance early-warning systems, fire lines, and community fire brigades in vulnerable zones like **Nanda Devi Biosphere Reserve** under the guidelines of the **National Disaster Management Authority.**
- **Sustainable Winter Tourism:** States like **Uttarakhand and Himachal Pradesh** should diversify tourism beyond snow-based activities by promoting winter cultural tourism, wellness tourism, and **regulated eco-treks to reduce economic shocks from delayed snowfall.**
- **Mainstream Snow Variability Into Policy:** Explicitly factor delayed snowfall and reduced snow persistence into **State Action Plans on Climate Change (SAPCCs)** and disaster management plans of Himalayan states.

"Snowfall deficit in the western Himalayas is no longer a short-term anomaly but a climate signal." Analyse.

Drishti Mains Question

Conservation of Grasslands

Grasslands remain underrepresented in global and national climate plans, as discussions at the **UNFCCC COP30** continued to prioritise forests, even as the United Nations declared **2026 as the International Year of Rangelands and Pastoralists (IYRP).**

Grasslands

- **About:** Grasslands are **open terrestrial ecosystems dominated by grasses**, with sparse or no tree cover, adapted to **seasonal droughts, grazing, and fires**. They include savannas, rangelands, and pasture commons.
  - **UNESCO defines them as land with less than 10% tree and shrub cover**, while **wooded grasslands have 10–40% cover**.
  - Grasslands are among the **largest ecosystems,** covering about 40.5% of Earth's terrestrial area (excluding **Greenland** and **Antarctica**), far exceeding the extent of **woody savannahs, shrublands, and tundra.**
  - They play a crucial ecological role, with **tropical and sub-tropical grasslands storing nearly 15% of global terrestrial carbon**.
  - They support the livelihoods of **around 20% of the world's population**, especially pastoral and agro-pastoral communities, and rely on **natural disturbance regimes such as fire and grazing** to maintain biodiversity and ecosystem balance.
- **Grasslands in India:** They occupy about **24% of India's geographical area**, yet they have witnessed severe decline over time.
  - Major grassland regions in India are found in **Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Karnataka, Telangana, Andhra Pradesh,** the **Terai–Duar belt** of Uttar Pradesh, Uttarakhand, Assam and West Bengal, and the **alpine grasslands** of Himachal Pradesh and Ladakh.
  - Banni Grassland, located in Kutch district of Gujarat, is the largest grassland in Asia.
  - Despite their ecological and livelihood value, **less than 1% of India's grasslands are protected under the formal conservation network.**

- **Role of Grasslands:**
  - **Climate Regulation:** Act as major **carbon sinks**, especially tropical grasslands, helping mitigate **climate change.**
  - **Livelihood Support:** Sustain pastoral and agro-pastoral communities by providing grazing land, fodder, fuel, and food.
  - **Biodiversity Conservation:** Serve as habitats for diverse plant species, birds, and grassland-dependent wildlife.
  - **Water & Soil Regulation:** Aid groundwater recharge, reduce **soil erosion**, and regulate local hydrology.
  - **Ecosystem Stability:** Depend on **natural fire** and grazing regimes that maintain ecological balance and resilience.

NOTE: The United Nations General Assembly declared 2026 as the International Year of Rangelands and Pastoralists, led by the Food and Agriculture Organization. Rangelands consisting of grasslands, savannahs, deserts, and shrublands, are vital for **biodiversity, ecosystem regulation, and climate resilience**.

- Rangelands cover over half of the Earth's land surface and support more than 500 million pastoralists (communities that depend on rangelands for herding livestock).
- The initiative seeks to raise awareness, promote responsible investment, secure pastoralists' land and mobility rights, strengthen inclusive governance, and improve rangeland management, contributing to sustainable livelihoods and the **Sustainable Development Goals** (**SDGs**).

Gaps in Grassland Conservation	Suggestions
■ **Misclassification and Policy Blindness:** Grasslands are **misclassified as degraded forests or wastelands**, leading to afforestation, plantations, or diversion. ● In India, they are governed by multiple ministries with conflicting mandates, causing policy fragmentation and weak protection. ■ **Institutional Silos:** Global governance remains siloed across UNFCCC, CBD, and UNCCD, preventing integrated ecosystem management. ● Despite UNCCD recognising rangelands as **complex socio-ecological systems** and **Resolution L15**, grasslands lack a dedicated legal framework and remain legally vulnerable due to inconsistent application of conservation laws (**Forest** (**Conservation**) **Act, 1980**). ■ **Forestry-Centric Climate Policies Bias**: Focus on **REDD+ and afforestation** leads to plantations on grasslands, causing biodiversity loss and disrupted fire regimes. ■ **Neglect of Disturbance Ecology**: Suppression of **natural grazing and burning**, vital for grassland regeneration and resilience. ■ **Lack of Data & Monitoring**: No **national inventory**, **standard indicators**, or valuation of ecosystem services for grasslands. ■ **Pastoral Communities Marginalised**: Exclusion of **traditional management systems** that support **sustainable grazing**, fire management and **biodiversity**. ■ **Land-Use Decisions Skewed**: Grasslands treated as "**wastelands**" for defence, energy, and industrial projects without proper ecological assessments or local consent.	■ **Correct Ecological Classification**: Officially recognise **grasslands as distinct ecosystems**, not wastelands or degraded forests; classify them as a major land-use category. Include **grasslands in India's NDCs** ■ **Dedicated Legal Protection**: Enact a **National Grassland Conservation and Grazing Policy**. Extend protections under **Forest Conservation Act** and **Wildlife Protection Act** to natural grasslands. ■ **Ecosystem-Based Management**: Apply the **Driver-Pressure-State-Impact-Response Framework** (**DPSIR**) for land-use and conservation decisions. ● Evaluate **cumulative environmental impacts** and integrate livelihood and development goals. ■ **Empower Communities**: Ensure **tenure rights** over **common lands**; revive **customary grazing and fire practices**. Legally recognise **community-led stewardship** models. ■ **Science-Based Restoration**: Restore native grass species. **Control invasive plants**. **Avoid afforestation** on natural grasslands. ■ **Strengthen Data and Monitoring Systems:** Develop a **national grassland inventory**. Use standard indicators for **biodiversity**, **carbon storage**, **fodder**, and **hydrology services**. ● Mandate **Environmental Impact Assessments** for all grassland diversions. Require **Gram Sabha consent** for use of **common lands**.

Grasslands are victims of policy invisibility rather than ecological fragility. Examine the statement in the context of climate governance in India and globally.

Drishti Mains Question

White-bellied Heron and Kalai-II Project

The environmental clearance (EC) for the **1,200-MW Kalai-II hydropower project** on the **Lohit River** in Arunachal Pradesh (AR) has triggered concerns over serious omissions in the **Environmental Impact Assessment (EIA)**, particularly regarding the **critically endangered white-bellied heron**.

White-bellied Herons

- **About:** The White-bellied Heron (Ardea insignis), also known as the **imperial heron** or **great white-bellied heron**, is a **large species** of heron in the **family Ardeidae**. It is recognized as the **2nd-largest heron in the world**.
- **Habitat:** Strictly dependent on **free-flowing, fast-flowing eastern Himalayan** riverine habitats with **low human**

disturbance. Feeds mainly on **fish found in river rapids**, making it highly sensitive to dams and flow alterations.

- **Morphological Features: Longer, flexible neck** with **razor-sharp serrated bill** for catching fish in deep waters.
  - **Compact body with shorter legs** for stability in fast currents. **Extended toes** to grip slippery rocks—an adaptation to turbulent river habitats.
- **Conservation Status: Critically Endangered** species as per the **IUCN Red List**.
  - **Schedule-I species** (highest legal protection in India) under the **Wildlife Protection Act, 1972**.
- **Global & Regional Population:** Distributed across **~165,000 km²** of **Himalayan freshwater ecosystems** spanning **Bhutan, India, Myanmar, China, and Bangladesh**. **Fewer than 60 individuals** survive in the wild today.
  - **Bhutan** hosts **~45% of the global population**, with **3–5 active breeding pairs**, making it the species' last stronghold.
  - It is considered **extinct in Nepal** and **possibly Bangladesh**.
- **Distribution in India:** It is found in **Arunachal Pradesh** (Lohit, Anjaw, and Changlang districts)**.** Recorded in and around **Namdapha Tiger Reserve** (AR) and **Kamlang Tiger Reserve** (AR). Sightings recorded along the **entire Lohit River stretch.**
- **Behavior:** It is largely **solitary**, vocalizing with **deep croaks** mainly at **dawn and dusk**, and nests in **tall trees.**
- **Ecological Significance:** It serves as a **bio-indicator** for the **Himalayan freshwater ecosystem**, reflecting factors like **water quality**, **fish populations**, **pollution**, and **habitat integrity**. Its decline signals broader ecosystem degradation and collapsing **food chains**.
- **Major Threats: Hydropower dams** (habitat fragmentation, altered river flows), **habitat loss**, **hunting**, and **anthropogenic disturbances**. Very **small gene pool** and restricted distribution range.

Kalai-II Hydropower Project

- **About:** It is a **proposed 1,200 MW run-of-river hydroelectric project with pondage (small storage capacity)** on the **Lohit River**, a major **tributary of the Brahmaputra**, located in **Anjaw district, Arunachal Pradesh**.
  - It is being developed by **Tehri Hydro Development Corporation India Limited**.
- **Development History:** Initially allotted to a **private developer**, the project **stalled for years** before being **revived in 2023–24** and **transferred to THDC India Limited** by the **Arunachal Pradesh government**.
  - It is among **13 stalled hydropower projects** reassigned to **central PSUs** for **faster execution**.

Lohit River

- **About:** The **Lohit River** is a **right-bank** tributary of the **Brahmaputra River**, originating in the Kangri Karpo range of **eastern Tibet**, where it is known as **Zayul Chu**.
- **Course:** It enters India near **Kibithu in Arunachal Pradesh** (India's **easternmost inhabited point**), flows southward through the **Mishmi Hills** in **Anjaw and Lohit districts**, and emerges into the **Assam plains** near Parasuram Kund and Sadiya.
  - It flows through protected areas such as **Kamlang Wildlife Sanctuary** (**AR**) and **Mehao Wildlife Sanctuary** (**AR**).
- **Confluence**: It joins the **Siang** (**upper Brahmaputra**) and **Dibang rivers** near Kobo in Assam to form the main Brahmaputra stem.
- **Hydroelectric Power Projects**: Kalai-II Hydroelectric Project (1,200 MW), Demwe Lower Hydroelectric Project (1,750 MW, now stalled), Hutong (proposed), Demwe Upper (proposed).

Year-End Review 2025: Ministry of Environment, Forest and Climate Change

2025 was a watershed year for the Ministry of Home Affairs, marked by strong action on internal security and key reforms towards a Safe, Secure & Viksit Bharat.

Key Achievements in the Year 2025

- **Forest Conservation & Green Cover**: India ranked **9th** globally in forest area (**FAO 2025**); **3rd** in annual net forest gain. Unveiled a **Detailed Aravalli Landscape Restoration Action Plan**.
- **Wildlife Conservation**: **Madhav Tiger Reserve** (MP) declared; **6th All India Tiger Estimation** initiated.
  - **Elephant Reserves**: Increased to **33** (from 26 in 2014).
  - **Protected Areas**: Rose to **1,134** (from 745 in 2014); **Community Reserves**: **309**.
  - **Project Cheetah**: Expanded to **Gandhisagar WS (MP)**; total Cheetah population– **30** (19 cubs born in India).
  - Launched **5 national projects** (incl. **Project Dolphin Phase II**, **Sloth Bear**, **Gharial**, CoE for **Human-Wildlife Conflict Management**, project on "**Tigers Outside Tiger Reserve**") and **4 action plans** (River Dolphins, Tigers, Snow Leopard, Bustards).
- **Climate Change Leadership**: **Non-fossil fuel capacity >50%** by **June 2025** (5 years early). **Carbon Credit Trading Scheme (CCTS)** operationalised.
- **Air Quality & Urban Environment: 103 cities** saw reduced **PM10** levels (2024–25 vs 2017–18); **22 cities** met National Ambient Air Quality Standards under **NCAP**.
  - **75 projects** sanctioned under **Nagar Van Yojana**.
- **Coastal, Wetland & Mangrove Conservation**: 4,536 ha mangroves restored under **MISHTI programme**; **11 new Ramsar Sites**; total **96** (highest in Asia); **Udaipur & Indore**: First **Ramsar Wetland Cities**.

- **18 beaches** certified as **Blue Flag beaches** (2025–26).

- **Waste Management & Circular Economy:** 71,401 producers, 4,447 recyclers on EPR portal (as of Dec 2025). ~375.11 lakh tonnes waste recycled.
- **Environmental Awareness**: Mission LiFE– 6 crore+ participants, 34 lakh+ events, 4.96 crore pledges **(Meri LiFE portal data)**.

Evaluate the policy measures required to strengthen India's environmental conservation, renewable energy transition, and climate-resilient infrastructure.

Drishti Mains Question

10 Years of Paris Agreement

The **Paris Agreement(2015)** completed ten years in November 2025, triggering a global **re-evaluation of its effectiveness and relevance.**

Paris Agreement

- **About:** The **Paris Agreement** is a legally binding global climate agreement adopted in **2015 (21st Conference of the Parties (COP))** under the **UN Framework Convention on Climate Change**.
  - It **replaced the Kyoto Protocol**, expanding climate responsibility to all countries.
- **Objective:** It aims to limit global warming to **well below 2°C**, with efforts to restrict it to **1.5°C** above pre-industrial levels.
- **Working Procedure:** The **Paris Agreement** follows a **five-year cycle** of progressively stronger climate action by countries.
  - Every five years, countries submit updated **Nationally Determined Contributions (NDCs)**, outlining plans for **emission reduction (mitigation)** and **climate resilience (adaptation)**.
  - In **2023**, the first **Global Stocktake** concluded at **COP28**, calling for faster action on **mitigation, adaptation, and climate finance** by 2030, including a push to **transition away from fossil fuels**.
  - Countries are encouraged to submit **long-term low-emission development strategies**, though these are **voluntary**.
  - The **Paris Rulebook**, finalised at **COP24 (Katowice, Poland)** and **COP26 (Glasgow, Scotland)**, laid down detailed rules for implementing the Agreement.
- **Key Achievements**:
  - **Universal Participation:** Nearly all countries (194 States plus the **European Union**)committed to climate action under a single framework.
  - **Climate Finance Commitment:** Developed countries committed to mobilising **USD 100 billion per year up to 2025** to support developing countries in climate mitigation and adaptation.
    - At **COP29 (Baku, Azerbaijan, 2024)**, a **New Collective Quantified Goal (NCQG)** was agreed, setting a higher target of **at least USD 300 billion annually by 2035**.
  - **Equity principle:** The Paris agreement embedded **Common But Differentiated Responsibilities (CBDR)**, recognising differing national capacities and responsibilities.
  - **Mainstreaming of Climate Policy:** Climate action integrated into **national laws, budgets, and development plans** (e.g. EU Green Deal, India's **Mission LiFE**).
  - **Boost to Climate Finance and Markets:** Expansion of **green bonds, carbon markets, and climate investments**, though still inadequate.

India and Paris Agreement

- India submitted its **Intended Nationally Determined Contribution (INDC)** to the UNFCCC in **2015**, which was adopted as its **first Nationally Determined Contribution (NDC)** under the Paris Agreement for the period **up to 2030**.
- The updated NDC commits India to promoting a **sustainable lifestyle through the LIFE (Lifestyle for Environment) movement**, following a **cleaner and climate-friendly development pathway**, reducing **emissions intensity of GDP by 45% from 2005 levels by 2030**, and achieving **about 50% of installed electricity capacity from non-fossil fuel sources**.
  - It also aims to create an **additional carbon sink of 2.5 - 3 billion tonnes of CO_2 equivalent**, strengthen **climate adaptation** in vulnerable sectors, mobilise **finance from domestic and developed-country sources**, and enhance **technology transfer and climate R&D**.
  - India reaffirmed its commitment to the **UNFCCC and Paris Agreement**, stating that this update is a key step toward its **long-term net-zero target by 2070**
- **Achievements:** India achieved **50% of its electricity capacity from non-fossil sources in 2025**, well ahead of the 2030 target, and committed to **Net Zero emissions by 2070 at COP26**.
  - It has demonstrated global leadership through initiatives such as the **International Solar Alliance (ISA)**, **Coalition for Disaster Resilient Infrastructure (CDRI)**, and the **LiFE movement**, while aligning its climate vision with **"Viksit Bharat 2047"** and positioning **solar and green hydrogen** as key drivers of growth and employment.

Concerns Regarding the Paris Agreement

- **Voluntary Commitments:** The Paris Agreement replaced the **Kyoto Protocol's legally binding emission targets** for developed countries with **voluntary NDCs**, weakening accountability.

- **Equity Concerns:** Uniform emissions reduction expectations dilute the principle of **CBDR** and ignore historical emissions of developed countries, and **LDCs (Least Developed Countries) and SIDS (Small Island Developing States)** face existential risks without adequate support.
- **Climate Finance Gap: India rejected the NCQG,** criticising it for its inadequacy. The USD 300 billion pledge was **deemed insufficient** for addressing the climate challenges faced by developing nations.
  - India, alongside other Global South countries, has been advocating for at least **USD 1.3 trillion annually** to meet the growing demands of climate change mitigation and adaptation in developing nations, with USD 600 billion as grants or grant-equivalent resources.
- **Mitigation-centric Approach:** Excessive focus on emission reduction sidelines **adaptation and resilience**, crucial for vulnerable nations.
- **Development Constraints:** Climate obligations and measures like **carbon border taxes (e.g. (CABM)** restrict energy and industrial choices of developing economies.
- **Insufficient Ambition:** Current NDCs place the world on a **2.5–2.9°C warming path**, fall far short of the **1.5°C and even 2°C targets**, risking severe climate impacts.

Measures to Strengthen Climate Action

- **Shift From Voluntary To Enforceable Action:** Climate commitments must move beyond voluntary pledges to **legally backed, time-bound national policies**, including sector-wise carbon budgets and measurable milestones.
- **Balance Mitigation With Adaptation:** Climate action should give **equal priority to adaptation**, with greater investment in climate-resilient infrastructure, agriculture, water systems, and early warning mechanisms.
- **Bridge The Climate Finance Gap:** Developed countries must **fulfil and scale up climate finance commitments**, while reforms in multilateral banks, green bonds, and blended finance reduce costs for developing nations.
- **Reinforce Equity And Climate Justice:** The principle of **common but differentiated responsibilities and respective capabilities (CBDR-RC)** must guide implementation, ensuring policy space for developing countries and fairness in trade measures like carbon border taxes.
- **Accelerate Technology Access:** Affordable access to **renewables, storage, green hydrogen, and grid technologies** should be expanded through technology transfer, patent pooling, and South–South cooperation.
- **Strengthen Climate Science And Governance:** Robust climate action requires **credible science, transparent data, and countering climate misinformation**, supported by strong monitoring and verification mechanisms.

Critically examine the effectiveness of the Paris Agreement after a decade. What structural limitations constrain its success?

Drishti Mains Question

Madhav Gadgil and the WGEEP

Ecologist Madhav Gadgil passed away; known for chairing the **Western Ghats Ecology Expert Panel (2011)**, whose influential report remains relevant during **ecological disasters & landslides in the region**.

WGEEP (Gadgil Commission)	Recommendations
■ **About**: Environmental research commission, set up by **MoEFCC** (**2010**); report submitted in **2011**. ■ **Mandate**: Assess Western Ghats' ecology (**UNESCO World Heritage Site and global biodiversity hotspot**), demarcate its **Ecologically Sensitive Areas** (**ESAs**), suggest conservation & sustainable development measures. ■ **Controversy & Rejection:** Faced **political opposition** from **Kerala & Maharashtra** over threats to **cash crops** (e.g., in Idukki & Wayanad), **mining, hydro projects**. ● Concerns over **WGEA's powers** and impact on **agriculture/habitation**. ● **Rejected** by the central government. ■ **K Kasturirangan Panel** (**High-Level Working Group, 2013**): Formed by **MoEFCC** to review **Gadgil report**. ● Proposed **56,825 sq km** as **Ecologically Sensitive Area** (**ESA**). ● Restrictions on **polluting industries**, **mining**, **thermal plants**, **large townships**. ● Identified **specific villages** as ESAs, unlike the Gadgil panel.	■ **Designation as ESA:** Entire Western Ghats (1,29,037 sq km) designated as ESA. ● Divided into **3 zones** based on sensitivity levels– **ESZ1** (highest), **ESZ2** (high), **ESZ3** (moderate). ■ **Key Sectoral Guidelines**: Ban on **GM crops**, new **SEZs**, and new **hill stations**. ● **No new mining licenses**; existing mines to be **phased out in 5 years** in ESZ1 & 2. ● Restrictions on **major infrastructure** (railways, large roads) in ESZ1 & 2, unless essential. ■ **Institutional Recommendation:** Proposed **Western Ghats Ecology Authority** (**WGEA**) under **Environment Protection Act, 1986**. ● **Apex multi-state body** for regulation across **6 states**: Gujarat, Goa, Maharashtra, Karnataka, Kerala, Tamil Nadu. ● To include **experts and government** representatives. ■ **Inclusive Development**: Advocated **Gram Sabha involvement** in decisions, promoting **inclusionary development**.

Amazonian Stingless Bees-World's First Insects with Legal Rights

Satipo Municipality (Peru) adopted the **Declaration of Rights for Native Stingless Bees *(Tribe Meliponini)***, marking the world's first legal recognition of insect rights and boosting biocultural conservation.

Amazonian Stingless Bees

- **About**: Native stingless pollinators of the Amazon rainforest; among the **oldest bee species on Earth**; pollinate **80%+ of Amazonian flora**.
- **Defense**: Not completely devoid of a stringer; have a **vestigial stinger** (**too small**); defend by **biting** or **secreting irritating resins**.
- **Habitat**: Tropical/subtropical regions; highest diversity in the **Amazon Rainforest**.
- **Behavior**: **Eusocial**, live in **perennial colonies**, nest in **hollow tree trunks**.
- **Cultural Value**: Integral to **Asháninka** & **Kukama-Kukamiria** cultures.
- **Key Ecological & Economic Importance:**
  - **Biodiversity**: Support **rainforest biodiversity & ecosystem stability**; pollinate crops like **coffee, cocoa, avocado, blueberries**.
  - **Meliponiculture**: Traditional **bee-rearing** for **honey and medicine** by Indigenous communities.
  - **Medicinal Honey**: Known as "**miracle liquid**"; has **anti-inflammatory, antibacterial, antiviral** properties; used for **eye ailments**; high moisture, acidic, sweet–sour taste.

Declaration of Rights for Native Stingless Bees

- Landmark **Rights of Nature**–based legal framework integrated into local law by **Satipo Municipality**; sets **global precedent**.
- **Rights Recognised include:** To **exist and flourish;** to **maintain healthy populations;** to a **pollution-free habitat;** to **ecologically stable climatic conditions;** to **regenerate natural cycles;** to **legal representation** in cases of harm or threat
- **Human guardians** (e.g., Indigenous leaders, experts) can represent bees in court and sue polluters.

Indian Parallel

- **Animal Welfare Board vs. A. Nagaraja (2014)**: SC expanded **Article 21** to include **the protection of animal life**, affirming their right to **dignity, intrinsic worth**, and freedom from **unnecessary suffering**.
- **Mohd. Salim vs. State of Uttarakhand (2017)**: HC granted **legal personhood** to **Ganga & Yamuna**, declaring them as **living entities with legal rights & duties**, inspired by **New Zealand's Whanganui River case;** later **stayed by SC**.

Climate-Resilient Agriculture in India

There is renewed focus on **Climate-Resilient Agriculture (CRA)** as a strategic necessity for ensuring **India's food security**, safeguarding **farmer livelihoods**, and achieving **long-term sustainability**.

- Recent policy signals, including the **BioE3 Policy (Biotechnology for Economy, Environment, and Employment) Policy**, underscore the need for a **coherent national CRA roadmap** to scale climate-resilient agricultural solutions across the country.

Climate-Resilient Agriculture

- **About:** Climate-Resilient Agriculture (CRA) is an approach to farming that strengthens the ability of crops, soils, and farming systems to **withstand climate variability and extreme events** while sustaining productivity and environmental health.
  - **Objective:** To **ensure food security**, stabilise farm incomes, reduce dependence on chemical inputs, and build long-term resilience of agriculture against climate change.
- **Key Strategies of Climate-Resilient Agriculture:**
  - **Climate-Adapted Crops:** Planting varieties specifically bred to survive high temperatures, high salinity (salt), or prolonged droughts (e.g., "Scuba Rice" that can survive underwater for weeks), to reduce climate-induced crop losses.
  - **Water Stewardship:** Adoption of **drip irrigation, rainwater harvesting, and precision irrigation** to optimise water use during dry periods.
  - **Soil Health Management:** Practices like **no-till farming, cover cropping, and organic inputs** to prevent erosion, enhance moisture retention, and increase soil carbon.
  - **Agroforestry Systems:** Integration of **trees with crops and livestock** to provide shade, wind protection, and improved microclimate.
  - **Crop Diversification:** Moving away from monocropping to **multiple crops**, spreading climate risk and stabilising farm income.
  - **Early Warning and Digital Tools:** Use of **weather forecasts, AI-based advisories, and climate alerts** to support timely sowing, harvesting, and risk management.

Need for India to Transition Towards Climate-Resilient Agriculture

- **Vulnerability of Agriculture:** Indian agriculture is increasingly exposed to erratic **monsoons, droughts, floods, heat stress, and declining soil and water health**, making conventional farming practices less reliable under changing climate conditions.
- **Dependence on Rainfed Farming:** Nearly **51% of India's net sown area is rainfed** and produces about **40% of the**

country's food, leaving a large share of agricultural output highly vulnerable to climate variability, demanding resilient farming systems.

- **Threat to Food Security:**
  - Climate projections indicate that without adaptation measures, **rainfed rice yields in India may decline by 47% (2080)**, while **irrigated rice** could fall by **5% (2080)**.
  - **Wheat yields** are projected to drop by **40% (2080)**, and **kharif maize** by **23% (2080)**. Overall, climate change lowers **crop productivity and nutritional quality**, posing serious food security risks.
  - India's growing population places sustained pressure on agriculture to deliver **higher, stable, and reliable productivity**, even as climate stress intensifies.
- **Limits of Conventional Farming:** Input-intensive and chemical-heavy farming methods are increasingly unsustainable, as rising input costs and environmental degradation reduce their ability to cope with climate stress.
- **Economic, Strategic and Environmental Imperatives:** Climate-resilient agriculture can reduce India's dependence on food imports, protect farmer livelihoods, and strengthen the country's **strategic autonomy in the food sector**.
  - By promoting efficient use of water, soil, and nutrients, climate-resilient agriculture supports productivity while reducing environmental damage and agricultural emissions.

Key Government Initiatives to Promote Climate-Resilient Agriculture

- **National Innovations in Climate Resilient Agriculture:** India acknowledged climate risks to agriculture early, with the launch of **National Innovations in Climate Resilient Agriculture (NICRA)** by **Indian Council of Agricultural Research (ICAR)** in 2011 to build resilience against climate variability.
  - Under NICRA, location-specific climate-resilient practices such as zero-till wheat, direct-seeded rice, and climate-tolerant varieties have been demonstrated in **over 448 climate-resilient villages**.
- **National Mission for Sustainable Agriculture (NMSA):** The **NMSA** promotes climate adaptation through integrated farming, soil health management, water-use efficiency, and resource conservation, especially in rainfed areas.
- **Paramparagat Krishi Vikash Yojana (PKVY) and Mission Organic Value Chain Development for North Eastern Region (MOVCDNER):** Promote organic farming by supporting the use of **biofertilizers,**, biopesticides, and microbial soil enhancers, thereby reducing dependence on chemical inputs, improving soil health, and strengthening sustainable agricultural practices,
- **Digital Agriculture:** India's digital agriculture ecosystem is expanding rapidly through initiatives like the **Digital Agriculture Mission**, **AgriStack**, **NAMO Drone Didi and Kisan Drones**, **Kisan Suvidha App**, and **Soil Health Card**.
  - Alongside private projects such as **Project FarmVibes**, enabling data-driven farming decisions, though adoption remains uneven due to the digital divide.
- **Biotechnology and Research:** India has robust CRA research capacity supported by ICAR, the **Department of Biotechnology (DBT)**, and the **Indian Agricultural Research Institute (IARI)**, with increasing focus on climate-tolerant and genome-edited crops.
- **BioE3:** The BioE3 framework positions CRA as a priority area, signalling intent to scale biotechnology-led solutions through a national roadmap.

Key Challenges in Scaling CRA in India	Suggestions
■ **Low Adoption by Small & Marginal Farmers**: ~86% farm holdings; limited awareness, credit, affordability. ■ **Quality & Trust Deficit in Bio-input**: Quality issues in biofertilizers & biopesticides reduce farmer confidence. ■ **Slow Rollout of Climate-Resilient & Genome-Edited Seeds**: Only a small share of stress-tolerant and genome-edited seeds adopted despite **109 field & horticultural crop** varieties developed by ICAR. ■ **Digital Divide Limiting Precision Agriculture**: 95.15% of villages have access to 3G/4G mobile connectivity, but only **38% digital literacy** hinders AI, precision farming use. ■ **Soil & Water Stress**: ~**30% land degraded**, **60% districts** face groundwater stress. ■ **Policy Fragmentation**: Overlap across sectors; lacks unified **national CRA roadmap**.	■ **National CRA Roadmap**: Under **BioE3**, align biotech, climate, and agri policy; scale proven tech; ensure policy coherence; balance productivity, sustainability, and farmer welfare. ■ **Global Cooperation & Best Practices**: Collaborate with **FAO**; adapt CRA models from **US** (USDA Climate-Smart Agriculture & Forestry initiative), **EU** (Green Deal and Farm to Fork Strategy), **China**. ■ **Digital & Precision Agri**: Expand **AI advisories**, climate alerts, precision irrigation; bridge digital gap via **Bhashini**. ■ **Soil & Water Management**: Promote **soil health**, **micro-irrigation**, **watershed development**, and **water-saving tech**.

"Climate-Resilient Agriculture is central to India's food security and climate adaptation strategy." Discuss.

Drishti Mains Question

Dulhasti Stage-II Project

The Ministry of Environment, Forest and Climate Change (MoEF&CC)'s **Expert Appraisal Committee (EAC)** has recommended an **environmental clearance** for the **Dulhasti Stage-II hydropower project.**

Dulhasti Stage-II Run-of-the-river Hydropower Project

- **Location & Capacity:** It is a **260 MW (2x130 MW)** underground powerhouse project on the **Chenab River** in the **Kishtwar District of Jammu & Kashmir**.
- **Design & Function:** It is a **run-of-the-river (ROR)** project. **Dulhasti-II** will use the existing infrastructure of Stage-I and draw **Marusudar River water** (a **tributary of the Chenab**) via the **Pakal Dul Hydroelectric Project** into the Dulhasti reservoir. The **390 MW Dulhasti-I**, a **run-of-the-river project**, was commissioned in **2007**.
  - The **Pakal Dul Hydroelectric Project** is a **1,000 MW ROR hydroelectric project** under construction on the **Marusudar River**. It features a **167-meter-tall concrete-face rockfill dam**, the **tallest** in the Indus River system in India. A **ROR** uses the **natural flow** and **elevation drop of a river** to produce **electricity** without creating a **large reservoir** for **water storage**.
- **Strategic Significance:** The project gained momentum after the **suspension of the Indus Water Treaty (IWT), 1960**, following the **Pahalgam terror attack**.
  - It will add to the cascade of **hydropower projects** on the **Chenab River**, which already includes operational plants (**Dulhasti-I (**390-MW, Kishtwar**), Baglihar (**890-MW, Ramban**), Salal (**Reasi**))** and several under-construction projects (**Ratle (**850MW**), Kiru** (624 MW)**, Kwar** (540 MW)).

Expert Appraisal Committee (EAC) of MoEF&CC

- **About:** The **Expert Appraisal Committee (EAC)** is a multi-disciplinary, **sector-specific committee** constituted by the **Central Government** under the **Environment Impact Assessment (EIA) Notification, 2006**.
- **Primary Role:** It is a **recommendatory body** responsible for the **screening, scoping, and detailed appraisal** of industrial and infrastructure projects requiring environmental clearance under the EIA law.
- **Sectoral Structure:** There are **nine EACs** at the **central level**, each dedicated to appraising **specific project categories**, such as River valley and hydro-electric projects (RVHEP), Thermal & coal mining, Nuclear, strategic & defence projects etc.
- **Composition & Tenure:** Each **EAC** comprises up to **15 subject matter experts** selected based on **prescribed qualifications**. Committees are **reconstituted every three years** (with a possible **one-year extension**).
- **Decision-Making:** The **EAC** operates on **consensus** and **collective responsibility**. Its **final recommendation** is submitted to the **Ministry of Environment, Forest and Climate Change (MoEFCC)**, which takes the **final decision** on granting or denying **environmental clearance**.

Indus Waters Treaty

- **About:** The **Indus Waters Treaty** (IWT) is a **bilateral water-sharing pact** between **India and Pakistan**, brokered by the **World Bank** and **signed in 1960**. It governs the **distribution and utilization** of the waters of the **Indus River** and its **five major tributaries**—the **Sutlej, Beas, Ravi, Jhelum, and Chenab**.
- **Water Allocation:** The treaty assigns **India** full control over the **three eastern rivers** (**Ravi, Beas, and Sutlej**). **Pakistan** is allocated the **three western rivers** (**Indus, Jhelum, and Chenab**).
  - **India** is permitted **limited use** of the **western rivers** for specified **domestic, non-consumptive, agricultural, and hydroelectric purposes**, subject to **defined conditions**. Overall, **Pakistan** receives about **80% of the water** from the **Indus River system**, while **India** receives around **20%**.
- **Permanent Indus Commission (PIC):** The treaty establishes a **Permanent Indus Commission** (**PIC**), comprising **commissioners from both nations**. The **PIC** is required to meet at least **once annually** to oversee the treaty's **implementation** and address **routine issues**.
- **Dispute Resolution Process (Article IX):**
  - **First Level: Disputes or questions** regarding **interpretation or implementation** are to be resolved through **discussions within the PIC**.
  - **Second Level:** If unresolved by the **PIC**, either **Commissioner** may request the **World Bank** to appoint a **Neutral Expert**.
  - **Third Level:** If the issue is deemed a "**dispute**" or falls outside the **Neutral Expert's mandate**, either party may seek the establishment of a **Court of Arbitration** by the **World Bank**.

Chenab

- **About: Chenab** is a **transboundary river** in the **Indus system**, spanning **India and Pakistan**. It originates in the **upper Himalayas of Himachal Pradesh** (**Baralacha Pass** in **Lahaul**) as the **Chandrabhaga**, formed by the **confluence of the Chandra and Bhaga rivers**.
- **Key Tributaries:** Major **tributaries** are the **Marusudar** (**largest**), **Miyar Nalla, Bhut Nalla, Kalnai, Ans, Tawi**, and **Neeru rivers**.
- **Course & Flow:** The **river** flows **northwest** through **Jammu & Kashmir's districts** of **Kishtwar, Doda, Ramban, and Reasi**, carving **deep gorges**, before entering **Pakistan's Punjab plains**, where it joins the **Sutlej** to form the **Panjnad**, which then merges with the **Indus**.

Right to a Clean and Healthy Environment

The persistent environmental crisis has reignited **debates** about **constitutional provisions** for environmental protection and the need for **explicit recognition** of the **right to a clean and healthy environment**.

- The **Commission for Air Quality Management (CAQM)** has recently amended the **Graded Response Action Plan (GRAP)**, making it **mandatory** to close schools under **Phases 3 and 4**, alongside **phased office timings**.

Persistent Environmental Crises in India

- **Severe Air Pollution: India's severe air pollution**, particularly in **northern cities** such as **Delhi**, consistently exceeds **particulate matter limits** and contributed to **2.1 million** of the **8.1 million** global air-pollution-related **deaths** in **2021.** As per the World Air Quality Report 2024, **13 of the 20** most polluted cities worldwide are in **India**.
  - **Health impacts** range from **respiratory infections, lung diseases**, and asthma to cardiac and gastrointestinal issues.
- **Water Scarcity:** Despite initiatives like the **Jal Jeevan Mission (JJM)**, **water scarcity** is escalating, with **per capita availability** declining from **1,816 cubic meters** in 2001 to **1,545 cubic meters** in 2011 and projected to fall to **1,219 cubic meters** by 2050.
  - **Central Ground Water Board** assessments show elevated **nitrate, fluoride, and arsenic levels** in West Bengal, Bihar, and Uttar Pradesh.
  - This **crisis** is worsened by **groundwater depletion** in major cities, **Himalayan glacial retreat**, river pollution, and erratic **monsoons**, causing repeated **floods** and **droughts**.
- **Biodiversity and Habitat Loss: Deforestation** driven by infrastructure, agriculture, and mining leads to **habitat fragmentation, soil erosion**, and **reduced carbon sequestration**. India's **biodiversity hotspots**, like the **Western Ghats**, face **severe threats**, with **IPCC projections** warning of up to **33% biodiversity loss** by 2050 due to **climate change.**
- **Land Degradation and Soil Health Decline:**
  - Despite India being a party to the **United Nations Convention to Combat Desertification (UNCCD)**, soil erosion, salinization, and fertility loss are rampant due to **over-farming** and **chemical fertilizer overuse**.
  - Some **83.69 million ha** (mha) underwent desertification in **2018-19**. This was greater than the **81.48 mha in 2003-2005** and **82.64 mha in 2011-13**.
  - **Soil Organic Carbon** in **intensively farmed areas** is falling to **0.3%** from historical levels of around **1%.**
- **Waste Management Crisis:**
  - **India** generates approximately **62 million tonnes** of **waste annually**, including 7.9 MT of **hazardous waste,** 5.6 MT of plastic, 1.5 MT of **e-waste**, and 0.17 MT of biomedical waste. Despite a reported **95% collection rate**, much of this **waste** is **burned** or **poorly handled**, resulting in **landfill overflows** and **toxic leachate** contaminating **soil** and **water.**

Graded Response Action Plan (GRAP)

- **About:** The **GRAP** is a **pre-emptive and emergency framework** created to **control and reduce air pollution** in **Delhi-NCR**.
  - **GRAP** has been prepared in compliance with the **Supreme Court's (SC) order** dated 2nd December, 2016, in the *MC Mehta vs. Union of India case 1986*, to address air quality issues in the **National Capital Region** of Delhi.
  - It was notified in **2017**, and is **implemented by the Commission for Air Quality Management (CAQM)** in coordination with the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and the concerned state governments.
- **Stages of GRAP:** It categorises pollution response measures into **four stages**, depending on the AQI levels.
  - **Stage I – Poor (AQI 201–300)**: Basic pollution control measures like **road dust management** and enforcing **vehicle PUC** (Pollution Under Control) norms.
  - **Stage II – Very Poor (AQI 301–400)**: Stricter actions such as **limiting diesel generator use** and controlling operations in pollution hotspots.
  - **Stage III – Severe (AQI 401–450)**: Imposes **restrictions on specific vehicles**, construction activities, and allows for remote schooling measures.
  - **Stage IV – Severe+ (AQI > 450)**: Enforces bans on entry of heavy vehicles, **closure of schools**, and shutdown of non-essential industries.

Commission for Air Quality Management (CAQM)

- **About:** The **CAQM** is a **statutory body** established under the Commission for Air Quality Management in NCR and Adjoining Areas Act, 2021 to coordinate and **implement air pollution control measures** in the **NCR** and adjoining states—**Punjab, Haryana, Rajasthan, and Uttar Pradesh**.
- **Leadership and Eligibility:** The Commission is headed by a **full-time Chairperson** with either **at least 15 years of experience** in environmental protection and pollution control or 25 years of administrative experience.
- **Accountability and Role:** The **CAQM is directly accountable to Parliament** and functions as the apex authority for air quality management in the NCR region.

Evolution of Environmental Jurisprudence in India

- ***Maneka Gandhi v. Union of India (1978):*** The SC gave its opinion that a clean environment shall be included in the **meaning of life under Article 21.**
- ***Rural Litigation and Entitlement Kendra v. State of UP (1985):*** The **SC** recognized, for the first time, the **right to live in a healthy environment** as part of **Article 21** of the **Constitution**.
- ***M.C. Mehta v. Union of India (1986):*** The **SC** held that the **right to live in a pollution-free environment** is part of the **fundamental right to life** under **Article 21** of the **Constitution**.
- ***Subhash Kumar v. State of Bihar (1991):*** The **SC** combined **Articles 48A and 51A(g)** with **Article 21**, ruling that the **state** must **protect and improve the environment** so that every **citizen** can enjoy **pollution-free air and water**, essential for a **meaningful life.**
  - **Article 48A:** Obligation of the **State** to protect and improve the **environment** and safeguard **forests and wildlife.**
  - **Article 51A(g):** Obligation of **Citizens** to **protect and improve the natural environment**, including **forests, lakes, rivers, wildlife**, and to have **compassion for living creatures.**
- ***M.C. Mehta versus Kamal Nath (1996):*** The **SC** defined the **public trust doctrine** as a **social contract** where the **state** acts as a **trustee of natural resources** owned by the **people**, and must manage them only for public benefit, not for private gain.
- ***M.K. Ranjitsinh v. Union of India (2024):*** Recognised **right against adverse effects of climate change** under Article 21 (Right to Life) and **Article 14 (Right to Equality).**
- ***Vellore Citizens' Welfare Forum versus Union of India (1996):*** The **SC** explained the **precautionary principle** and the **polluter pays principle**.
  - The precautionary principle requires the state to take **preventive action** against serious **environmental threats**, promoting **sustainable development** over a choice between development and ecology.
  - The **polluter pays principle** makes **polluters** financially responsible for **managing their pollution**, such as a factory safely disposing of **toxic by-products.**

Key Environmental Conservation Initiatives Taken in India

- **Air & Water Quality Management:** National Clean Air Programme (NCAP), Graded Response Action Plan (GRAP), Namami Gange Programme, Jal Jeevan Mission.
- **Biodiversity & Wildlife Conservation:** Wildlife (Protection) Act, 1972 (National Parks, Wildlife Sanctuaries, Conservation Reserves, and Community Reserves), Project Tiger (1973), Project Elephant (1992), Biological Diversity Act, 2002.
- **Waste Management & Circular Economy:** Plastic Waste Management Rules, 2016, E-Waste Management Rules, 2022, Swachh Bharat Mission, Waste to Wealth Mission.
- **Climate Change & International Commitments:** Paris Agreement Commitments, International Solar Alliance (ISA), LiFE (Lifestyle for Environment).
- **Monitoring & Technology Initiatives:** Environmental Impact Assessment (EIA), National Green Tribunal (NGT), ISRO's Environmental Information System (ENVIS).
- **National Missions & Programs:** National Green Hydrogen Mission, National Action Plan on Climate Change (NAPCC), National Afforestation Programme (NAP), Green India Mission (GIM).

Challenges in Solving India's Environmental Crises

- **Governance Gaps**: Weak enforcement of laws (e.g. **EPA 1986**); industries operate without valid clearances.
- **Developmental Pressures**: Fast-track infra clearances fragment ecosystems; **illegal sand mining** persists.
- **Ecological Complexities**: Issues like **Indo-Gangetic air pollution** need multi-state coordination; extreme events (e.g., **Cyclone Biparjoy**) outpace adaptation.
- **Political & Behavioural Hurdles**: **Populist subsidies** encourage overuse; low public adherence to sustainable practices (e.g., **waste segregation**).

Steps to Strengthen Environmental Conservation

- **Legal Reform**: Make **clean environment a Fundamental Right**. Codify **Precautionary Principle, Polluter Pays, Public Trust Doctrine**.
- **Better Governance**: Set up **National Environmental Authority**. Use **AI/satellite tools** for real-time monitoring.
- **Systemic & Behavioural Change**: Link funds to **eco-targets** (e.g., air quality, forest cover). Enforce **green urban planning**.

- **Financial Tools**: Impose **carbon tax**, expand **green bonds**. Allocate **50% CSR to environment** with public tracking.
- **International Cooperation**: Ensure **tech transfer** and access to **$300B global climate finance**.

Critically examine the role of the Supreme Court in expanding the scope of Article 21 to include environmental protection.

Drishti Mains Question

Nature-based Solutions and their Importance

Brazil's hosting of **UNFCCC COP30** in **Belem** (inside **Amazon rainforest)** has brought attention to **nature-based solutions (NbS)** as **critical instruments** for tackling **global climate change**.

- It can serve a fundamental role in accelerating partnership for **Enhancing Nature-based Solutions for an Accelerated Climate Transformation (ENACT)**.

Nature-based Solutions (NbS)

- **About: NbS** are actions to **protect**, **sustainably manage**, and **restore natural or modified ecosystems** that address **societal challenges** effectively and adaptively, while simultaneously providing benefits for **human well-being** and **biodiversity**.
  - Restoring **mangroves** instead of building **concrete sea walls** provides **natural storm surge protection**, as seen when **India's Pichavaram forest** (Tamil Nadu) reduced **2004 tsunami damage**.
- **Core Principles of NbS** (as defined by the IUCN):
  - Address a **societal challenge** (e.g., climate change, flooding, water security, **food security**, **air pollution**, **urban heat**).
  - Provide benefits for **human well-being** and **biodiversity**.
  - Be designed and implemented with the full engagement and consent of **local communities** and **indigenous peoples**.
  - Promote **equity** and balance **trade-offs** between **short-term needs** and **long-term benefits**.
  - Maintain **biological** and **cultural diversity**. Be applied at a **landscape scale** (not just an isolated patch).
  - Be integrated into **policy and planning across sectors** (not a one-off project). Be managed **adaptively** and generate **evidence for effectiveness**.

Key Types & Examples:

Ecosystem Type	NbS Intervention	Climate Impact
Terrestrial	**Afforestation & Reforestation** (e.g., Miyawaki Method in urban areas).	Carbon sequestration and soil moisture retention.
Marine/Coastal	**Mangrove Restoration** (e.g., India's **MISHTI** Scheme).	Coastal protection against cyclones and "Blue Carbon" storage.
Agricultural	**Agroforestry & Natural Farming** (e.g., ZBNF, PM Pranam).	Improving soil carbon, reducing chemical runoff, and ensuring food security.
Urban	**Blue-Green Infrastructure** (e.g., Restoring urban wetlands like Ennore or Deepor Beel).	Reducing urban flooding and cooling local temperatures.

- **Government Initiatives:** National Mission for a Green India (GIM), National Mission on Sustainable Agriculture (NMSA), National Water Mission, National Afforestation Programme (NAP), AMRUT 2.0, MISHTI, Mission Amrit Sarovar.

Enhancing Nature-based Solutions for an Accelerated Climate Transformation (ENACT)

- **About:** ENACT is a global partnership designed to accelerate action on **climate change**, **land degradation**, and **biodiversity loss** by championing and scaling up **NbS**.
- **Governance & Origin**: It was launched at **UNFCCC COP27** in Sharm el-Sheikh by the Egyptian Presidency with Germany and **IUCN**. IUCN hosts ENACT's secretariat and leads its implementation.
- **Primary Function**: Acts as a collaborative hub for both **state** and **non-state actors** to align efforts, build **political support**, and advocate for **evidence-based NbS policies** across the three Rio Conventions (**UNFCCC**, **CBD**, **UNCCD**).
- **Quantifiable Global Goals (Outcomes)**:
  - **Human Resilience**: Enhance protection for over **1 billion vulnerable people**, with a dedicated focus on at least **500 million** women and girls.
  - **Ecosystem Integrity**: Secure up to **2.4 billion hectares (ha)** via a combined strategy of protection (45M ha), sustainable management (2B ha), and restoration (350M ha).
  - **Climate Mitigation**: Significantly boost **global carbon sequestration** by protecting, conserving, and restoring **carbon-rich ecosystems** across terrestrial, freshwater, and marine realms.

Strategic Importance of Nature-based Solutions (NbS) for India

- **Climate Change Mitigation:** Forest conservation and **wetland protection** provide essential **carbon sequestration** and **water regulation** in **India**, countering deforestation's **12–15% contribution** to emissions. **Restoration efforts** can create significant **carbon sinks**, while urban green spaces reduce **temperatures by 2–4°C**.
- **Disaster Risk Reduction:** Mangrove and **floodplain** restoration deliver cost-effective protection against **floods and storms** in **India**, where **damages exceed USD 7.5 billion annually**. These measures significantly reduce **damage costs** and flood volumes.
- **Water Security and Quality:** Riparian buffers and **watershed protection** filter **pollutants** and secure **water supplies** for **India's 600 million people** facing **water stress**. They reduce **flows** and improve **water quality** effectively.
- **Urban Health and Well-being: Urban green corridors** improve **health** and connect **habitats** in **India**, where over **52 crore people** reside in **urban areas**. They reduce **pollution** and **stress levels** significantly.

Challenges Related to Nature-based Solutions (NbS)

- **Critical Financing Gap**: Meeting global biodiversity and climate goals requires **annual** investment of **USD 384 billion** by 2025 (**UNEP**), with current **private sector finance** for NbS critically low at **~18% of total**.
- **Flawed Economic Paradigm**: A core challenge is treating **nature** as a **costless input**. Humanity's demand exceeds **Earth's regenerative capacity** by **~70%**, drawing down ecological capital.
- **Corporate Governance Gap**: Frameworks like the **Taskforce on Nature-related Financial Disclosures (TNFD)** are gaining traction (**700+ adopters**), but **biodiversity** is often not a material board-level priority, revealing a disconnect between **policy** and **strategic integration**.
- **Sectoral & Regional Disparities**: **TNFD adoption** is uneven; **high-impact sectors** (**Energy, Infrastructure**) and European firms lead in integration, while **Technology/IT sectors** and **emerging economies like India** show varied commitment, often focusing on **climate** over broader **biodiversity**.

Pathways to Strengthen Nature-based Solutions (NbS)

- **Close the Critical Financing Gap:** Catalyze **private investment** via frameworks like the **TNFD** and innovative instruments (e.g., **green bonds**).
- **Mainstream NbS into Policy Making:** Integrate **NbS** into core sectoral policies (**urban planning**, **agriculture**, **infrastructure**). Elevate **biodiversity** from a voluntary concern to a material, board-level strategic priority for corporations.
- **Mainstreaming "Inclusive Governance":** Adopt a **"Rights-based Approach"** by making **Gram Sabhas** the primary decision-makers for NbS projects. This ensures that traditional ecological knowledge (TEK) is integrated and social safeguards are upheld.
- **Urban-Rural Integration (The Landscape Approach):** Move beyond "isolated patches" to **Blue-Green Corridors**. For example, restoring the **Aravalli Green Wall** to tackle desertification and Delhi's air pollution simultaneously.
- **Technology & Monitoring:** Utilize the **Bhuvan Portal (ISRO)** and AI-driven dashboards to track the survival rates of plantations and carbon sequestration levels in real-time, ensuring accountability in schemes like **MISHTI** and **Nagar Van Yojana**.

Nature-based solutions are increasingly viewed as a bridge between climate mitigation, adaptation, and biodiversity conservation. Discuss with examples.

Drishti Mains Question

Sponges Mitigate Heavy Metal Pollution

A recent study by Indian scientists has identified **freshwater sponges** in the **Sundarban delta** as natural tools for **detecting** and **mitigating heavy metal pollution**, highlighting their dual potential as **bioindicators** and agents of **bioremediation.**

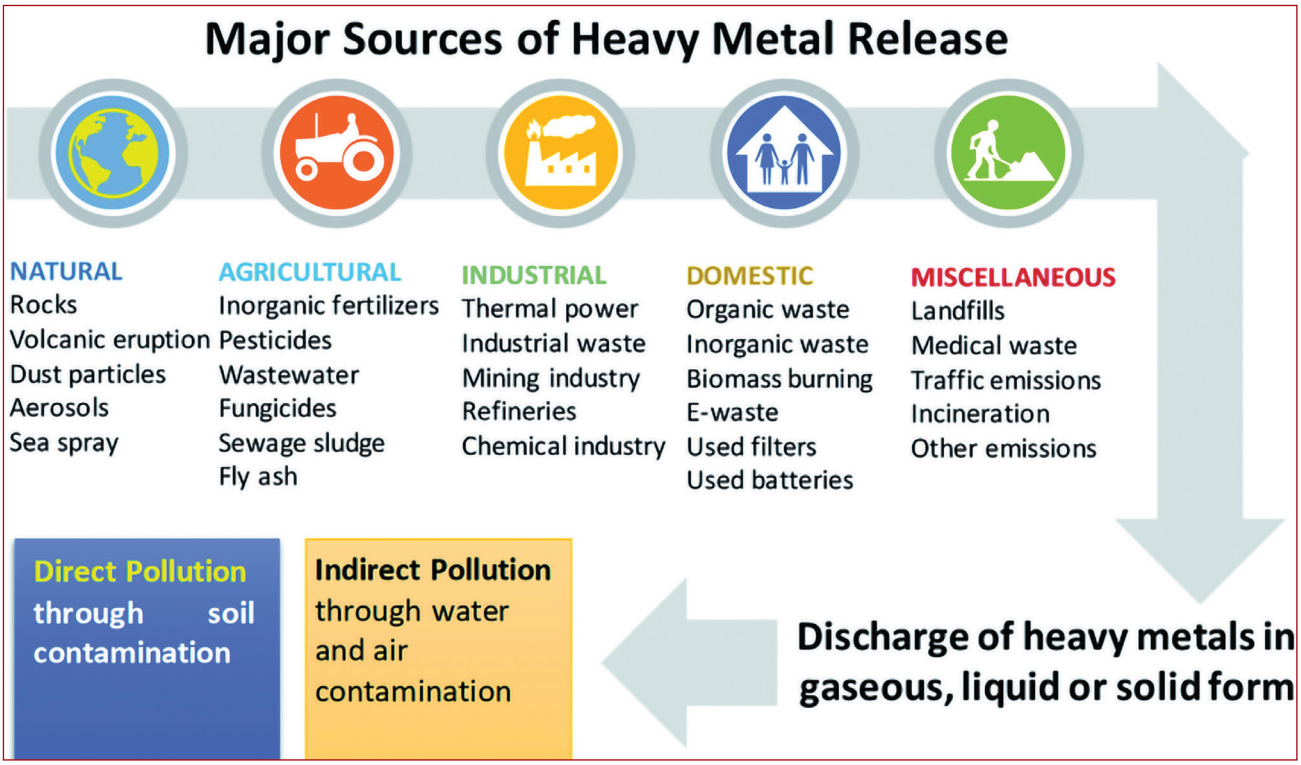
Sponges

- **About:** Sponges are **simple, aquatic animals** belonging to the **phylum Porifera**. They are among the oldest and most primitive multicellular organisms on Earth, with a fossil record dating back **over 600 million years**.
- **Key Characteristics of Sponges:**
  - **No True Tissues or Organs:** They **lack** complex body systems like **nerves, muscles, or digestive tracts**.
  - **Filter-Feeding Mechanism:** They draw in water through **numerous pores (ostia)** on their body surface. Specialized cells called **choanocytes (collar cells) trap and ingest** bacteria, plankton, and organic particles from the water, which is then expelled through larger **openings called oscula**.
  - **Skeleton:** They possess a simple skeleton made of **mineral spicules** (e.g., silica, calcium carbonate) and/or a fibrous protein called **spongin**.
  - **Habitat:** Mostly **marine**, but some species live in **freshwater** (like those studied in the Sundarbans).
  - **Symbiotic Relationships:** They host diverse **microbial communities** (bacteria, archaea) that play crucial roles in nutrition, chemical defense, and, as recent research shows, bioremediation.
- **Role in Mitigating Heavy Metal Pollution:** Sponges show **strong bioaccumulation** of **toxic metals** such as **arsenic**,

lead, and **cadmium**, concentrating them far more than the **surrounding water**. They remove these **heavy metals** through **adsorption** where **metal ions** attach to the **sponge's surface** or are **trapped in its porous structure**.

Heavy Metals

- **About:** Heavy metals are a **group of elements** that have high atomic weights and densities, typically **greater than 5 g/cm³**. Common examples of heavy metals are **Lead (Pb), Arsenic (As), Cadmium (Cd)** etc.
- **Characteristics:**
  - **Toxicity**: They are **harmful** even in **small amounts** and can **accumulate in** living organisms, leading to **poisoning** or other **health issues**.
  - **Persistence**: Many heavy metals **do not break down** easily and can **persist in** the environment for a **long time**.
  - **Bioaccumulation**: Heavy metals can **accumulate** in the **food chain**, as **plants and animals absorb them**, & higher organisms can accumulate the metals in their tissues.



- **Regional Heavy Metal Contamination in India**:

State/Region	Key Contaminants	Affected Areas	Reported Health Effects
West Bengal & Bihar	Arsenic, Cadmium	Nadia District, Kolkata	Arsenicosis (skin lesions), chronic lung disease, peripheral neuropathy, respiratory deficits.
Punjab	Selenium, Uranium, Barium	Hoshiarpur, Nawansahar, Malwa, Ludhiana	Hair loss, nail changes, "garlicky" breath, organ dysfunction (liver/kidney), DNA damage, increased breast cancer risk.
Uttar Pradesh	Hexavalent Chromium (Cr VI), Arsenic, Lead	Kanpur, Balai	Gastrointestinal distress, skin abnormalities, eye complaints.
Madhya Pradesh	Mercury, Industrial Pollutants	Singrauli, Ratlam, Malanjkhand	Tremors, abdominal pain, respiratory issues, gum problems.
Odisha	Iron, Industrial Heavy Metals	Keonjhar, Talcher, Ganjam	Acute respiratory infections, water-borne diseases.
Delhi & NCR	Lead, Aluminium	Yamuna River Basin	High blood lead levels (mothers/children), weakness, anxiety, high blood pressure, neurotoxicity.
Karnataka	Silver, Cadmium	Bengaluru	Renal (kidney) dysfunction, heavy metal accumulation in hair.

Bioaccumulation

- **Bioaccumulation** is the gradual buildup of **persistent toxic substances**, such as **heavy metals**, within a single **organism** when intake from the environment, water, air, or food exceeds its ability to **metabolize or excrete** them.
  - Unlike **biomagnification**—which occurs across a **food chain**—bioaccumulation occurs at the **individual level** and drives biomagnification.
- A prime example is **methylmercury** in aquatic systems. **Inorganic mercury** from industrial pollution converts to **methylmercury** in aquatic environments, which bioaccumulates in **fish and shellfish**.
  - Predatory fish (e.g., **tuna**, **swordfish**) exhibit **high levels**, posing risks to **human consumer**s through neurological damage.

Southern Ocean Carbon Anomaly

A study published in **Nature Climate Change** reveals a striking **Southern Ocean carbon anomaly**, showing that the **Southern Ocean** has continued to absorb more carbon dioxide since the early 2000s, contrary to earlier climate model predictions that its carbon-sink capacity would weaken.

Southern Ocean Carbon Anomaly

- **Contradiction to Model Projections:** Climate models had long predicted that rising **greenhouse gas concentrations**, coupled with a **thinning ozone layer,** would intensify the **westerly winds over the Southern Ocean** and shift them poleward.
  - This change in **atmospheric circulation** was expected to enhance **oceanic upwelling** (bringing deep, carbon-rich waters closer to the surface).
    - ❖ The intensified meridional overturning circulation would thereby expose these **carbon-laden waters to the atmosphere**, potentially weakening the **Southern Ocean's function as a carbon sink.**
  - However, long-term observations since the early 2000s show that the Southern Ocean has continued to absorb more carbon dioxide, as rising **Carbon-rich circumpolar deep waters** remain trapped **100–200 metres below the surface**, preventing atmospheric release.
- **Role of Stratification:** Increased rainfall, **melting Antarctic ice, and sea-ice transport have added fresh water** to the ocean surface. Fresh water is lighter than salty water, so it forms a stable upper layer.
  - This layered structure, known as **stratification**, acts like a **lid that prevents vertical mixing** between surface waters and deeper carbon-rich waters, trapping the carbon below, preventing **CO_2 from escaping into the atmosphere** and allowing the Southern Ocean to continue functioning as a **carbon sink.**
- **Significance:** The study cautions that this situation may be temporary. If surface **stratification weakens in the future,** the trapped carbon could be released rapidly into the atmosphere, accelerating **climate change.**
  - Since the early 2010s, thinning surface stratification and rising salinity in parts of the Southern Ocean have made it easier for winds to mix deep, carbon-rich waters upward, risking a shift from a **carbon sink to a carbon source.**

Key Facts About the Southern Ocean

- **Geographical Extent**: The Southern Ocean (or Antarctic Ocean) is defined as the **waters encircling Antarctica**, generally extending from the Antarctic coast north to **60° South latitude,** a boundary established by the **International Hydrographic Organization (IHO) in 2000** and marked by the **Antarctic Circumpolar Current (ACC),** connecting parts of the Atlantic, Pacific, and Indian Oceans.
  - It's unique for being **defined by a current, not land**, and plays a vital role in global climate.
- **Key Geographic Features**
  - **Narrowest chokepoint: Drake Passage** (~1,000 km wide) between South America and the Antarctic Peninsula.
  - The Southern Ocean includes **Weddell Sea, Ross Sea, Amundsen Sea, Bellingshausen Sea, and parts of the Scotia Sea.** No **continental landmass interrupts its flow.**
- **Size and Coverage**: By area, it is the **fourth largest ocean** after the Pacific, Atlantic, and Indian, and larger than the Arctic Ocean. It covers approximately **25–30% of the global ocean area** and accounts for about **5.4% of Earth's total ocean volume**.
- **Carbon Sink Role**: The southern ocean absorbs nearly **40% of all anthropogenic CO_2** taken up by the world's oceans. It plays a **critical buffer role** against global warming.
  - It is responsible for absorbing around **75% of the excess heat** generated by greenhouse gas emissions.
- **Ocean Circulation**: The Southern Ocean's circulation is dominated by the **Antarctic Circumpolar Current** (the world's strongest current), which flows eastward around Antarctica and links the Atlantic, Indian, and Pacific oceans.
  - **Cold, dense** Antarctic waters sink and flow northward along the ocean floor, while **warmer surface waters** from the Atlantic, Indian, and Pacific oceans move southward to replace them, meeting at the **Antarctic Convergence**.
    - ❖ This zone supports high phytoplankton productivity dominated by diatoms, with **Antarctic krill** forming the core of the food web that sustains fish, seabirds, seals, and whales.
  - The ocean is central to the **global meridional overturning circulation (MOC),** often referred to as the **"conveyor belt" of the oceans.**

Science & Technology

PSLV Failures and Implications

ISRO faces scrutiny after **PSLV-C61 (May 2025)** and **C62 (Jan 2026)** failures, both due to **third-stage anomalies**. Raises concerns over **PSLV quality control**, affecting **strategic missions** & **commercial credibility**.

PSLV

- **Type**: **3rd-gen** ISRO launch vehicle; first successful launch in **Oct 1994**.
- **Features**: Become first Indian rocket with **liquid propulsion stages**; known as **ISRO's workhorse**.
- **Orbits**: Suited for **LEO** & **Sun-Synchronous Polar Orbit (SSPO)**.
- **PSLV Structure: 4 Stages** – mix of **solid & liquid propulsion**:
  - **PS1**: **Solid motor**, uses **HTPB**. **PSLV-XL**: 6 solid **strap-on boosters** for extra thrust.
  - **PS2**: Vikas engine, liquid stage. Fuel: **(unsymmetrical dimethylhydrazine) + N_2O_4 (oxidiser)**; ensures controlled ascent.
  - **PS3**: **Solid motor**, uses **HTPB**. Operates in **near-vacuum**, gives orbital velocity.
  - **PS4**: **Liquid stage**, twin engines. Fuel: **MMH (monomethylhydrazine) + MON (mixed oxides of nitrogen)**; enables precise orbital insertion.
- **Payload Capacity**: 1,750 kg to 600 km SSPO**; ~1,425 kg** to **Sub-Geostationary Transfer Orbit (GTO)**
- **Key Missions**: **Chandrayaan-1**, **Mars Orbiter Mission**. Commercial Use– major launcher of foreign satellites.

Concerns Regarding Repeated PSLV Failures	Suggestions
■ **Strategic Implications** ● **Surveillance Gaps**: Loss of **EOS-09** & **EOS-N1** (**Anvesha**) affects border monitoring, military tracking, disaster response. ● **Defence Reliance**: Growing military dependence on **space assets** makes launcher reliability a national security issue. ■ **Commercial Credibility Loss** ● **Market Share Loss**: **NSIL** promotes PSLV globally; faces tough competition from **SpaceX**, **Rocket Lab**. India's **small-satellite launch share** dropped from ~**35%** (**2017**) to ~**0%** (**2024**). Failures risk further decline as clients prioritise **reliability**. ● **Rising Insurance Costs**: Two failures raise insurance premiums, reducing PSLV's cost advantage. ■ **Quality Control & Supply Chain Vulnerabilities** ● **Systemic Defects**: Repeated third-stage failures point to issues like propellant cracks, bonding, or nozzle defects in **manufacturing/storage**. ● **Import Dependency**: Reliance on imported **space-grade electronics**, **carbon** fibre, semiconductors; import cost ~**12× exports** (**2021–22**); vulnerable to **export controls/ Taiwan chip disruptions**. ● **Privatisation Risks**: **50% PSLV work** shifted to **HAL–L&T consortium**; raises concerns on **tech absorption** and Quality Assurance **consistency** in the **tiered supply chain**.	■ **Restore Launch Reliability**: Shift to fleet-level reliability engineering. Use block upgrades, feedback loops, incremental validation. Adopt a "**reliability-first phase**": fewer, high-scrutiny launches. ■ **Institutionalise Transparency After Failures**: Mandate **timely release** of **FAC findings** (with redactions). Builds trust with **insurers**, **clients** & **strategic partners**. ■ **Diversify Launch Infrastructure**: Reduce **Sriharikota dependence**; fast-track **second launch site** and alternate pads. Boost **redundancy**, **weather resilience**, and **crisis response**. ● Establish **Space Command** with funding and authority. Shift to **constellation-based ISR** (Intelligence, Surveillance, and Reconnaissance) & **SSA** (Space Situational Awareness); enable **real-time space-data fusion** for joint ops. ■ **Accelerate Indigenisation**: Focus on **mission-linked** indigenisation of **electronics**, **TWTs**, composites, semiconductors. Use **government demand** to de-risk private sector and reduce **import exposure**.

The Polar Satellite Launch Vehicle (PSLV) has long been regarded as the workhorse of India's space programme. In the context of recent PSLV failures, examine the challenges and their implications for India's global launch credibility.

Drishti Mains Question

Marine and Space Biotechnology

India is strengthening its focus on marine and space biotechnology under the Blue Economy framework, Deep Ocean Mission and BioE3 initiative to reduce import dependence and build leadership in next-generation biomanufacturing.

Marine Biotechnology

- **Focus**:
  - Utilises **marine microbes, algae, sea life** for **bioactives, enzymes, biostimulants, biomaterials**, and **food ingredients**—suited for **climate-resilient biomanufacturing**.

- **Current Status**: **Seaweed cultivation** ~70,000 tonnes/year.
  - **Imports**: Agar, carrageenan, alginates used in **food, pharma, cosmetics**.
- **Policy Push:**
  - Driven by **Blue Economy**, **Deep Ocean Mission**, **BioE3** for **end-to-end marine biomanufacturing**.
  - Key actors: **CMFRI**, **Sea6 Energy**, **ClimaCrew**, and **state initiatives**.
- **Significance**:
  - India has **11,000+ km coastline**, **2 million+ sq km EEZ**—rich in **marine biodiversity**.
  - Enables sustainable production of **food, chemicals, biofuels, biomaterials**, easing pressure on **land and water**.

Space Biotechnology

- **About**:
  - Studies **microbes, plants, human systems** in **microgravity & radiation**; used for **space food, life-support, biomanufacturing**, and **astronaut health**.
- **India's Progress**:
  - **ISRO's microgravity biology programme** conducts research on **microbes, algae, and biological systems**.
  - Supports **long-duration space missions** (nutrition, health, sustainability).
  - **Private participation** limited due to **nascent, research-heavy nature**.
- **Significance**: Key for **India's human spaceflight goals**, enabling **safe food production, life-support**, and **astronaut health management**.

Global Initiatives

- **EU**: Marine bioprospecting, algae-based bioactives (**Horizon Europe**).
- **China**: Seaweed farming, deep-sea and marine bioprocessing.
- **USA & Australia**: Advanced marine and space biotech R&D.
- **NASA, ESA, JAXA, Tiangong**: Microgravity research on **health, food, life-support systems**.

Remote Sensing and India's IRS Programme

Remote sensing enables **mapping & monitoring** of **natural resources** (forests, water, minerals, energy) from space, offering **faster**, **cost-effective**, and **sustainable insights**.

- It is observing & analysing Earth via **satellites/drones** using **electromagnetic radiation**. Objects have unique **spectral signatures**, enabling identification of **vegetation**, **water**, **minerals**, **rocks**, and **soil** without physical contact.

Indian Remote Sensing (IRS) Programme

- **About:** Launched with **IRS-1A (1988)**; operated by **ISRO**.
  - Among world's **largest remote sensing constellations**; provides data at various **spatial, spectral, temporal resolutions**.
  - Supports **agriculture**, **water**, **urban planning**, forestry, minerals, disaster management, ocean studies, environmental monitoring.
  - Foundational to India's **geospatial & GIS ecosystem**.
- **Key IRS Missions:**
  - **Land & Water Resource Observation Series:** IRS-1A/1B/1C/1D, Resourcesat-1, Resourcesat-2/2A & HysIS (Hyperspectral Imaging Satellite)
  - **Ocean & Atmospheric Observation Series: Oceansat**-1/2, Megha-Tropiques & SARAL.
  - **Cartographic Satellite Series: Technology Experiment Satellite (TES)**, Cartosat-1, Cartosat-2/2A/2B/2S, Cartosat-3
  - **Microwave Remote Sensing (SAR) Series:** RISAT (Radar Imaging Satellite)-1, RISAT-1A, RISAT-2A & NISAR (NASA–ISRO Synthetic Aperture Radar)

Contribution of Remote Sensing Technology for Societal Development

- **Bhuvan Geoportal (ISRO):** Visualisation & planning of development projects.
- **Geo-MGNREGA**: **6.24+ crore assets** geo-tagged for transparency & planning.
  - **Yuktdhara**: Supports planning of **natural resource assets**.
- **SIS-DP (Space-based Information Support for Decentralized Planning)**: Satellite data for Panchayat/village-level planning.
- **Watershed Development Component-Pradhan Mantri Krishi Sinchayee Yojana 2.0** (PMKSY-WDC): Monitoring micro-watersheds, soil–water conservation; **~1,150 projects** assessed using **Cartosat-2S & Cartosat-3** via **Bhuvan tools**.
- **Rural Road Mapping**: Satellite-based mapping via **PMGSY dashboard on Bhuvan** for real-time monitoring.
- **PMAY (Urban & Gramin)**: **Geotagging** to track construction, ensure transparency & release funds.
- **DMSP (ISRO/DoS)**: Space-based **hazard, vulnerability, and risk (HVR) assessment**, disaster monitoring, damage assessment, early warning systems.
  - Covers floods, cyclones, landslides, earthquakes, forest fires using **Resourcesat**, **Cartosat**, **RISAT**, **Oceansat-3**, **INSAT-3DR/3DS**, and global satellites.

Challenges Associated with Remote Sensing in India	Suggestions
■ **Data Access & Cost**: High-res imagery costly/restricted; urban planning uses coarse satellite data → low accuracy. ■ **Cloud Cover & Weather Limitations**: **Cloud cover** hampers **Kharif crop & flood assessment** during monsoon. ■ **Limited last-mile Application**: Satellite data underused; e.g., **Punjab/ Haryana groundwater maps** not followed due to weak enforcement. ■ **Skill & Capacity Gaps**: Lack of **trained staff** at district level; early-warning maps underutilised. ■ **Data Fragmentation & Poor Integration**: ISRO, states, ministries work in silos; poor integration affects **urban flood modelling**. ■ **Privacy/Security Concerns**: Concerns over border/city mapping and private sector participation.	■ **Integrate Satellite Data with Ground Systems**: Link **remote sensing + IoT, drones, GIS** under Digital India, Smart Cities for real-time use (e.g., irrigation, flood, heatwave management). ■ **Expand Open-access Geospatial Data**: Implement **National Geospatial Policy, 2022**; expand platforms like **PM Gati Shakti**, **Bhuvan** for affordable high-resolution data. ■ **Promote All-weather Monitoring**: Scale up **SAR missions** (e.g., **RISAT**) for day-night, all-weather data; useful in flood mapping, disaster response. ■ **Strengthen Capacity Building at Local Levels:** Expand ISRO-IIRS training for state/district officials to apply data in agriculture, drought, disaster management.

Examine the role of the Indian Remote Sensing (IRS) Programme in supporting sustainable development and governance.

Drishti Mains Question

IndiaAI Mission and Emerging AI Ecosystem

India is expanding its AI ecosystem under the **IndiaAI Mission** with over **₹10,300 crore** outlay & **38,000 Graphics Processing Units (GPUs) deployed**, boosting computing infrastructure, startups, skilling, datasets, and responsible AI governance.

IndiaAI Mission

- **About**: Aims to make India a global AI leader under the vision **'Making AI in India and Making AI Work for India'**.
- **Implementation**: By **IndiaAI**, **an independent business division** under **MeitY**, to build a comprehensive AI ecosystem.
- **Objectives**: Build **sovereign AI capability**, ensure **affordable access**, reduce **foreign dependence**, drive **socio-economic growth**.
- **Key Components**: **38,000 GPUs** for high-end computing; **BharatGen AI** (foundation models); **AIKosh** (national datasets); support to **startups** & **India-specific AI applications**

Seven Pillars of IndiaAI Mission	
■ **India AI Compute**: Enhancing computational resources for AI development ■ **India AI Dataset Platform:** Providing a comprehensive platform for AI datasets ■ **India AI Future Skills:** Equipping the workforce with necessary AI skills ■ **Safe & Trusted AI:** Ensuring the ethical & secure use of AI	■ **India AI Innovation Centre:** Fostering innovation & research in AI technologies ■ **India AI Application Development Initiatives:** Supporting the development of AI applications across sectors ■ **India AI Startup Financing:** Providing financial support to AI Startups

NOTE: India hosts 1,800+ Global Capability Centres, including 500+ AI-focused centres, alongside ~1.8 lakh startups.

Government Initiatives Related to AI

- **BharatGen AI**: Govt-funded **multimodal, multilingual LLM**; supports **22 Indian languages** for text, speech & image-based AI apps.
- **Sarvam AI**: **Indigenous sovereign LLM** for secure public service delivery, including **Aadhaar services**.
- **Bhashini**: AI-based multilingual platform offering **translation & speech services** in **20+ Indian languages** for digital services.
- **AI Competency Framework**: **Globally benchmarked** programme to build AI skills among **govt. officials.**

Nanorobots in Healthcare

An **IISc Bangalore researcher** won the **New York Academy of Sciences 2025** & **Tata Sons' Transformation Prize** for developing **magnetic nanorobots** that enable **precise drug delivery deep into tumors**, minimizing harm to healthy tissue, thereby opening new avenues for the **use of nanotechnology in healthcare**.

Magnetic Nanorobots

- **About**: Microscopic, externally powered machines made from or coated with **magnetic materials** like **iron oxide**. Guided by **external magnetic fields**, they navigate blood vessels or tissues without an onboard power source.
- **Functioning**: Mimic the **corkscrew motion of bacteria** using a tiny, **helix-shaped tail (functions like a propeller)**. A **magnet** attached to the helix enables control and propulsion via external fields, allowing movement through complex biological environments.

- **Structure**: **Biocompatible**, made of **silica & iron**, and can be **coated with cancer drugs** for targeted delivery trucks.
- **Primary Applications: Targeted Therapy**– deliver drugs directly to **tumors**, boosting efficacy & reducing side effects.
  - **Diagnostics**– used in **biosensing**, **imaging** & **biofilm removal**.
  - **Medical Dentistry**– enable **pain-free root canal treatments**, targeting **antibiotic-resistant bacteria** like *E. faecalis* without harming healthy tissue.

Applications of Nanotechnology in Healthcare

- **Targeted Drug Delivery & Therapeutics**: Uses **nanoparticles** (liposomes, polymers, dendrimers) to deliver drugs/genes to **diseased cells**, reducing side effects & crossing barriers like the **Blood-Brain Barrier** (e.g., Alzheimer's).
- **Advanced Diagnostics & Imaging**: Enables **rapid detection** of pathogens/biomarkers; **gold nanoparticles** & **quantum dots** enhance imaging (**MRI, CT, fluorescence**) for accurate diagnosis.
- **Regenerative Medicine & Tissue Engineering**: Guides **cell growth** for tissue repair (bones, nerves, heart); nanoparticles aid **gene delivery** to **stem cells** for treating injuries & degenerative diseases.
- **Antimicrobial Use**: **Silver, copper, zinc oxide** nanoparticle coatings on devices/surfaces prevent **Healthcare-Associated Infections (HAIs)**.
- **Vaccines & Immunotherapy**: Nanoparticles in **mRNA vaccines** boost stability & immune response; also deliver **immunomodulators** to activate **T-cells** in cancer therapy.

Main Obstacles in Adopting Nanotechnology in Healthcare	Suggestions
■ **Nanotoxicity**: Limited data on **nanopeptide bioaccumulation**, **biodegradability** & **chronic toxicity** raise concerns about human health and environmental nanopollution. ■ **Regulatory & Standardization Gaps**: Existing rules (e.g., **CDSCO**) don't address **nanomaterial-specific risks**; lack of universal standards hampers safety testing & quality control. ■ **Ethical Concerns**: **Implantable nanosensors** raise issues of **privacy**, **autonomy**, and a **nano-divide**, risking inequitable access. **Public Trust**– fears (e.g., **grey goo scenarios**) and low awareness mirror **GMO resistance**. ■ **High Costs & Economic Viability**: Requires **costly equipment**; **scaling production** while ensuring quality remains a challenge, creating a **lab-to-market gap**.	■ **R&D:** Fund mandatory studies on bioaccumulation, degradation & chronic effects; promote Green Nanotechnology with biodegradable, non-toxic materials & safety-by-design principle. ■ **Ethical, Social & Economic Governance**: Support **ELSA research** on privacy, autonomy, equity; ensure equitable access via PPPs and public engagement to build trust. ■ **Clinical Translation & Commercialization**: Bridge the **Valley of Death** with funding **translational research**, scale **cost-effective production** & promote **interdisciplinary collaboration** for practical solutions. ■ **Environmental Stewardship**: Mandate **EIAs**, develop **safe disposal/recycling protocols**, and set up monitoring programs for nanoparticles in air, water, and soil.

Nanotechnology holds immense promise for revolutionizing healthcare. Discuss its key applications and the major ethical and regulatory challenges hindering its widespread adoption in India.

Drishti Mains Question

ISRO's Heaviest Launch: BlueBird Block-2

ISRO marked a major milestone by launching its heaviest satellite, **BlueBird Block-2** (6,100 kg, by the US firm AST SpaceMobile), using the **Launch Vehicle Mark-3 (LVM3) rocket**, showcasing India's **strong heavy-lift** launch capability.

BlueBird Block-2

- **About:**
  - The **BlueBird Block-2**, is the **heaviest payload** ISRO has placed into **orbit**, surpassing the **previous record** of **5,700 kg** (**OneWeb satellites**).
  - The **satellite** was **injected** into a **Low Earth Orbit (LEO)** of approximately **520 km** altitude.
- **Objective:** It will provide **direct-to-mobile connectivity**, enabling 4G and 5G connectivity directly to **mobile phones** without requiring **specialized ground stations**.
- **Commercial Significance:**
  - This is ISRO's **3rd commercial mission** using **LVM-3**, following two OneWeb satellite launches in 2022 and 2023.
  - Despite global alternatives like **SpaceX's Falcon-9** and the **ESA's Ariane 6**, the **LVM-3** underscores **ISRO's** capacity for heavy launches at **much lower cost**.

LVM3 Launch Vehicle

- **About:** The LVM3 is **ISRO's largest** and **most powerful** heavy-lift rocket, with **three stages**. This **rocket** can carry **payloads** of up to **4,000 kilograms** to **Geosynchronous Transfer Orbit** and 8,000 kg in LEO.
  - Previously called the **Geosynchronous Satellite Launch Vehicle Mk III**, it launched for the first time in **December 2014**.
- **3 Stages:**

- **First Stage:** Uses two large **S200 solid rocket boosters**, which burn solid propellant **HTPB** (hydroxyl-terminated polybutadiene).
- **Second Stage (Core):** Uses **liquid-fuelled stage**, powered by **two Vikas engines**, burning **UDMH (unsymmetrical dimethylhydrazine) and nitrogen tetroxide**.
- **Third Stage (Upper):** Uses the **C25 cryogenic stage**,, equipped with the **CE20 engine**, burning **liquid hydrogen and liquid oxygen.**

- **Engine Optimization for Higher Efficiency:**
  - **Cryogenic Stage Upgrade:** ISRO is developing the **C32 cryogenic stage** for higher thrust and fuel capacity.
  - **Semi-Cryogenic Engine Development:** ISRO is developing **semi-cryogenic engines** using **kerosene and liquid oxygen**, which will raise LEO payload capacity from 8,000 kg to 10,000 kg.
  - **Bootstrap Reignition Technology:** ISRO is developing **bootstrap reignition capability** for **cryogenic engines**, allowing the **upper stage** to restart without external gases like **helium**, reducing **fuel weight** and increasing payload capacity for multi-orbit missions.
- **Role in Future Missions:** A modified **LVM-3** with added **human-safety** redundancies will support **Gaganyaan missions** and later carry modules for the **Bharatiya Antariksh Station**, India's planned space station.

Micrometeoroids and Orbital Debris

The MMOD threat gained attention after **debris damaged China's Shenzhou-20 capsule**.

Global Mechanisms to Manage Space Debris

- **Outer Space Treaty 1967** (India is a Signatory): Makes states responsible for all national space activities, including private ones, but lacks enforcement mechanisms.
- **Convention on Liability for Space Objects 1972** (India is a Signatory)**:** Imposes absolute liability for space object damage on Earth without needing proof of negligence, but enforcement is weak.
- **Voluntary UN Guidelines on Deorbiting:** Recommend deorbiting satellites within 25 years; only 30% compliance.
- **Inter-Agency Space Debris Coordination Committee (IADC):** It brings together agencies like NASA, ESA, and ISRO to develop technical standards, which inform non-binding debris mitigation guidelines by UNCOPUOS, relying on voluntary compliance.

India's Measures

- **Debris Free Space Missions (DFSM):** Aims for zero-debris space missions by 2030.
- **IS4OM:** Manages space operations, safety, and debris mitigation.
- **NETRA:** Enhances space surveillance and tracking.
- **Indian Space Policy 2023:** Focuses on space debris mitigation & Space Situational Assessment capacity building.

Reusable Launch Vehicle (RLV) Technology

The space sector is shifting to **private-led commercial activity**, with **RLVs** cutting launch costs by **5–20 times**. Market projected to exceed **USD 1 trillion by 2030**.

- **About RLV Technology**: Launch system designed to **recover & reuse** some or all rocket stages, unlike expendable rockets (burn up/discarded in the ocean).
- **Goal**: Shift from **disposable** rockets to a **transportation model**, lowering cost of space access.
- **Scientific Constraint**: As per **Tsiolkovsky rocket equation**, carrying fuel adds weight; extra weight requires more fuel. **>90%** rocket mass is **propellant and fuel tanks**; **<4%** is payload. **Reusing costly hardware** across missions reduces **per-launch costs** significantly.
- **Role of Staging**: Divides rocket into **discardable propulsion units** to reduce mass and improve ascent performance. **Traditional rockets** (e.g., **PSLV, LVM-3**) use **expendable staging**; **RLVs** aim to **reuse key stages**, especially the first stage
- **RLV Mechanism:**
  - **Launch**: Reusable stage launched like a conventional rocket to deliver payload to orbit.
  - **Stage Separation**: Reusable stage separates after burnout.
  - **Re-entry Control**: Uses guidance, navigation & control systems for stable re-entry.
  - **Deceleration**: Achieved via **aerodynamic drag** and/or **retro-propulsion** (engine relight).
  - **Recovery**:
    - ❖ **Vertical Take-off, Vertical Landing (VTVL)**: Vertical landing on pad/barge using controlled engine burns.
    - ❖ **Horizontal Landing (Winged Body)**: Winged RLV lands on a runway.
  - **Refurbishment**: Inspection, repair, and testing enable multiple reuses, reducing cost.
- **Limitations:**
  - **Thermal Stress**: Re-entry heat causes material fatigue; needs costly **Thermal Protection Systems (TPS)**.
  - **Refurbishment**: Costs & time rise with reuse, reducing economic gains. Higher reuse requires stricter **inspection & testing** for reliability.

ISRO's Reusability Initiatives

- **RLV-TD** (**Pushpak**): Winged tech demonstrator; tested in **LEX-01, 02, 03** for **autonomous horizontal landing**.
- **ADMIRE**: Test bed for **VTVL**, developing **retro-propulsion** tech like Falcon 9.
- **NGLV** (**Project Soorya**): Successor to PSLV with reusable first stage using vertical landing.

History, Art & Culture

Indian Miniature Painting

Golden Temple has engaged artists from the **Kangra region**, the cradle of **Pahari miniature painting**, to restore a **200-year-old painting of Guru Gobind Singh** using **traditional Kangra art techniques** and **natural pigments**.

- **Miniature Painting:** Small, detailed works (≤25 sq. inches), with subjects at **1/6th actual size**, using **tempera technique** (pigments + water + emulsion typically egg yolk). Features include **bulging eyes**, **pointed noses**, **slim waists**; painted with **single-bristle brushes**.

School/Styles of Miniature Painting

- **School/Styles of Miniature Painting**:
  - **Pala School (750–1150 AD)**: One of the earliest examples from Eastern India; **Buddhist/Vajrayana themes**; **sinuous lines**, **subdued tones**; on **palm leaf/vellum paper**.
  - **Apabhramsa School**: Western India (Gujarat, Mewar); began with **Jain themes**, later added **Vaishnava & Gita Govinda**; features **fish-shaped eyes**, **pointed nose**, **double chin**.
  - **Delhi Sultanate Style**: **Indo-Persian style**, influenced by **Iranian & Jain traditions**; centres in **Mandu** & **Jaunpur**; precursor to **Mughal, Rajput, Deccan** styles.
- **Mughal Era Miniature Painting**:
  - **Persian-inspired**, secular themes (e.g. **court scenes**, **hunting**), introduced **foreshortening** technique.
  - **Akbar**: Founded **Tasvir Khana**; blended Persian & Indian styles; illustrated **Tutinama**, **Hamzanama**.
  - **Jahangir**: Emphasis on **naturalism**, **flora/fauna**; Artist **Ustad Mansoor** notable.
  - **Shah Jahan**: Added European influence, pencil sketching, gold/silver use.
- **Rajput Schools**:
  - **Mewar**: **Sahibdin**; known for **Ragamala paintings**.
  - **Kishangarh**: Linked to **Raja Savant Singh**, **Bani Thani** by **Nihal Chand**.
  - Other schools: **Bundi, Amber-Jaipur, Marwar**; themes from **Ramayana**, **Mahabharata**, **Bhagavata Purana**, **Ragamala**.
- **Pahari School**: From the **Himalayan states** (Jammu, Basholi, Kangra)
  - **Basholi**: **Bold lines**, **red/yellow tones**; themes from **Rasamanjari**, **Ramayana**.
  - **Guler–Kangra**: **Delicate naturalism**, romantic **Krishna themes**; includes Gita Govinda, Bhagavata Purana, Nal-Damayanti, Baramasa.
  - **Kullu-Mandi**: Folk style, bold drawing, dark colours.
- **Colonial & Modern Developments**:
  - **Company Paintings**: Mix of **Rajput, Mughal, Indian styles** with **European realism**; made for **British patrons**.
  - **Bengal School** (early 20th c.): **Anti-colonial**, used **simple colours**, promoted **Indian aesthetic revival**.

Somnath Swabhiman Parv

Somnath Swabhiman Parv (1026–2026) marks **1,000 years of unbroken faith** and the **resilience of the Somnath temple**, symbolizing **India's indomitable spirit**.

- **Location**: Prabhas Patan, Gujarat coast; **first Jyotirling** among 12 holy Shiva shrines.
- **Scriptural Mentions**: Found in **Rig-Veda, Skandpuran, Shivpuran, Bhagavat**, and **Dwadasha Jyotirling Stotram**.
- **Mythological Construction**: **Gold** by Somraj (Moon God), **Silver** by Ravana, **Wood** by Lord Krishna, **Stone** by **King Bhimdev I** (Solanki dynasty) post-1026 attack (Mahmud of Ghazni).
- **Geographic Significance**: At confluence of **Kapila, Hiran, Saraswati** with **Arabian Sea**.
  - **Tirth Stambh** marks a straight sea route to the South Pole (~9,936 km).
- **Architecture Style: Kailas Mahameru Prasad** (Māru-Gurjara architecture)
  - Features: **Shikhara (155 ft), Garbhgruh, Sabhamandap, Nrityamandap**
  - Symbolism: Reflects **Mount Kailasa** and **Mount Meru**
- **Cycles of Destruction & Rebuilding:**
  - **1026 CE:** Mahmud of Ghazni - First major destruction (noted by Al-Biruni)
  - **1297, 1394, 1706 CE:** Multiple attacks (incl. Aurangzeb)
  - **Post-1947:** Rebuilt after Independence - Led by Sardar Patel
  - **1951:** Pran-Pratistha by Dr. Rajendra Prasad, with support from KM Munshi
- **Current Relevance:**
  - **Swami Vivekananda (1890s)**: Described Somnath as symbol of **India's national life-current**.
  - **Ahilyabai Holkar**: Maintained ritual continuity.

Kailas Mahameru Prasad Style

- **Associated With:** Chalukya/Solanki tradition (esp. Gujarat)
- **Symbolism:** Represents Mount Kailasa (abode of Shiva) and Mount Meru (cosmic axis)
- **Architectural School:** Under Nagara style, with Maru-Gurjara elements
- **Key Features:** High Shikhara; Garbhagriha, Sabha Mandapa, Nritya Mandapa; Elaborate carvings, intricate design; Crafted by Sompura Salats (traditional Gujarati temple architects).

Srimanta Sankardeva

Home Minister inaugurated the **redeveloped Batadrava Than**, the birthplace of **Vaishnavite saint Srimanta Sankardeva**, in Assam's Nagaon district.

Srimanta Sankardeva

- Born (**October 1449)** to a family of **Siromani Bhuyans (landed gentry)**, & composed his first **Borgeet** at Badarikashrama (Badrinath).
- 15th–16th century **Bhakti saint** in Assam
- Founder of **Neo-Vaishnavism** (Eka-sarana-nama-dharma)
- Established **eka-sarana-nama-dharma** (**Mahapurushiya dharma**) & **Worshipped Krishna** (as sole refuge)
- **Bhakti Focus: Sravana** (listening) & **Kirtana** (chanting)
- **Goal:** Social unity across castes, tribes, and languages
- **Institutional Contributions: Namghars (**Community prayer halls; open to all castes), **Satras (Monastic institutions for worship, art, moral discipline)**
- **Literary Contributions:**
  - **Kirtana-ghosha** (Devotional songs; sung daily in Namghars), **Gunamala** (Condensed Bhagavata Purana into 6 kirtans), **Nimi Nava Siddhi Samvada** (Doctrinal dialogue), **Bhakti Pradipa** (Against worship of other deities), **Bhatimas** (Poems praising God/Guru), **Rukmini Harana Kavya, Harishchandra-upakhyan** (Early poetic works)
  - **Translated** 8/12 **Bhagavata Purana** into **Brajavali**.
- **Contributions to Art & Culture:**
  - **Ankiya Naats:** One-act religious plays in Brajavali
  - **Bhaona:** Stage performance of Ankiya Naat in Namghars
  - **Sattriya Dance:** Classical dance from Satras (recognized by Sangeet Natak Akademi)
  - **Borgeets:** Devotional songs (~240) set to ragas & talas

Neo-Vaishnavism vs Others

Aspect	Shaivism	Vaishnavism	Neo-Vaishnavism (Sankardeva)
Deity	Shiva	Vishnu/Krishna/Rama	Krishna (sole refuge)
Practice	Asceticism, meditation, tantra	Bhakti, temple rituals	Naam-Kirtan, no idol worship
Philosophy	Advaita/tantric	Bhakti-based dualism	Exclusive devotion (Ekasarana), egalitarian
Spread	South India, Kashmir, Nepal	Pan-India	Assam & NE India
Cultural Forms	Temples, Shaiva texts	Bhakti poetry, festivals	Namghars, Satras, Borgeets, Sattriya dance

Holy City Status and Sikh Heritage

Punjab has declared **Amritsar, Anandpur Sahib, and Talwandi Sabo** as **holy cities** (each housing one of Sikhism's **five Takhts)** to promote them as **religious-cultural hubs**.

Sikhism

- Founded by **Guru Nanak Ji** (15th century), **Monotheistic (**influenced by **Bhakti & Sufi**), emphasizes **Seva (selfless service)**, and **equality**.
- **Khalsa**: Formed by **Guru Gobind Singh (1699)**; follows **Five K's (Kesh, Kangha, Kara, Kachera, Kirpan)**.
- **Sacred Texts & Institution: Guru Granth Sahib** (in **Gurmukhi**) = **Eternal Guru**. **Dasam Granth**, **Gurdwara** (for worship), **Shiromani Gurdwara Parbandhak Committee (**managing Gurdwaras), **Khalsa Panth (**Sikh community).
- **Historical Reform Movement: Gurdwara Reform (Akali) Movement – 1920**: Freed shrines from **mahants**. Led to **SGPC formation** & **Sikh Gurdwaras Act, 1925**.

Takht	Location	Significance
Akal Takht	Amritsar	Supreme seat; Miri-Piri union; est. by Guru Hargobind
Takht Sri Keshgarh Sahib	Anandpur Sahib, PJ	Khalsa founded by Guru Gobind Singh
Takht Sri Patna Sahib	Patna	Birthplace of Guru Gobind Singh
Takht Sachkhand Hazur Sahib	Nanded, MH	Cremation site of Guru Gobind Singh
Takht Sri Damdama Sahib	Talwandi Sabo, PJ	Guru Granth Sahib finalized

Social Issues

Urbanisation Beyond Megacities

India is experiencing a significant **shift of urbanization** towards small towns. This **rapid and unplanned growth** presents both challenges and opportunities for **balanced regional development**.

- Out of nearly **9,000 census and statutory towns**, only **500** are **large cities**, while the vast majority are **small towns** with populations under **1,00,000**, playing a key role in **shaping India's urban future**

Factors Driving the Shift of Urbanisation to Small Towns

- **Saturation of Megacities**: High costs, congestion in metros like **Delhi, Mumbai, Bangalore** push people and industries to **small towns**.
- **Decentralised Economic Growth**: Small towns support **rural non-farm jobs** in **agro-processing, logistics, services** (e.g., Sattenapalle, Dhamtari, Bongaigaon).
- **Infrastructure & Policy Enablers**: Roads– **PMGSY**, **state highways;** Digital– **BharatNet**, mobile reach; Policies– **Shyama Prasad Mukherji Rurban Mission**, **state industrial/ investment schemes** promote Tier-2/3 town development.
- **Demographic & Social Factors**: **Young rural population** migrates to small towns for **education, jobs**; rising demand for **services** transforms large villages.
- **Resilience Against Climate Vulnerabilities**: **Smaller scale** allows **decentralized systems**, mitigates **heat island effect**, supports **sponge city model**. Small towns less prone to **health crises** (e.g., Covid-19), better at **disaster-resilient infrastructure**.
- **Preservation of Socio-Cultural Fabric**: Small towns blend **modern economy** with **local traditions** (e.g., **Srirangapatna**, Karnataka).

Status of Urbanisation in India

- As per **Census 2011**, the **total urban population** of the country is **over 377 million**, constituting **31.16% of the total population**.
- According to the **United Nations Department of Economic and Social Affairs** (**UN DESA**), about **36% of India's population** is estimated to live in **cities in 2025**, a share projected to **reach 50% by 2050**.
  - India alone will contribute well over 20 crore new urban residents between 2025 and 2050.
- According to **NITI Aayog**, **urban areas** contribute around **63% to India's GDP**, a share projected to **exceed 75% by 2030** and **reach 80% by 2050**.

Concerns Associated with Shift of Urbanisation to Small Towns in India

- **Urbanization of Poverty:** The primary concern is that **small towns** are becoming sites for the **"urbanisation of rural poverty."** They absorb **poor populations** but fail to provide pathways out of **poverty**.
  - **Employment** is dominated by highly **informal** and **precarious work**. E.g., Construction labour work without **contracts** or **social security**.
- **Emergence of Exploitative Local Hierarchies:** New, unregulated economies allow **local elites**, real estate brokers, contractors, micro-financiers, and political intermediaries, to consolidate control over **land**, **credit**, and **labour**, leading to deepening **local inequality** and **exploitation**.
- **Governance and Institutional Deficits:** Small towns suffer from **low own-source revenue** and inadequate access to institutional finance like **municipal bonds**, creating a **perennial dependence** on state and central grants that hinders **autonomous planning**. Furthermore, most develop without **Master Plans** or **Building Byelaws**, resulting in **haphazard construction**, encroachment on **ecologically sensitive zones**, and inefficient land use.
- **Infrastructure & Ecological Deficit:** Flagship **urban missions** like **AMRUT** are **metro-centric**, leaving small towns with **fragmented**, **inadequate infrastructure**. Lack of **piped water supply** leads to dependence on private **"tanker economies"** and the indiscriminate mining of **groundwater**, creating severe ecological stress.
  - There is a **chronic deficit** in water supply, sewage networks, **solid waste management (SWM)**, and stormwater drainage.
- **Missed Demographic Dividend:** With a **young population** migrating to these **towns**, the lack of **quality education**, **skill development**, and formal job creation risks squandering the **demographic dividend**. E.g., **delivery**, **ride-hailing** jobs with **no job security or benefits**.

Measures to Achieve Sustainable Urbanisation

- **Formalizing the Informal Urban:** To empower small towns, mandatorily notify qualifying **census towns** as **statutory towns**, followed by **massive capacity building** for the new **Urban Local Bodies (ULBs)** in planning and finance. Subsequently, develop simple, flexible, and enforceable **Master Plans** and **Local Area Plans** using **GIS-based participatory mapping (e.g., SVAMITVA scheme)** to integrate existing settlements and natural assets (water bodies, forests).

- **Building Foundational Infrastructure:** Achieve **100% coverage** of sustainable basic services—**water supply, decentralised Sewerage Treatment Plant (STP)**, and **SWM**—by converging funds from **AMRUT 2.0**, **Swachh Bharat Mission-Urban 2.0**, and **Finance Commission** grants. Planning must prioritize **non-motorised transport networks** (walkways, cycle tracks), avoiding car-centric models.
- **Leverage Place-Based Economies**: Strategically develop economies around **local comparative advantage**, agro-processing clusters, handloom & handicraft hubs, logistics centers, or **eco-tourism**, as envisioned under the **Scheme for Formalisation of Micro Food Processing Enterprises (PMFME)**.
- **Adopt a "Rurban" Cluster Approach:** Implement the **Shyama Prasad Mukherji Rurban Mission** in true spirit by developing rurban clusters where small towns anchor villages for **economies of scale** in service delivery. Mandate **convergence** of all central and state schemes (**PMGSY**, **VB-G RAM G**) at the small-town ULB level for integrated development.

"The proliferation of small towns in India represents the 'urbanisation of rural poverty' rather than inclusive growth." Critically examine this statement in the context of India's recent urban transition.

Drishti Mains Question

Bal Vivah Mukt Bharat Abhiyan

The Union government recently marked one year of the **Bal Vivah Mukt Bharat Abhiyan (BVMB)** by launching a nationwide 100-day awareness campaign, reaffirming India's commitment to the **United Nations target of ending child marriage by 2030.**

Bal Vivah Mukt Bharat Abhiyan

- **About: BVMB was** launched in **2024** by the **Ministry of Women and Child Development**, to eliminate child marriage and make India **child marriage-free by 2030**.
  - It reflects India's commitment to the **UN Sustainable Development Goal (SDG) 5.3** and marks a shift from a purely legal response to a prevention- and community-driven approach.
- **Objectives**: The campaign aims to **reduce the prevalence of child marriage by 10% by 2026** and completely eradicate the practice by **2030**.
  - Its broader goal is to **protect children's rights, delay the age of marriage, promote girls' education, and address the social norms** and economic vulnerabilities that sustain early marriage.
- **Legal and Constitutional Foundation of BVMB:** It is grounded in **Article 21 of the Constitution**, which guarantees the right to life and dignity, and is supported by the **Prohibition of Child Marriage Act (PCMA), 2006**.
  - It is further strengthened by the **Supreme Court's judgment in Society for *Enlightenment and Voluntary Action & Anr v. Union of India & Ors (2024)*,** which emphasised **prevention, banned child betrothals, and directed States to create stronger institutional mechanisms** against child marriage.
- **Key Components of the BVM:** The Abhiyan rests on dedicated **Child Marriage Prohibition Officers (CMPOs)** at district and sub-district levels, a **technology-enabled BVMB portal** for real-time reporting and monitoring, and large-scale **community engagement** involving schools, Anganwadis, Panchayats, NGOs, youth groups, and religious leaders.
- **Progress under BVMB:** The campaign has led to proactive prevention through awareness drives, counselling, injunctions, and rapid response systems.
  - International organisations like **UNICEF** have provided technical support, while model successes such as **Balod district of Chhattisgarh becoming India's first child marriage-free district** and **Surajpur of Chhattisgarh declaring 75 child marriage-free panchayats** highlight the impact of sustained local action.

Child Marriage

- **About: Child marriage** refers to a marital union where **one or both parties are below the legally prescribed age of marriage**.
  - In India, this means a **girl below 18 years** or a **boy below 21 years**, as defined under the **PCMA, 2006.**
  - Under the **Bharatiya Nyaya Sanhita, 2023**, sexual relations with a wife below 18 years amount to **rape**, and the **Supreme Court** has clarified that penetrative sexual assault by the husband of a child bride constitutes **aggravated penetrative sexual assault** punishable under the **Protection of Children from Sexual Offences (POCSO) Act, 2012**, making child marriage not only a social evil but also a criminal offence.
- **Global Prevelance of Child Marriages:** Ending child marriage is a core target under the **UN SDG 5**, which seeks to achieve gender equality and empower all women and girls.
  - **Target 5.3** specifically calls for eliminating child, early, and forced marriage, along with other harmful practices.
  - Progress is measured by the share of women aged 20–24 married before 18.
  - Despite efforts, in 2023, **UNICEF estimated that around 64 crore girls worldwide were married in childhood**.

- ❖ The practice is most prevalent in **Sub-Saharan Africa**, **South Asia**, and parts of **Latin America and the Middle East**.
- Experts warn that without much faster progress (nearly **20 times the current pace**), the world will miss the 2030 target and fall short on several other development goals related to health, education, poverty, & gender equality.

- **India and Child Marriages:** India has sharply reduced child marriage from 47.4% in 2005–06 to 23.3% in 2019–21, according to the **National Family Health Survey (NFHS-5) (2019-2021), though progress slowed after 2015–16.**
  - However, **India accounts for nearly one-third of the world's child brides.**
  - Large regional disparities persist, with the highest rates in **West Bengal, Bihar, and Tripura**, and the lowest in **Lakshadweep, Jammu & Kashmir, Ladakh, Himachal Pradesh, Goa, and Nagaland**.
  - Sharp disparities exist by education and income: **48% of girls with no education** marry before 18 compared to **4% with higher education**, while **40% from the poorest households** marry early versus **8% from the richest**.

India's Initiatives to Curb Child Marriage

- **Legal Framework:**
  - **PCMA, 2006:** Defines child as a male under 21 years or female under 18 years, makes child marriage a cognizable and non-bailable offence, and allows annulment of child marriages. It prescribes punishment for adult groom and those who abet or perform the marriage.
  - **POCSO Act, 2012**: Criminalises sexual relations with a wife below 18 years of age, treating them as rape and other sexual offences under the Act.
- **Major Campaign:**
  - **Beti Bachao Beti Padhao (BBBP):** Promotes girls' education and empowerment; indirectly delays age of marriage by improving school retention
- **Socio-Economic Incentives:**
  - **Sukanya Samriddhi Yojana:** Encourages savings for girl child's education and future, reducing economic pressure for early marriage
  - **Kanyashree Prakalpa (West Bengal):** Annual scholarship (13–18 years) and one-time grant (18–19 years) if the girl remains unmarried and continues education
  - **Kalyana Lakshmi / Shaadi Mubarak (Telangana):** Financial assistance for marriage only if the bride is 18+ years, discouraging child marriage.
- **Institutional Mechanisms:**
  - **Childline 1098:** 24×7 emergency helpline to rescue children at risk of forced or early marriage
  - **Child Welfare Committees (CWCs):** Quasi-judicial bodies deciding care, protection, rehabilitation, and best interest of rescued children.

Challenges in Eliminating Child Marriage

- **Cultural Norms & Traditions:** Honour, caste norms, and **child betrothals** normalise early marriage & weaken legal enforcement.
- **Cultural Norms & Traditions:** Honour, caste norms, and child betrothals normalise early marriage & weaken legal enforcement.
- **Household Poverty:** Economic insecurity pushes early marriage as a survival strategy.
- **Education Gaps:** Poor access to secondary education & high dropouts increase risk.
- **Weak Law Enforcement:** Low convictions, overburdened officials, poor deterrence.
- **Normative Gender Inequality:** Patriarchal norms, fear of **harassment/ violence,** restrict girls' autonomy.

Suggestions

- **Boost Girls' Education**: **Samagra Shiksha** and **National Scheme of Incentive to Girls for Secondary Education** improve secondary retention (key deterrent; **NFHS-5**).
- **Reform & Strengthen Enforcement:** Proposal to raise marriage age to 21; BVMB via CMPOs, **district monitoring, real-time reporting**.
- Economic Support: DAY-NRLM & NSAP reduce poverty-driven marriages.
- **Awareness & Community Ownership:** Poshan Abhiyaan and **Rashtriya Kishor Swasthya Karyakram** leverage Anganwadis and peer educators to delay marriage.
- **Safety & Empowerment: Mission Shakti** and Scheme for Adolescent Girls build safety, life skills, and health support.

Despite legal prohibition, child marriage persists in India. Examine the socio-economic and institutional factors responsible and suggest a way forward.

Drishti Mains Question

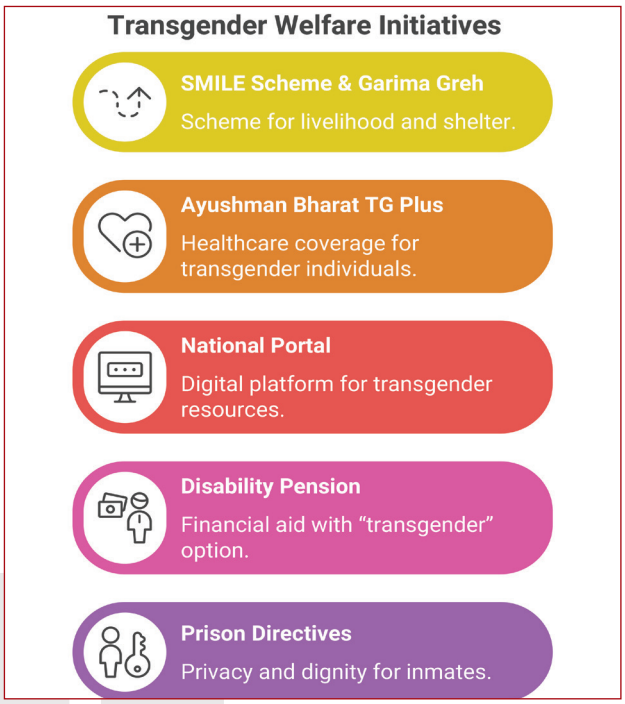
Transgender Welfare in India

Trans men & gender-diverse persons assigned female at birth (AFAB) face systemic discrimination, medical ignorance & structural barriers in accessing basic healthcare. Highlights **gaps in affirmative, ethical, and evidence-based transgender welfare** in India.

- As per the **Transgender Persons (Protection of Rights) Act (TPA), 2019**, a transgender person is someone whose **gender identity does not match** the **gender assigned at birth**
- **Total Transgender Population (Census 2011):** ~4.88 lakh; **Top 3 States:** UP, Andhra Pradesh, Maharashtra

Legal & Constitutional Framework

- **TPA, 2019–** created a comprehensive legal structure to protect & empower transgender persons.
  - Establishes **National Council for Transgender Persons (NCTP)**.
- **Judgments:**
  - ***NALSA v. Union of India (2014):*** Recognised transgender persons as the **"third gender"**.
  - **Karnataka HC in *Ms. X vs State of Karnataka, 2024*** upheld the right of transgender persons to **change name & gender on birth certificates**.
- **Election Commission Directive (2009)** introduced an **"others" option** in voter registration forms.



Major Challenges Faced by the Transgender Community in India	Suggestions
■ **Healthcare Access & Medical Discrimination:** ~27% refused medical care due to gender identity. lack of trained professionals, especially for trans men. No pan-India protocols; many resort to unsafe self-medication. ■ **Social Stigma & Mental Health Crisis:** Discrimination starts from family, extends to all public spheres. 31% die by suicide, 50% attempt it before age 20. ■ **Economic Exclusion:** 92% economically excluded (NHRC, 2018); 48% unemployed (ILO, 2022). Denied financial access, inheritance (e.g., Hindu Succession Act, 1956 excludes non-binary heirs). ■ **Barriers in Education:** Literacy rate at 56.1% (Census 2011) vs 74% national average. Lack of representation in universities & absence of gender-sensitive framework. ■ **Ineffective Legal Implementation:** Only 277 identity certificates issued via National Portal for Transgender Persons since Nov 2020. 16% application processing rate. Garima Greh shelter homes suffer from low funding, poor awareness, limited reach. ■ **Political Under-Representation:** Minimal presence in Parliament, State Assemblies & local governance.	■ **Full Enforcement of Existing Laws:** Enforce 2019 Act with grievance redressal cells, centralized digital portal & regular audits. Simplify self-identification process, mandate gender-sensitivity training, adopt models like Delhi Transgender Persons (Protection of Rights) Rules, 2025. ■ **Economic Inclusion & Livelihood Opportunities:** Scale up models like Karnataka's 1% job reservation, Tata Steel's corporate diversity hiring. Expand SMILE Scheme for skilling & entrepreneurship. ■ **Accessible & Affirmative Healthcare:** Cover gender-affirming treatments under Ayushman Bharat, as in Odisha & Karnataka. Set up dedicated health centres (e.g., AIIMS Delhi's CoE) and include mental health services. ■ **Social Awareness & Cultural Change:** Run campaigns like "I Am Also Human", promote respectful media representation. Support events like Koovagam Festival (TN) and platforms like Ya_All Sports Club (Manipur).

Acid Attacks in India

The **2009 Shaheen Malik acid attack case** ended in **acquittal** after **16-year legal battle**, exposing systemic flaws.

Acid Attack

- **About:**
  - **Intentional use of corrosive substances** (e.g., sulphuric, nitric, hydrochloric acid) to cause **severe injury, disfigurement**, and **trauma**.
- **Impact**: Leads to **blindness, lifelong disability, psychological trauma, social stigma, loss of livelihood**, and **legal struggles**.
- **Law Commission's 226th Report (2009)**: Recognised **gendered violence**; Urged **distinct penal provisions** and **rehabilitation support**.
- **Victims & Perpetrators: Predominantly women** as victims; **men** as perpetrators.
- **Motives**:

- **Women victims**: Personal relationship conflicts (¾ cases), dowry, infidelity suspicions, domestic abuse
- **Men victims**: Property disputes, professional rivalry, political enmity

- **Menace of Acid Attacks in India:** Reported **207 acid attacks** in **2023**, up from **202 in 2022** and **176** in 2021 (**NCRB**).
  - **Underreporting**: Due to **stigma**, **family pressure**, **fear of retaliation; Worst-affected states**: **West Bengal**, **Uttar Pradesh**, **Gujarat.**

Laws Against Acid Attacks in India

- **Bharatiya Nyaya Sanhita, 2023**: Acid attacks are now treated as a **specific and serious offence under Section 124 of BNS**, prescribing **a minimum punishment of ten years' imprisonment, extendable to life**, along with a **just and reasonable fine** to meet the victim's medical expenses.
  - The law also penalises **attempted acid attacks with five to seven years' imprisonment** and mandates that **all public and private hospitals provide free first aid and medical treatment** to victims, with denial attracting criminal liability.
- **NALSA (Legal Services to Victims of Acid Attacks), Scheme, 2016:** Under the **Legal Services Authorities Act, 1987**, the **National Legal Services Authority (NALSA)**, through the **NALSA (Legal Services to Victims of Acid Attacks) Scheme, 2016**, provides **priority legal aid, support, and assistance** to acid attack victims and their heirs.
- **Model Poisons Possession & Sale Rules, 2013: 2013 SC order** mandated strict regulation of the **sale and availability of acid**, requiring buyers to produce a **photo identity proof** & sellers to **maintain detailed purchase registers**.
  - Pursuant to this order, the **Ministry of Home Affairs** issued an advisory to all States and framed the **Model Poisons Possession and Sale Rules, 2013** under the **Poisons Act, 1919**, directing States to formulate their own rules since the subject falls within the **State domain**.

Related Judicial Precedents

- ***Laxmi vs Union of India (2013):*** The Supreme Court gave acid attacks a **specific recognition in criminal law**, moving them out of **general injury provisions** and treating them as a **distinct and serious offence**.
  - SC mandated that acid attack survivors are entitled to a minimum **compensation of Rs 3 lakh, with Rs 1 lakh payable within 15 days** for immediate medical treatment and the **remaining Rs 2 lakh within 2 months** for aftercare and rehabilitation, including reconstructive surgeries.
  - It prohibited over-the-counter sale unless the seller maintained a **register/logbook** recording the buyer's details and quantity sold.
- ***Parivartan Kendra vs Union of India (2015):*** The Supreme Court flagged **poor implementation of acid sale regulations** and directed States to ensure **effective enforcement** and timely compensation for survivors.
- **Justice JS Verma Committee (2013):** In the aftermath of the **Nirbhaya case,** the **Justice JS Verma Committee** examined structural failures in addressing violence against women and **explicitly highlighted acid attacks** as a gendered crime.
  - The Committee recommended **stringent punishment, and a national survivor fund for compensation**, directly influencing later reforms on acid violence.

Challenges in Justice Delivery

- **Weak Investigation:** Delayed FIRs, poor forensics, untraced acid source
- **Judicial Delays:** Trials stretch for years; e.g., Shaheen Malik case – 16 years
- **Low Conviction Rates: 2023** Only 16 convictions, 27 acquittals out of 703 cases
- **Victim-Blaming & Stigma:** Character assassination, intrusive questions, fear of reporting
- **Weak Regulation Enforcement:** Easy acid access, especially in industrial zones
- **Out-of-court Settlements:** Police pressure for monetary compromise, undermining justice
- **Delayed/Inadequate Compensation:** Funds released years later, impeding recovery

Solutions for Prevention & Support

- **Acid Sale Regulation:** Enforce **strict acid sale laws**, fix **SDM accountability**
  - **Bangladesh model**: Public awareness + sealing illegal shops → attacks fell from **494 to 13 (by 2024)**
- **Justice Delivery: Gender sensitisation** for judges, prosecutors
  - **Fast-track courts**, **penalise delays**, improve **convictions**
- **Survivor Support: Free legal aid**, **counselling**, reduce **settlement pressure**
  - **Reform disability norms** under RPwD Act: **Timely compensation** linked to medical & rehab needs
- **Long-term Rehabilitation:** Implement **JS Verma Committee**'s **national survivor fund**
  - Cover **lifelong medical care**, **education**, **skill training**, **livelihood support**.

Despite stringent laws, acid attacks continue in India. Examine the institutional and judicial factors responsible for low conviction rates.

Drishti Mains Question

REPORTS & INDICES

Export Preparedness Index (EPI) 2024

NITI Aayog released **EPI 2024**, assessing **States/UTs' export readiness** to support India's **$1 trillion export target by 2030** & **Viksit Bharat @2047** vision.

- **EPI**: Launched in **2020**; assesses **State/district export readiness** via evidence-based framework.
  - Focuses on **infrastructure**, **competitiveness**, and **cluster-led strategies**.
  - Promotes **district-led export growth**, linking **federalism with economic performance**.
  - Supports **Make in India**, **Atmanirbhar Bharat**, **MSMEs** & **trade competitiveness**.
- **Framework & Coverage:** Structured around 4 pillars, 13 sub-pillars, 70 indicators.
  - **Pillars– Business Ecosystem** (40%), **Export Infrastructure**, **Policy & Governance**, **Export Performance** (20% each). Emphasizes **cost efficiency**, **MSMEs**, **finance access**, **innovation**.
  - States/UTs grouped into **Large**, **Small**, **North-Eastern**, **UTs** and classified as **Leaders** (High export preparedness), **Challengers** (Moderate preparedness with scope for improvement) & **Aspirers** (Early-stage export ecosystems).
- **Top Large States**– Maharashtra, Tamil Nadu, Gujarat, UP, Andhra Pradesh; **Top Small States/UTs/NE States**– Uttarakhand, J&K, Nagaland, Dadra & Nagar Haveli and Daman & Diu, Goa

Responsible Nations Index (RNI)

The **World Intellectual Foundation (WIF)** will launch **RNI**, India's first global index assessing countries on **responsible governance**, **sustainability** & **global responsibility**.

- **RNI**: Developed by **WIF** with **JNU**, **IIM Mumbai**, and **Dr. Ambedkar International Centre**; ranks **154 countries** based on **responsible governance**, not conventional power or GDP, using **transparent global data**.
- **Three Core Dimensions**:
  - **Internal Responsibility**: Dignity, justice, citizen well-being
  - **Environmental Responsibility**: Natural resource stewardship, climate action
  - **External Responsibility**: Peace, multilateralism, global stability
- **Significance**: Shifts focus to **ethical governance**, **social well-being**, **environmental stewardship** & **international responsibility**, aligning with **India's vision** of ethical, sustainable global leadership.

Rising FTA Trade Deficit

As per NITI Aayog Trade Watch Quarterly report, **India's trade deficit** with **FTA partner countries** has **widened sharply**, even as the country recorded strong **export growth** in **electronics** and other sunrise sectors.

Key Findings

- **Trade Deficit with FTA Partners**: Widened by **59.2% in Q1 FY26** (**April & June**); **Exports**– Down 9% to $38.7 billion; **Imports**– Up 10% to $65.3 billion
- **Structural Export Shift**: **Electronics exports** up **47% YoY**, now **11%+** of total exports; **petroleum exports** saw a sharp decline
- **ASEAN** (**India's largest FTA export market**): Exports down **16.9%**; major drops in **Malaysia** (-39.7%) & **Singapore** (-13.2%)—key driver of overall deficit
- **Import Surge & Diversification**: **UAE** imports up **28.7%** (gold compounds, petroleum); **China** imports up **16.3%** (electronic components).
- **Geopolitical & Negotiation Context**: Data relevant amid ongoing **FTA talks** with **EU**, **US** and recent FTAs signed with **Oman, New Zealand, UK** (**2025**).
  - Follows **missed 2025 deadline** to renegotiate **ASEAN FTA**

India's Foreign Trade Pattern

- **Total Exports**: $778.21 billion (2023-24); **Merchandise**– $437.10 billion; **Services**– $341.11 billion
- **Top Export Destinations**: North America (largest), followed by EU, West Asia, ASEAN; **Major countries–** US, UAE, China, Netherlands
- **Top Import Sources**: China, Russia, UAE, US

Census 2027

MHA has notified the commencement of **house-listing** for the **2027 Census**, marking the start of preparations for India's **16th Census and the first since 2011**.

Key Highlights of Census 2027

- **Phases**:
  - **Phase I (2026)**: House-listing (1st Apr–30th Sep; 30-day window completion for each State & UT)
  - **Phase II (2027)**: Population Enumeration; reference date– 1st March (for most of the country) or 1st Oct (snow-bound areas: Ladakh, J&K, HP, Uttarakhand)
- **Legal Basis**: Under **Sections 3 & 17A, Census Act, 1948**, by **Office of the Registrar General of India (RGI);** supersedes 2020 notification for the deferred 2021 Census.
- **Digital & Self-Enumeration: First digital census** with **15-day self-enumeration** window before enumerator visit. Uses **GPS tagging**, **offline data capture**, **cloud uploads** & **monitoring system**.
- **Expanded Data Points: House-listing (34 columns)** includes new data– internet access, smartphone ownership, type of gas connection, vehicles, water source, cereal consumption.
- **Historic & Political Significance:** Includes **first nationwide caste enumeration since 1931** (beyond SCs/STs); to aid **future delimitation** post-freeze.

Adult Skill Assessment Survey, 2026

India to hold its **first nationwide** assessment of **adult skill competencies** in **2026** to address **workforce challenges** and tap the **demographic dividend**.

- **About: Conducted by MoSPI** via **Comprehensive Modular Survey (CMS) framework** at Ministry of Skill Development and Entrepreneurship's (MSDE) request
  - **CMS**: Short, targeted household surveys for policy needs
- **Scope & Objective:** Covers population aged **18 years & above** (3-month survey); assesses **basic, intermediate, advanced skills** levels
  - Needed as **working-age population to hit 68.9% by 2030**; no current data on skill levels
- **Data Gaps**: **PLFS** records only if **vocational or technical** training was received, not **skill quality/level**, limiting workforce readiness assessment.
- **Skill–Employability Mismatch**: ~**75% of employed** have only **basic education; Graduate employability**– 54.8%; **serious mismatch** b/w education outcomes & labour market needs
- **Vocational Training Trend**: Training among **15–59 age group** rose to **34.7%** (**2023–24**) from **27.4%** (**2022–23**). Rise in training not matched by **employability gains**, stressing need for **skill-quality data**

India Tops Global Doping Violations in 2024

India topped global doping violations in 2024 with **260 cases**, ranking **1st for the 3rd consecutive year (WADA)**.

- **Global Ranking (Violations): India (260)** > France (91) > Italy (85) > Russia & USA (76 each) > Germany (54) > China (43).
- **WADA: Founded** in **1999** by IOC. Global independent authority against doping.
  - **Core Instrument**: **World Anti-Doping Code** (harmonises rules globally).
  - **Publishes: WADA Prohibited List, international standard** for **banned substances** and **methods**.
- **National Anti-Doping Agency (NADA): 2005**, Implements **Anti-Doping Programme**, testing & compliance.
  - **Initiatives**: **#PlayTrue Campaign** for athlete education and clean sport promotion.

Denotified Tribes to be Enumerated in Census 2027

Ministry of Social Justice and Empowerment recommended **enumeration of DNTs in Census 2027**. **1st enumeration after Independence**; last counted in **1911 Census**.

- **Denotified Tribes:** DNTs were labelled *criminal tribes* under **Criminal Tribes Act, 1871**. Act repealed in **1949**, but **no Census data thereafter**.
  - Many DNTs **not classified as SC/ST/OBC**. Excluded from **reservation and welfare schemes**.
- **Committees & Findings**
  - **Ayyangar Committee (1949)**: Recommended repeal of Criminal Tribes Act.
  - **Lokur Committee (1965)**: Treat DNTs as a **separate group**.
  - **Renke Commission (2008)**: Population **10–12 crore**.
  - **Idate Commission (2014)**: Identified **1,200+** DNT, nomadic, semi-nomadic communities.
- **Related Groups**
  - **Nomadic Tribes**: Fully mobile livelihood (e.g., **Banjara, Rabari**).
  - **Semi-nomadic Tribes**: Seasonal migration with partial settlement (e.g., **Gaddi, Maldharis**).

India's LFPR Hits Record 56.1% in 2025

PLFS (December 2025) shows consistent recovery, with a workforce with stable unemployment rates based on Current Weekly Status (CWS) approach, assessing individuals' activity status.

Key Highlights

- **LFPR** for ages 15+ continued its upward trend, reaching 56.1%.
- **WPR** peaked at 53.4%, with rural male WPR at 76.0% and rural female WPR at 38.6%, showing strong rural employment.
- **Unemployment Rate** remained stable at 4.8%. Rural UR stayed at 3.9%, while urban UR slightly rose to 6.7%. Urban female UR declined to 9.1% from 9.7% in October 2025.
- **Rural-Urban Divide**: Rural LFPR (59.0%) is higher than urban LFPR (50.2%), with urban unemployment consistently higher than rural.

AWARDS & HONOURS

Rashtriya Vigyan Puraskar

India's highest national science awards, presented by the **President**; **2nd edition honored 24 scientists**. Modeled on the Padma Awards.

- **Covers**: **13 scientific domains**, **Instituted by**: **MoS&T.**
- **Category:** Vigyan Ratna (Highest award – Lifetime achievements), Vigyan Shri (Sustained contributions in specific fields), VY–SSB Scientists below 45, Vigyan Team.
- **Vigyan Ratna** was awarded to **Prof. Jayant Vishnu Narlikar (Hoyle–Narlikar Theory of Gravity** - supports **Steady State Universe**, alt. to Big Bang/Einstein's theory).

Indira Gandhi Peace Prize

2025 Indira Gandhi Prize for Peace, Disarmament and Development was awarded to **Mozambican rights activist Graca Machel**.

- **About:** Awarded **annually since 1986** by the Indira Gandhi Memorial Trust, honours individuals or organisations for exceptional contributions to peace, disarmament, and development.
- **Key Features:** The **prize includes Rs 1 crore, a citation, and a trophy**, and is one of India's prestigious international peace awards.
- **Selection Criteria:** Recognises exceptional efforts addressing global challenges with a positive humanitarian impact.

IMPORTANT DAYS

National Disaster Response Force (NDRF) Raising Day

PM greeted & commended **NDRF** on its **Raising Day** on **19th Jan 2026**, marking its formation.

NDRF

- **Raised**: 19th Jan 2006 under **Disaster Management Act, 2005**.
- **Structure**: **4 operational zones** headquartered in **New Delhi**. Each battalion has **18 specialised search and rescue teams**. **NDRF Academy** (2018) – apex training institution.
- **Mandate & Scope**: Responds to **natural/man-made disasters** incl. **CBRN**, floods, collapsed structures, forest fires (added 2022), mountain/rope rescue, medical & animal rescue.
- **Global Disaster Response Experience**: Japan disaster (2011), Nepal earthquake (2015), Türkiye – **Operation Dost** (2023); mentoring **HUSAR** team for **INSARAG** certification.
- **CBRN Preparedness & Training**: **2024** declared as "**Year of CBRN Preparedness**". Conducted **workshops**, **training**, **SOPs**, and **coordination exercises**.

151st Foundation Day of IMD and Automatic Weather Stations

India marked **IMD's 151st Foundation Day (15th Jan 2026)** by deploying **200 AWS** in **Delhi, Mumbai, Chennai, Pune** to boost **urban forecasting** & **disaster preparedness**.

- **AWS:** Meterological station that **automatically records & transmits weather data**.
  - **Benefits**: High-density, reliable, frequent observations; useful in remote areas; reduces human error & costs; standardised digital measurements
  - **Applications**: Agriculture, aviation, urban planning, public safety, disaster management.
- **IMD:** Principal agency for **meteorology, forecasting, seismology**. Forecasts & warnings for **agriculture, aviation, shipping, disaster management**.
  - **Ministry**: Functions under **Ministry of Earth Sciences**; **HQ**– New Delhi.
- **Achievements of IMD: Forecast Accuracy**– general forecasts improved by **40–50%**; **cyclone track prediction** improved by **35–40%**; **seasonal forecast errors** reduced from **7.5% to ~2.5%**.
  - **Coverage**: **Radar network covers ~87%** of India's geographical area.
  - **Technological Expansion**: Doppler radars, aerosol monitoring, **ultra-short-range (3 hr) forecasts**. Introduced **Model Observatory**, 3D-printed AWS & Agro-AWS.
  - **Mission Mausam**: Focus on **advanced weather science, climate resilience, public welfare**.
  - **Regional Support**: Weather & disaster satellite support to **Bangladesh, Nepal, Bhutan, Sri Lanka**.

World Hindi Day

Third Technical Hindi Symposium "Abhyuday-3" was organised by **CSIR-NIScPR**, **IIT Indore**, and **IIT Jodhpur** to promote **Technical Hindi** & **inclusive science outreach**.

- Aligned with **World Hindi Day** to promote **science outreach in Hindi** and strengthen its **global and functional use**.
- **World Hindi Day:** Observed annually on **10th Jan**.
  - Marks the **First World Hindi Conference (1975)** held at **Nagpur** under **Rashtra Bhasha Prachar Samiti, Wardha** (founded by Mahatma Gandhi).
  - **Official observance** began in 2006, announced by **PM Dr. Manmohan Singh**.

- **Distinct from National Hindi Diwas** celebrated on **14th Sept**. to mark adoption of **Hindi in Devanagari script** as **official language** in **1949** by the **Constituent Assembly**.

- **Hindi Language:** Name from Persian **"Hind"** (land of Indus River).
  - Evolved from **Sanskrit → Prakrit & Apabhramsa → Khari Boli** (forming direct foundation), with **Persian & Arabic** influences.
  - **Devanagari script** took shape in **11th century**.
  - One of **India's official languages**; also spoken in **Mauritius, Fiji, Suriname, Guyana, Trinidad & Tobago, Nepal**.
  - **Third most spoken language globally** (~600 million speakers) after English & Chinese.
  - Recognised as an official language by **UNESCO in 1948**, used in **UNGA in 1949**.

Constitutional Provisions Related to the Hindi Language	
Article 343	**Hindi in Devanagari script** declared **official language of the Union**; **English** allowed for continued official use.
Article 344	Provides for a **Language Commission** & **Parliamentary Committee** to review and promote **progressive use of Hindi**.
Article 351	Union to **promote & develop Hindi**, enriching it with **Sanskrit and other Indian languages**.
Article 120	Permits the use of **Hindi or English in Parliament**; other languages allowed with permission of the Chair.
Article 210	State Legislature may use **Hindi, English, or State's official language**.

Pravasi Bharatiya Divas (PBD)

On PBD (9th Jan 2025), the PM lauded the global Indian diaspora as a key bridge linking India with the world.

- **About**: Flagship **MEA outreach programme** to engage the **Indian diaspora**, held **biennially** since **2015** with theme-based conventions.
- **Significance**: Marks **Gandhi's return in 1915 from South Africa**, symbolising the diaspora's role in **freedom struggle** & **nation-building**.
- **Evolution**: PBD convention was instituted in **2003** under **PM Atal Bihari Vajpayee** for structured diaspora engagement.
- **Objectives**: Recognise **diaspora contributions**, promote **India's image**, support **national causes**, and enable **dialogue with the Government**.
- **PBD 2025 (18th Edition)**: Held in **Bhubaneswar, Odisha**; featured **Pravasi Bharatiya Express** under the **Pravasi Teertha Darshan Yojana**, **Mandvi–Muscat migration** exhibit, and focus on **Girmitiya legacy** with proposed database.
- **Honour**: **Pravasi Bharatiya Samman Award (PBSA)** – highest honour for **NRIs, OCIs, diaspora organisations** for contributions to India's image & community welfare.

Ayush Export Promotion Council

Ayush EXCIL observed its **4th Establishment Anniversary** on 4th Jan 2026.

- **About: Nodal Export Promotion Council** for **AYUSH sector.** Launched in **2022** during **Global AYUSH Investment & Innovation Summit**, Gandhinagar
  - Works with **Ministry of AYUSH**; supported by **Ministry of Commerce & Industry**
- **Functions:** Exporter capacity building, regulatory compliance, B2B meetings, international exhibitions, seminars, overseas outreach programmes
- **Coverage:** Exports of **Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa, Homeopathy**, herbal products, traditional healthcare services
- **Ayush Quality Mark:** Anchors **Ayush Quality Mark** programme for global quality assurance
- **Trade Agreement Integration**: India–Oman CEPA; India–New Zealand FTA. Annexes on **traditional medicine & health services**
- **Export Growth**: **6.11% increase** in AYUSH & herbal product exports; From **USD 649.2 million (2023–24)** to **USD 688.89 million (2024–25)**

India's Braille Ecosystem

World Braille Day (4th Jan) promotes **Braille** as a **tactile literacy system** ensuring **education**, **dignity**, **independence**, and **equal participation** for the **visually disabled**.

- **Braille**: **Tactile reading/writing system** using **6-dot cells**; not a language but a **code** adaptable to all languages.
- **Introduced in India**: Late **19th century**; vital for **literacy and empowerment** of **50.32 lakh** visually impaired persons (Census 2011).
- **Legal Foundation: Rights of Persons with Disabilities Act, 2016** ensures **accessibility**, **inclusive education**, and **Braille/assistive devices**.
- **Government Initiatives:**
  - **Bharati Braille (2025)**: Unified **Unicode-mapped Braille script** across Indian languages.
  - **Sugamya Bharat Abhiyan** & **Sugamya Pustakalaya**: Accessible **public infrastructure** and **digital learning resources**.
  - **NIEPVD**: Released **Draft Bharati Braille 2.1 (2026)** for **tech upgrade** and **digital compatibility**.
- **International Commitment:** India, as part of **UNCRPD**, ensures **access to education and info** in **Braille and accessible formats**.

BIS Foundation Day 2026

BIS celebrated its **79th Foundation Day** on 6th Jan 2026.

- **About: Statutory Body** under Department of Consumer Affairs, Ministry of Consumer Affairs, Food & Public Distribution
  - **Origin:** Established as Indian Standards Institution (ISI) on 6th Jan 1947
  - **Legal Basis:** BIS Act, 2016
  - **Mandate**: Standardisation, certification, hallmarking
- **Vision:** Transform **"Made in India"** into **"Trusted by India and Trusted by the World"**; focus on **digital & globally harmonised quality ecosystem**

Key Reforms

- **Annual Minimum Marking Fee Concessions**: **80%** for Micro; **50%** for Small; **20%** for Medium industries
- **Relaxation** in **in-house lab requirements** for large industries
- **Silver HUID Hallmarking Scheme**: HUID-based marking mandatory; Silver hallmarking voluntary

- **Key Initiatives:**
  - **BIS Standardisation Portal**: Digital platform for standards formulation, review, expert collaboration
  - **SHINE** (**Standards Help Inform & Nurture Empowered Women**) **Scheme**: Women-centric quality awareness via **SHGs** & **NGOs**
  - **BIS–SAKSHAM** (**Scheme for Acknowledging Knowledge, Skills and High-impact Merit**): Annual excellence recognition framework
  - **Standards National Action Plan** (**SNAP**) **2022–27**: Roadmap for standardisation in **emerging tech, sustainability, climate action**
- **Achievement: 94% Indian standards** harmonised with International Organisation for Standardisation (ISO) & International Electrotechnical Commission (IEC) standards

Birth Anniversary of Savitribai Phule

Union Home and Cooperation Minister paid tribute to **Savitribai Phule** on her **194th birth anniversary** on **3rd Jan 2026**.

Savitribai Phule

- Born on **3rd Jan 1831**, **Satara, Maharashtra**; **married at 9** to **Jyotiba Phule**, who educated her.
- India's **first female teacher**; pioneering **feminist-social reformer** from **Mali community**.

Contributions

- **Social Mobilisation for Women's Rights: 1848**– founded India's first **Indian-run girls' school** at **Bhide Wada, Pune**.
  - Founded **Native Female School**, Pune & **Society for Promoting Education of Mahars, Mangs, etc. in the 1850s**
  - **1852**– founded **Mahila Seva Mandal**; advocated **women's rights**, **widow remarriage**, opposed **child marriage**.
  - **1863**– Jyotirao & Savitribai Phule founded **Balhatya Pratibandhak Griha** to **prevent female infanticide** and support pregnant, exploited widows and their children.
- **Champion of Caste & Gender Equality**: Opened schools for **marginalised communities**; led first **Satyashodhak marriage** (dowry-free, priest-free & non-Brahminical).
- **Literary Works**: Authored **Kavya Phule (1854)** & **Bavan Kashi Subodh Ratnakar (1892)**.
- **Martyrdom**: Died in **1897**

Birth Anniversary of Rani Velu Nachiyar

PM paid tribute to **Rani Velu Nachiyar** on her **296th birth anniversary** on **3rd Jan 2026**.

- **About:** Born on **3rd Jan 1730**, **Ramnad Kingdom** of Ramanathapuram (present-day **Tamil Nadu)**; known as **'*Veeramangai*'**.
- **Pioneer of Anti-Colonial Resistance:** First Indian queen to launch an organised **armed resistance** against **British East India Company**.
- **Ruler of Sivaganga:** Became **Ruler of Sivaganga** in **1780** after her husband's (**Muthuvaduganathaperiya**) death; ruled till **1790**, restoring **indigenous political authority**. Died on **25th Dec 1796**.
- **Military Innovations:** Deployed **India's first recorded human bomb** against colonial forces; organised the **first trained women's military unit** in late 18th century.
- **Expertise: A polyglot ruler,** fluent in **French, English, Urdu**, reflecting her intellectual depth & diplomatic acumen

Birth Anniversary of Pandit Madan Mohan Malaviya

The **birth anniversary** of **Bharat Ratna Mahamana Pandit Madan Mohan Malaviya** is observed on **25th December (**Born in **1861** in Prayagraj**)**.

- **Freedom Struggle**: Participated in Salt Satyagraha, Civil Disobedience, and was President of the Indian National Congress four times.
  - **Member of Imperial Legislative Council** for 11 years, introduced Devanagari script in British-Indian courts, popularized **Satyameva Jayate**.
- **Educational Contributions**: Founded Banaras Hindu University (BHU) in 1916, promoted youth scouting.
- **Social Reforms**: Ended the indenture system, fought for Indians' rights, and defended Chauri Chaura accused.
- **Environmental Efforts**: Established Ganga Mahasabha in 1905 to protect the Ganga.

- **Journalism**: Founded *Abhyudaya*, *Maryada*, and *Leader*, served as Chairman of Hindustan Times.
- **Recognition**: Bharat Ratna (2014), Mahamana Express (2016), praised by Gandhi as **Devata Purush** (man of God), Tagore (titled him **Mahamana**), and Radhakrishnan (described him as a Karmayogi).

National Mathematics Day

It is observed on **22nd Dec** to mark the birth anniversary of **Srinivasa Ramanujan**. Instituted in **2011**; **2012** declared **National Mathematics Year**.

- **Objective:** Promote **India's mathematical heritage**.
- **Srinivasa Ramanujan:** Born **1887**, **Erode, Tamil Nadu**; died **1920**. His notes are known as **Ramanujan's Frayed Notebooks**.
  - Elected **Fellow of the Royal Society (1918) – 2nd Indian** & **1st Indian Fellow of Trinity College, Cambridge**. Collaborated with **G. H. Hardy**.
- **Major Contributions Ramanujan (Hardy–Ramanujan) Number: 1729 (**Smallest number as sum of two cubes in two ways).
  - **Infinite series for π** → basis of modern high-precision π computation.
  - **Circle Method** (with Hardy) → later used in **Waring's conjecture**.
  - **Mock Theta Functions** → vital in modular forms & **black hole physics**.
  - **Ramanujan Theta Function** → applications in **string theory**.
  - Contributions to **number theory, infinite series, continued fractions, Riemann zeta function**.
- **Legacy: SASTRA Ramanujan Prize (since 2005)**: For mathematicians **≤32 years**.
  - **2025 winner**: **Alexander Smith** (work on **congruent number problems**).

Subhash Chandra Bose

Parakram Diwas was observed to commemorate the birth anniversary of **Subhash Chandra Bose.**

Parakram Diwas

- Celebrated annually on 23rd January to honor Netaji Subhash Chandra Bose's birth anniversary.
- **Parakram Diwas 2026**: Marks the 129th birth anniversary of Netaji.
- **Past Celebrations**:
  - **2021**: First celebration at Kolkata's Victoria Memorial.
  - **2022**: Hologram statue of Netaji unveiled at India Gate.
  - **2023**: 21 islands in Andaman & Nicobar named after Param Vir Chakra awardees.
  - **2024**: Inaugurated at Red Fort, Delhi, marking INA trials.
  - **2025**: Held at Barabati Fort, Cuttack, marking Netaji's birthplace
- **Significance**: Honors Netaji's courage, valor, and leadership of the INA. Symbolizes his iconic slogan, "Give me blood, and I will give you freedom," inspiring India's fight for independence.

Facts About SC Bose

- **Early Life**: Born in 1897 in Cuttack, Odisha. Raised in a family valuing English education and Hindu customs. Attended Ravenshaw Collegiate School and Presidency College, Calcutta.
- **Ideological Foundations**: Influenced by Ramakrishna Paramhansa, Swami Vivekananda, and Bankim Chandra Chatterjee. Developed a blend of Western and Indian cultures focused on India's freedom.
- **Early Political Involvement**: Passed the Indian Civil Service exam in 1920 but resigned in 1921 to join the freedom struggle. Met Gandhi in 1921 but disagreed with his non-violent approach.
- **Disagreements with Congress**: Elected Congress president in 1938, opposed Indian federation under the 1935 Act. Re-elected in 1939, & resigned and proposed the Forward Bloc.
- **Death**: After Japan's surrender in 1945, Bose allegedly died in a plane crash while en route to China, with some reports suggesting he survived the crash but was severely burned.
- **Legacy**: Bose's call for complete independence and his leadership in the INA made him a key figure in India's freedom struggle.

Rash Behari Bose

Union Home Minister paid tribute to **Rash Behari Bose** on his death anniversary (21st Jan, 2025).

- **Rash Behari Bose**: Born on **25th May 1886 in Bardhaman, Bengal**, he was a revolutionary nationalist who globalized the freedom struggle.
- **Revolutionary Activities**: Prominent in the A**lipore Bomb Case (1908)** & the 1912 plot **to assassinate Viceroy Charles Hardinge**. In 1913, he met Jatin Mukherjee (Bagha Jatin) and joined the **Ghadar Movement** to overthrow British rule.
  - In 1924, **in Japan, he met Subhas Chandra Bose**, facilitated by Veer Savarkar.
- **Escape to Japan**: Fleeing British intelligence, he left India in 1915 and took refuge in Japan. In 1942, he **founded the Indian Independence League (IIL)** to mobilize Indians against British rule.
- **Azad Hind Fauj**: In 1942, he formed the **Azad Hind Fauj & handed over its leadership to Subhas Chandra Bose**, recognizing his leadership potential.

Birth Anniversary of Mannathu Padmanabhan

PM paid tribute to **Mannathu Padmanabhan (2nd Jan 1878 – 25th Feb 1970)** on his birth anniversary, recalling his role in **social reform, equality, and nation-building**.

- **Mannathu Padmanabhan**: Eminent **social reformer from Kerala**, known for challenging **caste discrimination** & **social exclusion**.
  - Founded **Nair Service Society (NSS) in 1914**, institutionalising efforts in education, social reform, and community upliftment.
- **Influenced by Gandhian Thought**: Adopted **Satyagraha** as a tool for **social justice**.
- **Freedom Fighter**: Active in **Indian national movement esp. in Travancore**; imprisoned for his role.
- **Champion of Anti-Untouchability Movements:** Led **Savarnajatha Satyagraha**, supporting **temple access** for oppressed communities—contributed to **Temple Entry Proclamation**.
  - Participated in **Vaikom (1924)** & **Guruvayoor (1931) Satyagraha**, central to the anti-untouchability movement.
  - Advocated **peace, unity**, and **inter-community harmony**, reinforcing Kerala's **pluralistic ethos**.
- **Awards & Recognition**: Received **Padma Bhushan (1966)**; titled **Bharata Kesari** by the President.

DEFENCE & SECURITY

Akash-NG Missile

DRDO completed **User Evaluation Trials (UET)** of **Akash-NG (Next Generation).** Clears path for its induction into Indian Air Force (IAF).

Akash-NG

- **About:** NG **surface-to-air missile (SAM)** for **IAF**; intercepts **high-speed, manoeuvring, low radar cross-section (RCS)** targets (aircraft, drones, cruise missiles), faster response time
- **Range**: Up to **70 km**; **Altitude**: Beyond **20 km**; **Speed**: **Mach 2.5**; **Kill probability**: ~**90%**
- **Development and Production: Indigenously developed** by **DRDO** (96% indigenous); produced by **Bharat Dynamics Limited (BDL) & Bharat Electronics Limited (BEL)**
- **Canisterised Design**: Sealed container launch for **better transport, shelf life, and readiness**
- **Tech Features**: **Electronic Counter-Counter Measures (ECCM)** capabilities; Indigenous RF seeker; Dual-pulse solid rocket motor; Homegrown radars & command-and-control systems
- **Operational Capabilities**: Can be launched from **mobile platforms**; engages **multiple targets simultaneously.** Counter threats at low altitude, near-boundary & high-altitude long-range scenarios.
- **Strategic Role**: **Akash inducted**– IAF (2014), Army (2015); enhances layered air defence, supports Atmanirbhar Bharat
- **Exports of Akash Missile**: Approved in **Dec 2020**; interest from **Armenia, Philippines, Vietnam, Egypt, Brazil. Export version** differs from Indian Armed Forces variant
- **Upgrades Over Original Akash**: **Weight**: **350 kg** (vs 700 kg); **Range**: Up to **70 km** (vs ~30 km); **Propulsion**: Solid rocket motor replaces ramjet; Improved **mobility** and **survivability**
- **Akash Prime** (upgraded version of the Akash missile): Same range; features an **indigenous active RF seeker** for improved accuracy

Integrated Guided Missile Development Programme (IGMDP)

- **IGMDP (1983–2012)** launched under **A. P. J. Abdul Kalam** for **self-reliance in missile technology.** Developed **5 missiles (P-A-T-N-A)**:
  - **Prithvi** – short-range surface-to-surface; **Akash** – medium-range surface-to-air; **Trishul** – short-range surface-to-air; **Nag** – third-generation anti-tank missile; **Agni-I**
- **Agni Missile Programme**: Separated from IGMDP due to **strategic importance**; expanded independently for **strategic deterrence**

ICGS Samudra Pratap

ICGS Samudra Pratap (Majesty of the Seas), India's first indigenously built pollution control vessel, was commissioned; it will operate under Coast Guard Region (West) from Kochi.

- **Built by**: Goa Shipyard Limited with 60%+ indigenous content
- **Type**: Largest ship in Indian Coast Guard (ICG) fleet
- **Speed & Endurance**: **22+ knots** speed, **6,000 nautical miles** endurance
- **Multi-role Functions**: Pollution response & oil spill containment
  - Firefighting, maritime safety, coastal patrol, surveillance
- **Key Features**: Advanced pollution detection systems; Specialised response boats; Modern firefighting equipment; Aviation facilities with helicopter hangar.

Suryastra Rocket Launcher

Indian Army signed an **emergency procurement contract** with **NIBE Limited** for the indigenous **Suryastra long-range rocket launcher**, developed with **Elbit Systems**.

- **Emergency Procurement** powers extended till **15th Jan 2026 by the Defence Acquisition Council**.

Suryastra

- **About:** India's **first Made in India**, multi-calibre, long-range rocket launcher by **NIBE Ltd** in collaboration with **Israel's Elbit Systems**.
  - Uses **Elbit's PULS architecture** for **precision surface-to-surface strikes** up to **150 km & 300 km**, marking India's **first indigenous 300 km precision rocket launcher**.
  - **Accuracy– <5m circular error probable (CEP)** in trials; **fire loitering munitions** up to 100 km
- **Features**:
  - **Multi-Calibre Capability**: Fires various rockets and guided munitions; boosts **flexibility**, cuts **logistics**.
  - **High Tactical Mobility**: Mounted on **BEML high mobility vehicle**; enables **rapid deployment**, **shoot-and-scoot operations**, operates across **diverse terrains**.

Pralay Missile

DRDO successfully conducted a **salvo launch of two indigenously Pralay missiles** from the same launcher off **Odisha coast**, as part of ongoing missile tests including **Pinaka Long Range Guided Rocket** and **K-4 submarine-launched ballistic missile**, highlighting India's missile modernisation drive.

- **Pralay Missile**: Solid-propellant, surface-to-surface, **short-range** (150–500 km)**, quasi-ballistic** missile & **500–1,000 kg payload**.
- **Warhead & Launch**: Can carry **multiple warhead types** against various targets; launched from a **mobile launcher**.
- **Guidance & Navigation**: Uses **Inertial Navigation System (INS)** with **Radio Frequency (RF) seeker** for high precision & in-flight manoeuvrability.
- **Operational Edge**: Low-altitude, manoeuvring trajectory makes i**nterception more difficult compared to ballistic missiles**.

India Signs Major Defence Contracts

India signed ₹4,666 crore defence contracts for modern infantry weapons and advanced naval torpedoes, boosting operational readiness and indigenisation.

- **Over 4.25 lakh Close Quarter Battle Carbines** to be procured from **Bharat Forge Ltd** & **PLR Systems Pvt Ltd** for Indian Army & Navy; to replace legacy rifles.
  - **Features: compact design**, **high rate of fire**, **enhanced lethality** for urban and confined-space combat.
- **48 heavyweight torpedoes** from **WASS Submarine Systems (Italy)** for **Kalvari-class (Project-75)** submarines. Delivery: **2028–2030**; boosts **underwater warfare** capability.
- In **FY 2025–26**, **₹1.82 lakh crore** capital acquisition contracts signed, showing focus on **defence modernisation** & **indigenisation**.

Pinaka Long Range Guided Rocket (LRGR 120)

India successfully test-fired the **LRGR 120 (range ~120 km)**, featuring **inertial navigation**, **mid-course updates**, and **terminal guidance**. It is **launch-compatible with existing Pinaka systems**.

Guided Pinaka Missile System

- **Developer:** DRDO (ARDE)
- **Type:** Indigenous multi-barrel rocket launcher
- **Named after:** Bow of **Lord Shiva**
- **Features:** High mobility, quick deployment, precision strike, intense firepower (**12 rockets per salvo)**
- **Variants:**
  - **Pinaka Mk I:** Up to 40 km
  - **Pinaka Mk II:** 70–80 km, extendable to 120 km, future 300 km

INSV Kaundinya Reached Oman

INSV Kaundinya reached Muscat's Port after completing its **voyage** from **Porbandar** (Gujarat).

INSV Kaundinya

- **About**: India's first 'stitched ship' built using the ancient Tankai shipbuilding method, aimed at reviving a 2000-year-old indigenous technique.
- **Tankai Method**: Uses stitched planks with coir ropes, no metal fasteners, making ships flexible and rust-proof. Employs coir, dammar resin, and animal fat for waterproofing.
- **Design & Inspiration**: Modeled after 5th-century Ajanta cave paintings, inspired by the Yuktikalpataru text and foreign travelers' accounts. Features motifs like Gandabherunda, Sun symbols, and a Harappan-style anchor.
- **Historical Significance**: Named after Kaundinya, a legendary 1st-century mariner who co-founded the Kingdom of Funan (modern Cambodia).

INS Sagardhwani Flags Off for Sagar Maitri V

Indian Navy recently flagged off **INS Sagardhwani** from Kochi for the **5th edition of the Sagar Maitri (SM-5) mission**.

- **SM:** A joint programme of the Indian Navy & DRDO, aligned with India's MAHASAGAR vision. Its scientific component, **MAITRI**, focuses on joint research & capacity building with partner countries.
- **Objectives:** Aims to collect oceanographic & acoustic data and strengthen scientific cooperation among Indian Ocean Rim (IOR) countries, **enhancing Underwater Domain Awareness (UDA)** for maritime security.

- **SM-5 Mission:** INS Sagardhwani will retrace the historic routes of INS Kistna from the **1962–65 International Indian Ocean Expedition**, reviving collaborative ocean research.
- **INS Sagardhwani:** A marine acoustic research vessel designed by NPOL, Kochi & built by GRSE, Kolkata, it has been **India's primary platform for oceanographic observation** and maritime research since its commissioning in July 1994.

Lokayan 26

INS Sudarshini began the **Lokayan 26 expedition on 20th Jan 2026**, showcasing India's maritime heritage & Vasudhaiva Kutumbakam.

- **About:** Lokayan 26 is a **10-month transoceanic voyage covering 22,000+ nautical miles**, visiting 18 ports in 13 countries. It includes maritime activities with host nations, advancing the MAHASAGAR vision.
- **Engagements:** INS Sudarshini will participate in tall ship events– **Escale à Sète, France & SAIL 250, New York, USA.**
- **Training & Capacity Building:** 200+ Indian Navy & Coast Guard trainees will undergo intensive sail training, gaining experience in navigation, seamanship & interactions with other navies.
- **INS Sudarshini:** Second sail training ship of the Indian Navy, after **INS Tarangini**, has sailed 1,40,000+ nautical miles, symbolizing India's maritime professionalism & goodwill.

SUMMITS & CONFERENCES

Commonwealth Conference of Speakers and Presiding Officers

PM inaugurated the **28th CSPOC** in the **Central Hall** (formerly Chamber of Princes) of the **Old Parliament**.

- **India hosts CSPOC** after **16 years**; earlier in **1971, 1986, 2010**. Held **biennially**; **Standing Committee** meets in alternate years.
- Objectives– Uphold **impartiality** of presiding officers. Advance **parliamentary democracy knowledge**. Strengthen **parliamentary institutions**.

Commonwealth

- **About: 56-member** voluntary association of **equal, independent countries**, mostly former **British Empire** territories.
  - As of **Jan 2026**, **15 countries** (e.g., **Canada**, **New Zealand**) recognise **King Charles III** as head of state. **Barbados** became a **republic** in **2021**.
- **Genesis:** Origin: **1926 Imperial Conference → 1949 London Declaration** (modern commonwealth; allowed republics & non-British monarchies). **Gabon** & **Togo** joined in **2022**.
- **India's Role: Largest** member by **population**. **4th largest financial contributor**. Hosted **1983 Summit**, **2010 Commonwealth Games**, and to host **2030 Games**.
- **Values & Governance:** Guided by **Commonwealth Charter**. Promotes **development**, **democracy** & **peace**. Supported by **Commonwealth Secretariat**, **London**.

Chamber of Princes

- **Location**: Inside **Old Parliament House** (**Samvidhan Sadan**); also called **Narendra Mandal**, later **Library Hall**.
- **Established**: **1920** under **Government of India Act, 1919**.
- **Functioned**: **1921–1947** as a **consultative body** for **princely states**, presided over by the **Viceroy**.
- **Post-Independence**: Hosted **Supreme Court** (Jan 1950 – Aug 1958). Earlier seat of **Federal Court** (1937–1950).

Quadrilateral Security Dialogue

Ambassadors of QUAD countries (India, US, Japan & Australia) held a **rare publicised meeting in Beijing**; described their ties as **"stable and strong"**.

- **About: QUAD** began as a **humanitarian mechanism post-2004 Indian Ocean tsunami**. Proposed in **2007 by Japan's PM Shinzo Abe**, it went inactive after **Australia's 2008 exit**, revived in **2017** amid China's Indo-Pacific assertiveness.
- **Focus:** Regional security, economic cooperation, maritime safety, infrastructure, supply chain resilience (not being a formal military alliance).
- **Vision: 2021 Leaders' Summit** adopted **"Spirit of the Quad"** – vision for a **free, open, inclusive Indo-Pacific** based on **democracy, rule of law & freedom from coercion.**
- **Key QUAD Initiatives: QUAD At Sea Ship Observer Mission** (Wilmington Declaration 2024); **Malabar Exercise**– Annual **naval drill**
- **Quad Plus**: Involves **South Korea, New Zealand, Vietnam**
- **China's Opposition**: Labels Quad as **"bloc politics like NATO"**; opposes targeted cooperation.
  - **No mutual defence treaty**; focuses on **strategic coordination, maritime security, economic cooperation, rules-based order, not collective military defence.**

PLACES IN NEWS

Valley of Flowers National Park

Uttarakhand has sought help from the Indian Air Force (IAF) to control a **forest fire** in the Valley of Flowers National Park.

- **Location:** Western Himalayas, **Chamoli, Uttarakhand.** Forms one of the two **core zones** of **Nanda Devi Biosphere Reserve.**
- **Status**: National Park (1982), **UNESCO World Heritage Site** (2005)

- **River**: **Pushpawati River** flows through it
- **Ecology**: Alpine ecosystem (3000–5000 m), glacial barriers, transition zone b/w **Zanskar & Greater Himalayan ranges**
- **Known for**: Alpine meadows, rare flora, diverse fauna
  - **Flora**: 500+ species of **endemic & alpine flowers.** Key species– **Brahma Kamal (state flower)**, **blue Himalayan poppy**, **medicinal plants**
  - **Fauna**: Rare/endangered species like **snow leopard**, **Asiatic black bear**, **musk deer**, **brown bear**, **Himalayan monal bird**
- **Cultural Significance**: Linked to **Bhotia tribe**; practice **transhumance** b/w high-altitude **summer pastures** (**Bugyals**) & winter settlements

India–Germany Joint Declaration of Intent (JDI)

India & Germany signed a **JDI** on **Telecommunications Cooperation**, enhancing ties in **digital technologies** and the **IT sector** during the German Chancellor's visit to India.

- **Framework**: Structured bilateral cooperation in **telecom & ICTs**
- **Focus Areas**: Emerging & future digital technologies; Policy & regulatory best practices; Promotion of manufacturing & ease of doing business; Innovation via govt, industry, academia, research
- **Implementation Mechanism**: Regular consultations, **annual high-level meetings**, creation of **working groups.** Joint work plan to align shared priorities
- **Indo-German Digital Dialogue Work Plan (2026–27)**: Covers **AI**, **data governance**, **telecom**, **Industry 4.0**
- **Global Coordination**: Cooperation in **international fora** on **telecom governance** & **digital development**

Polar Silk Road

Recent US remarks on Greenland have renewed focus on **China's Arctic ambitions**, though experts note **China's military presence in the region remains limited**.

Polar Silk Road Initiative

- **Part of**: Extension of **China's BRI into the Arctic**
- **Aim**: Develop **shipping routes**, access **resources**, boost **geopolitical influence** amid melting Arctic ice
- **Launched**: **2017**, China-Russia joint initiative
- **2018 Arctic Policy**: China termed itself **"near-Arctic state"**; focus on shipping, resources, science; China's 2030 goal is to be a **"polar great power"**,
- **Main Route**: **Northern Sea Route** (Russia's Arctic coast) – up to **40% shorter** Asia–Europe link. **Secondary**– **Northwest Passage** (Canada's coast)
- **Strategic Goals**: Boost **energy security**, bypass **Suez Canal**, expand **geopolitical influence** via **Russia partnership**

Kaziranga Elevated Corridor and Bagurumba Dwhou

PM in Assam attended **Bagurumba Dwhou 2026 in Guwahati**, laid foundation for **Kaziranga Elevated Corridor**, and flagged off two Amrit Bharat Express trains virtually.

- **Bagurumba Dwhou**: Cultural festival in **Guwahati** celebrating **Bodo community heritage**.
  - **Bagurumba dance**– Bodo folk dance by **women**, symbolising **nature, peace, and joy**; linked to **Bwisagu (Bodo New Year)**.
- **Kaziranga Elevated Corridor**: Ensures **safe wildlife movement**, reduces **animal-vehicle collisions**, improves **road safety** and **connectivity** to **Upper Assam**.
  - Part of **NH-715 four-laning** (Kaliabor–Numaligarh, 86.675 km); includes **34.5 km elevated stretch** with bypasses at **Jakhalabandha** & **Bokakhat**.
- **Rail Connectivity Boost: Kamakhya–Rohtak** & **Dibrugarh–Gomti Nagar** Amrit Bharat Express trains to improve **Northeast–North India connectivity**, **reduce travel time**, and offer **modern amenities**.

Climate Records Unearthed From Kondagai Lake

Researchers recently reconstructed a detailed inland climate record using sediment cores from **Kondagai Lake, Sivaganga**, a region sensitive to the **Northeast Monsoon**.

- **Key Findings:**
  - Reconstructed **4,500 years** of Late Holocene climate history from **Kondagai Lake** using **stable isotopes, pollen analysis, grain size** & **radiocarbon dating**.

- Identified **3 major climatic phases**: **4.2 ka arid event**, **3.2 ka dry phase**, and the **Roman Warm Period**; linked to **monsoon variability, lake hydrology**, and **human activity**.
- Provides baseline for **Northeast Monsoon** behaviour, supports **flood risk mapping** in **Vaigai basin**, aids **water resource management**, and guides wetland restoration & biodiversity conservation.

- **Holocene Epoch**: Current geological epoch, began ~**11,700 years ago**, marked by **stable, warm climate** & **human civilisation rise**; part of **Quaternary Period**, after **Pleistocene Epoch**.
- **Kondagai Lake**: Inland lake in **Sivaganga, Tamil Nadu**, near **Keeladi** (Sangam-era site); in an **ancient settlement zone**, offering insights into **monsoon variability**, **ecosystem response**, and **human–environment interaction**.

World's First Repository of Mountain Ice Cores

Scientists have launched the **first global mountain ice core repository** at **Concordia Research Station**, Antarctica Plateau, to **preserve climate records** at risk from **glacier loss due to global warming**.

- Known as the **Ice Memory Sanctuary** & developed by **Ice Memory Foundation** (France, Italy, Switzerland).
- Ice vault is a cave carved into **compacted snow**, maintained at around **–52°C**, ensuring **long-term preservation** of **mountain ice cores** for future research.
- **First cores stored** from **Mont Blanc (France)** & **Grand Combin massif (Switzerland)**; transported to Antarctica **50+ days** via refrigerated ships and aircraft.
- Samples enable study of **historical climate change**, atmospheric composition, pollution, and change pace/causes.
- **Ice Memory project** (launched **2015**) has drilled cores from **10 glacier sites**; plans to **expand storage** and establish an **international convention** over the next decade.

China's Entry in Spice Market

China has started **cultivating & exporting chillies and cumin** at **lower, competitive prices**, posing a threat to **India's dominance** in global **spice exports**.

- **Chillies**: 25%+ of India's **spice export volume & value**.
- **Cumin**: High-demand, high-value spice, esp. in **West Asia**, **Europe**, and the **Americas** for **food processing** & **culinary use**.

- **Export Performance (2024–25): Chilli powder exports** up **35%** to **80.6 million kg**.
  - **Total chilli exports** up **19%** to **700,000+ tonnes** (vs 15% in 2023–24).
- **Price Pressure: Chilli export earnings** down **11%** due to global **price pressure**. **Cumin exports** up **39%** to **2.29 lakh tonnes** (from **1.65 lakh tonnes** in 2023–24).
- **China's Strategy:** Focus on **paprika** (colour, mild flavour) & **Teja chilli** (high pungency, pharma use). **Imports raw Indian chillies**, processes domestically, and **re-exports** finished products **at competitive prices**.
- **Impact on Indian Agriculture: Chilli acreage** down **~35%** in **Andhra Pradesh**, **Telangana** & **Karnataka**. **Cumin cultivation** area down **7–8%**.
  - Decline due to **weather-related crop losses** & **low export prices**. Farmers discouraged from sowing during **kharif season**.

Japan's Deep-Sea Rare Earth Mining Initiative

Japan launched the world's **first experimental deep-sea rare earth extraction** at ~**6,000 metres depth** using its deep-sea scientific drilling vessel Chikyu. Japan seeks to **cut dependence on China**, which controls **~1/3rd of rare-earth mining** & **90%+ of refining**.

- **Minami Torishima:** Conducted near **Minami Torishima**, a remote island located within Japan's **EEZ** in the **Pacific Ocean**.
  - **Reserves**: **16+ million tonnes** of rare-earths. **Dysprosium** – enough for **730 years; Yttrium**– enough for **780 years. Uses**– critical for EVs, electronics, wind turbines, defence systems.
- **Deep Sea Mining**: Extraction of **minerals from ocean depths >200 metres**, covering **2/3rd of world's seafloor**.
  - **Methods**: Polymetallic nodule collection; Mining seafloor sulphide deposits; Cobalt-rich crust stripping
  - **Concerns**: **Threat to marine ecosystems & biodiversity**; **ISA** is developing **global regulatory framework**.

Shaksgam Valley Dispute

India rejected China's CPEC projects in Shaksgam Valley, calling them **illegal & invalid**, and reaffirmed the valley as an **inseparable part of India**.

- **Shaksgam Valley (Trans-Karakoram Tract)**: High-altitude region in the eastern Karakoram mountain range. Lies in north of **Siachen Glacier**, part of **POK (Hunza-Gilgit region)**, bordering **China's Xinjiang** to the north.
- **History**: Originally part of **J&K**; **ceded by Pakistan to China** under the **1963 Sino-Pakistan Agreement**, which **India rejects as illegal**, asserting Pakistan had **no authority** to transfer the territory.
- **Current Administration**: Administered by **China** as part of **Xinjiang Uyghur Autonomous Region**, with **CPEC-linked infrastructure** development.

- **CPEC** aims to connect **Gwadar Port (Pakistan)** to **Kashgar (Xinjiang)**, bypassing the **Malacca Strait**.

- **Strategic & Military Significance**: Near **Siachen Glacier** (monitors Pakistani positions) and **Karakoram Pass** (tracks Chinese military movements).

Turkman Gate

Turkman Gate is in news due to a violent demolition drive, evoking memories of the Emergency-era (1975–77) forced demolitions and coercive sterilisation, later probed by the Shah Commission.

- **Turkman Gate**: One of **14 gates** of **Shahjahanabad** (built ~1650 AD by Shah Jahan), named after **Sufi saint Shah Turkman Bayabani**, whose **mausoleum** is nearby.
- **Historical Significance**: Predates Mughal Delhi; part of Delhi's **Sufi heritage**. **Razia Sultan's grave** lies close to the saint's shrine.
- **Location**: On route linking **Fatehpuri Masjid – Hauz Qazi – old Yamuna belt**; now in **Old Delhi**, near **Jama Masjid**.
- **Significance**: Served defensive and commercial roles; survived **1857 Revolt**, **colonial demolitions of city walls**, **partition**, and **commercial changes**.

Popocatépetl Volcano

Mexico has created the **first 3D seismic image** of **Popocatépetl volcano's internal structure** to enhance understanding of **magma movement** and **eruption behaviour**.

- **Popocatépetl Volcano (Smoking Mountain):** A **stratovolcano** on the **México–Puebla border**.
  - Located on the **Trans-Mexican Volcanic Belt**, formed by **Cocos Plate–North American Plate subduction**.
  - **Mexico's second-highest volcano** after Pico de Orizaba.
  - One of **Mexico's most active volcanoes**, with eruptions recorded since **1519**.
  - Part of the **Pacific Ring of Fire (**holds **~75% of active volcanoes** and **~90% of earthquakes** globally).

Israel's Recognition of Somaliland

Israel has become the first country to formally recognise **Somaliland (not a UN-recognised state)** as an independent state, **citing the Abraham Accords** and efforts to normalise ties with non-traditional partners.

Somaliland

- **Historical Background: British colony** in **1920**; gained independence as the State of Somaliland in **1960**, merged with **Italian Somaliland** to form **Somalia**.

  - Declared independence in **1991** after **Siad Barre's** fall and human-rights abuses against the **Isaaq clan** (dominant in Somaliland).
  - Functions with **de facto autonomy** (currency, passports, police, **capital: Hargeisa**); lacked international recognition till now.
- **Strategic Location:** Lies in the **Horn of Africa**, an **East African peninsula** extending into the **Gulf of Aden, Somali Sea & Guardafui Channel**, comprising **Djibouti, Eritrea, Ethiopia, and Somalia**.
  - **Bab el-Mandeb Strait** near **Djibouti & Eritrea**, linking the **Red Sea** to the **Indian Ocean**, key global shipping route.
- **Strategic for Israel**: potential forward base for **intelligence**, **logistics**, **counter-Houthi operations**, and **Palestinian resettlement**; **UAE** runs **military port and airstrip** in **Berbera (port)**.

Bulgaria 21st Member of the Eurozone

Bulgaria officially adopted the euro, **becoming the 21st Eurozone member** and replacing the lev, nearly 20 years after joining the EU.

- **Rationale**:
  - To boost **trade, market transparency, investment in Bulgaria** (EU's poorest member state); deepen **EU integration**; reduce **Russian economic influence**.
- **Eurozone**:
  - Formed under **Maastricht Treaty (1992)** (also known as the Treaty on EU) enabling common currency & the creation of **European Central Bank**, and unified economic region (Eurozone– EU Member States that have **adopted the euro as common currency**).
- **Launched**: **1999** with **11 countries**; with **Croatia (2023)** and **Bulgaria**, covering **350+ million people**.

Aspect	European Union	Eurozone	Schengen Area
About	**Political & economic union** of European countries.	**Monetary union** of EU countries using the **euro.**	**European visa free travel zone**, with no internal border checks.
Establishment Treaty/Agreement	Maastricht Treaty (1992)	Maastricht Treaty (1992)	Schengen Agreement (1985)
No. of countries (as of Jan 2026)	27 countries	**21 countries;** EU countries– **Sweden, Poland, the Czech Republic, Hungary, Romania & Denmark** have not yet adopted the euro.	**29 countries:** 25 EU Member States (except **Ireland, Cyprus**) & 4 non-EU countries (Iceland, Norway, Switzerland and Liechtenstein).
Note: Andorra, Monaco, Vatican City & San Marino use the euro via EU agreements; **Kosovo and Montenegro** use it unilaterally, none of these are regarded as Eurozone members.			

Rashtra Prerna Sthal

Rashtra Prerna Sthal (Lucknow) Inaugurated by PM on **101st birth anniversary of Atal Bihari Vajpayee (25th Dec)**.

- **Features: 65-feet bronze statues** of **Atal Bihari Vajpayee**, **Pandit Deendayal Upadhyay**, **Dr. Syama Prasad Mookerjee** and **a Lotus-shaped museum.**
- **Atal Bihari Vajpayee:** PM in 1996, 1998–1999, 1999–2004; Awards: Padma Vibhushan (1994), Bharat Ratna (2015); Good Governance Day on 25th Dec
- **Deendayal Upadhyay:** Ideologue of RSS and Bharatiya Jana Sangh; Promoted Antyodaya and Integral Humanism; Antyodaya Diwas on 25th Sept
- **Syama Prasad Mookerjee:** Founder of Bharatiya Jana Sangh (1951); Opposed Article 370; Youngest VC of Calcutta University (1934); Known as "The Lion of Parliament"

India–Spain: Counter-Terrorism Cooperation

President stressed the need for India & Spain to unite against global terrorism during a meeting with the Spanish Foreign Minister. **2026 marks 70 years of diplomatic relations**, celebrated as the **India-Spain Dual Year of Culture, Tourism, and AI**.

- **Counter-Terrorism Cooperation:** India & Spain share a firm stance against terrorism, calling for resource pooling to combat it in all its forms. They aim to collaborate on platforms like the **UN & G-20** for global stability.
- **India–Spain Economic Relations:** Spain is **India's 6th largest EU trade partner**, with bilateral trade at USD 9.32 billion in 2024. Spain is the 16th largest investor in India, with FDI of USD 4.29 billion.
  - Institutional mechanisms like the **India–Spain Joint Commission** support this growth. The **India-EU FTA** is expected to boost bilateral trade, with the EU being India's largest trading partner at USD 135 billion in FY 2023-24.

Spain: Shares land borders with Portugal (W), France & Andorra (NE) & Gibraltar (S). Its maritime boundaries– Bay of Biscay (N), Atlantic Ocean (NW/SW) & Mediterranean Sea (SE/E).

Statehood Day of Manipur, Meghalaya and Tripura

Manipur, Tripura & Meghalaya celebrated Statehood Day on 21st Jan, marking their full statehood under the **North-Eastern Areas (Reorganisation) Act, 1971,** in 1972.

- **Manipur:** An independent princely state before Independence, Manipur acceded to India in 1947 **(Instrument of Accession)**. It became a constitutional monarchy and conducted **India's first election in 1948.** In 1949, the Maharaja signed the Merger Agreement without consulting the Assembly, leading to its dissolution.
  - Manipur was a **Part-C State (1949–56), became a UT in 1956**, and gained full statehood in 1972 under the North-Eastern Areas (Reorganisation) Act, 1971, with special safeguards for hill areas under **Article 371C**.
- **Tripura:** A princely state ruled by the **Manikya dynasty**, Tripura merged with India in 1949 under Queen Kanchan Prabha Devi. It was a Part-C State & became a UT in 1956.
  - **Tripura gained full statehood in 1972** through the North-Eastern Areas (Reorganisation) Act, 1971, with tribal self-governance under the Tripura Tribal **Areas Autonomous District Council under the 6th Schedule**.
- **Meghalaya:** Meghalaya's statehood arose from demands for autonomy by the Khasi, Jaintia & Garo Hills to protect their cultural identity.
  - It **became an Autonomous State within Assam in 1969** and gained full statehood in 1972 under the North-Eastern Areas (Reorganisation) Act, 1971, **governed by the 6th Schedule with autonomous district councils**.

Zehanpora Stupa

Recent excavations in Zehanpora, Baramulla (North Kashmir), **revealed over 2,000-year-old Buddhist stupa from the Kushan era (1st to 3rd century CE)**.

- **Archaeological Significance**: Kashmir's largest known Buddhist site, covering 10 acres with a wooden superstructure & undisturbed mounds offering unique historical insights.
- **Link with International Archives**: A historic photograph showing **three Buddha stupas was found in a French museum archive**, possibly captured by British travellers.
- **Buddhism in Kashmir**: Buddhism in Kashmir traces back to **King Ashoka's reign** during the Mauryan period. Kalhana's ***Rajatarangini*** mentions King Surendra, the first Buddhist king, building monasteries.
  - The region hosted the Buddhist dialogue b/w **Indo-Greek ruler Menander & monk Nagasena**. Kushan kings, like Kanishka, supported Buddhism, and Kashmir is where the **Mahayana sect established roots (4th Buddhist Council, ~72 AD)**.
  - Ashoka also invited Buddhist scholars from Kashmir for the **3rd Buddhist Council in Pataliputra** around 250 BCE.
- **Buddhist Legacy in Kashmir**: **North Kashmir**– Kanispora, Ushkur, Zehanpora, Parihaspora; **Central Kashmir**– Harwan Buddhist complex (Srinagar); **South Kashmir**– Semthan, Hutmur, Hoinar, Kutbal.

PORTALS & APPS

PRAGATI Platform

The PM urged States to replicate the Centre's **PRAGATI** system to strengthen technology-driven governance.

- **PRAGATI (2015):** An **ICT-enabled platform** to ensure **timely implementation of government projects**, and grievance redressal**.**
  - It fosters **"Team India" approach** and resolves inter-state disputes efficiently, bypassing **red tapeism.**
- **Features:**
  - Three-tier communication: PMO → Union Secretaries → State Chief Secretaries
  - PM-led platform ensures direct oversight, quick decisions, and bottleneck resolution
  - Integrates video conferencing, geo-spatial mapping, drone feeds, and centralized data systems
  - Integrated with CPGRAMS (grievance redressal), PM Gati Shakti, PARIVESH (environmental clearances), Project Monitoring Group (large projects tracking).

PANKHUDI Portal

The **Ministry of Women and Child Development** has launched the **PANKHUDI portal**.

- **PANKHUDI Portal**: An **integrated single-window digital portal** to facilitate CSR & partnership initiatives for women and child development, connecting individuals, NRIs, NGOs, corporates, and government agencies on a common interface to enhance transparency, participation, and collaboration.
- **Coverage**: Focuses on nutrition, health, **Early Childhood Care and Education (ECCE)**, child welfare, protection & rehabilitation, and women's safety and empowerment.
- **Contribution**: Enables users to **register, submit proposals, track approvals and project progress**; all contributions are via **non-cash modes** to ensure **transparency and traceability**.
- **Significance**: Supports **Mission Saksham Anganwadi & Poshan 2.0**, **Mission Vatsalya**, and **Mission Shakti** via **structured workflows**.
  - Improves service delivery across **14+ lakh Anganwadi Centres**, **~5,000 Child Care Institutions**, **~800 One Stop Centres**, **500+ Shakhi Niwas**, and **400+ Shakti Sadan**.

SPECIES IN NEWS

Olive Ridley Turtles

Olive ridley turtle nesting season faces threats from **fishing nets** & **artificial lighting**, with recent **carcasses found** linked to human activity.

- **Olive Ridley Turtles**: World's **smallest sea turtle**; **olive/grayish-green heart-shaped carapace**.
  - Found in **tropical regions of Pacific, Indian & Atlantic Oceans**; inhabit open ocean & coastal waters.
- **Diet:** Omnivorous—**jellyfish, snails, crabs, algae**; **Nesting:** Synchronised mass nesting (**arribada**) on sandy beaches near estuaries & bays; lay **100–140 eggs** at a time.
- **Migration:** Long-distance; reach **Indian coasts (Nov–May)**.
- **Key Sites**: **Gahirmatha** (largest mass nesting), **Rushikulya**, **Devi River mouth** (Odisha), **Visakhapatnam** & **Kakinada** (Andhra Pradesh), **Andaman & Nicobar Islands**.
- **Legal Protection**: All 5 species of sea turtles are protected under **WPA, 1972** (Schedule I) & **CITES Appendix I**; **IUCN status:** Vulnerable.
- **Conservation Measures**: **Operation Olivia** (Indian Coast Guard) enforces fishing bans.
  - **Turtle Excluder Devices (TEDs)** mandatory in **Odisha**; **tagging programmes** track migration.
  - **Telemetry study (2025–27)** in **Tamil Nadu** using satellite & flipper tags.

Galaxy Frogs

A study finds **seven rare Galaxy Frogs** have disappeared, likely dead, due to **unethical wildlife photography** and rising **photo tourism in the Western Ghats**.

- **About:** Galaxy Frogs **are endemic** to **Western Ghats (Kerala & TN)**; found under **rotten logs** in **wet evergreen forests. Flagship species** of **Mathikettan Shola National Park**, Idukki, Kerala
  - Named for its **black skin with blue speckles & orange markings**
- **Physical and Behavioural Features: Size**: 2–3.5 cm; **non-vocal, cold-blooded**, breathes partly through **moist skin. Highly sensitive** to heat, drying, disturbance
- **IUCN Status: Vulnerable**.

Dugong

Expert Appraisal Committee (EAC) of **MoEFCC** has recommended a **design overhaul** of the proposed **International Dugong Conservation Centre** in **Manora, Thanjavur (TN)**, as it falls within **CRZ-III No Development Zone** & overlaps **CRZ-I** areas with **mangroves** & **seagrass meadows**.

- **Dugong:** Marine mammal with dolphin-like tail; can grow up to **10 ft**, **~420 kg**; called **sea cows/farmers of the sea**.
- **Habitat & Diet: Herbivorous**, feeds on **seagrass meadows**; inhabits **shallow, warm coastal waters** (<10m depth) like bays & lagoons.
- **In India:** Found in **Gulf of Kutch**, **Gulf of Mannar–Palk Bay**, and **Andaman & Nicobar Islands**.
- **Behaviour & Reproduction**: **Lifespan** up to **70 years**; usually **solitary or in pairs**. **Slow reproduction cycle**– maturity at **9–10 years**, birth every **3–5 years**.
- **Conservation Status**: **IUCN**– Vulnerable; **CITES**– Appendix I; **WPA, 1972**– Schedule I

India's largest seagrass meadows in Gulf of Mannar and Palk Bay (TN) host 13+ species; populations in Lakshadweep, Kachchh, Andhra Pradesh, Odisha are limited & threatened.

MISCELLANEOUS

Ban on Illegal Betting & Gambling Sites

Govt blocked **242 illegal betting & gambling websites**, total now **7,800**, under the **Promotion and Regulation of Online Gaming Act, 2025**, banning real-money online gaming.

Online Gambling

- **About**: Internet-based betting, including casino games, sports betting, poker, lotteries; regulations vary globally.
- **Modus Operandi**: Operators avoid **GST**, switch **URLs to evade blocking**, use **mule accounts** to route money abroad.
- **Status in India**: Under **Promotion and Regulation of Online Gaming Act, 2025**, **nationwide ban** on real-money online games (betting & gambling fall under Entry 34 of the State List). Prohibits **offering, advertising, facilitating** such games; bars **payment processing** by banks.
  - Platforms can be blocked under **IT Act, 2000**. **GST Provision**– **28%** on online money gaming, casinos, horse racing.
- **Online Gaming vs Gambling**: **Skill-based** = gaming; **Chance/luck-based** = gambling.

US Secondary Tariffs over Iran Trade

US President to impose **25% tariff** on nations trading with **Iran**; minimal direct economic impact on **India** due to low bilateral trade.

India–Iran Economic Relations

- **Trade Volume**: Dropped from **USD 15 bn (pre-2020)** to **USD 1.6 bn (FY25)**; Iran not in India's **top 50** trade partners.
- **Affected Exports**: Cereals, tea, coffee, spices, animal fodder, fruits & nuts.
- **Chabahar Port (**Gateway to **Afghanistan & Central Asia) Investment**: 10-year operations contract, USD 120 mn grant, USD 250 mn Line of Credit.
- **Historical Context: India**– major **Iranian crude importer** until **2018 US sanctions**; halted imports due to US **secondary sanctions**.
- **Global Impact**: Would primarily affect– **China**: Iran's top partner; bought **80%+ of oil (2025)**, **USD 22 bn exports (2022)**. Other key partners: **UAE**, **Türkiye**, **EU**.

Board of Peace for Gaza

India has been invited by the **US to join the Board of Peace for Gaza**, but has **not yet confirmed its participation**.

- **About the Board:** US-led intergovernmental body estd. under **UNSC Resolution 2803 (2025)**
- **Purpose**: Implement **US peace plan** for **Gaza reconstruction**
- **Status**: Not under UN-command, but backed by **UNSC-endorsed plan** for **international legitimacy**
- **Leadership & Structure: Chair (Proposed)** – US President
  - **Founding Executive Board**: Comprising high-level figures with expertise in **diplomacy, development** & **economics**
  - **Gaza Executive Board**: Coordinates **on-ground operations**
  - **High Representative for Gaza**: Nickolay Mladenov (Bulgaria)
  - **National Committee for the Administration of Gaza (NCAG):** 15-member **Palestinian technocrat committee**, chaired by **Ali Shaath**; handles **civil administration**
- **Mandate**: Strategic oversight for **demilitarization**, **reconstruction**, **economic recovery**, and **transitional governance** in Gaza. Valid till **31st Dec 2027**
- **Membership & Funding**: Invites to **India**, **Greece**, **Pakistan**, etc.
  - **Funding model–** Non-contributing 3-year membership (renewable); **USD 1 billion** = **permanent membership**; funds go to **Gaza reconstruction**

BBNJ Agreement Enters into Force

Biodiversity Beyond National Jurisdiction (BBNJ) Agreement, the first legally binding treaty to protect **marine biodiversity in international waters**, came into force on **17th Jan 2026**. It ensures **inclusive ocean governance**, with provisions for **Indigenous Peoples**, **local communities** & **gender balance**.

BBNJ Agreement

- **Full Name**: Agreement on **Marine Biological Diversity of Areas Beyond National Jurisdiction**
- **Adopted under**: UNCLOS, 1982
- **Applies to**: **High seas**, **international seabed** (beyond EEZs) & outside the control of any single country
- **Institutions**: COP, subsidiary bodies, **Clearing-House Mechanism**, **Secretariat;** establishes a **funding mechanism**
- **Adopted**: **2023** at UN HQ, New York; entered into force 120 days after **60+ ratifications**; now **80+ countries**
- **Ratified by**: China, Germany, Japan, France, Brazil; **India & US**: Signed (2024); ratification pending
- **Pillars:**
  - **Marine Genetic Resources (MGRs)** – fair & equitable benefit sharing
  - **Area-Based Management Tools (ABMTs)** – e.g., Marine Protected Areas (MPAs)
  - **Environmental Impact Assessments (EIAs)** – for high seas activities
  - **Capacity-Building & Marine Technology Transfer** – for developing countries
- **Significance:** Fills governance gap over **2/3rd of ocean's surface**, **90%+ of Earth's living space by volume.** Strengthens **global ocean conservation** under **UNCLOS**
  - Supports **SDG 14 (Life Below Water).** Addresses **climate change**, **biodiversity loss**, **pollution** in international waters
  - **Third UNCLOS implementation agreement** after **1994 Part XI Implementation Agreement** on international seabed mining & **1995 UN Fish Stocks Agreement** on straddling and highly migratory fish stocks

Chips to Start-up (C2S) Programme

Government released **C2S Programme** outcomes, highlighting **large enrolment**, **shared wafer runs**, **student-designed chips** & **patent generation**.

- **Launched**: 2022 by **MeitY**; ₹250 crore over 5 years
- **Target**: Develop **85,000 industry-ready professionals** (UG, PG, PhD)
- **Expansion Goals**: 25 start-ups, 10 tech transfers, **SMART lab access**; 1 lakh students trained, 50 patents, support ~2,000 research publications
- **Impact**: Boosts innovation, employability, academic role, and semiconductor self-reliance
- **Support**: **ChipIN Centre** provides centralized technical support. Resolved 4,855+ support requests, enabling design improvement and hands-on exposure
- **Programme Approach:** Hands-on model– integration of academics with industry-led training, mentorship & multi-year R&D. Involves **academic institutions**, **ChipIN Centre** (**C-DAC Bengaluru**), **NIELIT SMART Labs**
  - Provides shared infra, centralized training, full exposure to **chip design, fabrication, testing** using **EDA tools.** Covers **ASICs**, **SoCs**, and **IP core development**
- **Fabrication**: Quarterly **chip design aggregation**, **verification**, and **shared wafer fabrication** using **180 nm tech** at **SCL, Mohali.** Fabricated chips are **packaged & delivered** to students

India's First State-Funded BSL- 4 Lab

Union Home Minister laid the foundation of **India's first state-funded BSL-4 lab** in **Gujarat**.

- **BSL-4 Lab**: Highest bio-containment level for studying **highly infectious pathogens** without effective vaccines/ treatments under international safety protocols (e.g., **Ebola, Nipah, Marburg, Crimean-Congo Hemorrhagic Fever, Kyasanur Forest Disease**).
- **India's First State-Funded BSL-4 Facility: India's 2nd civilian BSL-4 lab**; developed under **GSBTM**, operated by **GBRC** (which decoded SARS-CoV-2 genome).
  - Includes **BSL-4, BSL-3, BSL-2, ABSL-4, ABSL-3** modules with advanced containment systems.
- **ABSL-4 Unit**: Enables **in-state testing** & **vaccine research** on **zoonotic diseases**.
- **National Facility Status**: Declared by **DBT** via MoU; open to experts and institutions nationwide.
- **Existing BSL-4 Labs**: **Civilian**– National Institute of Virology, Pune; **Defence**– DRDO, Gwalior
- **Current VRDL Network** (as of Mar 2025): **154 BSL-2** labs, **11 BSL-3** labs
- **Strategic Importance**: Enables **real-time outbreak response.** Reduces dependence on **ICAR-NIHSAD, Bhopal.** Boosts **vaccine/therapeutic R&D** using **animal models**

1.03 Crore New Workers Added to ESIC

Reforms in **ESIC** & **EPFO**, especially **SPREE**, have extended **social security coverage to 1 crore+ workers**, as announced by the **Union Labour Ministry**.

- **SPREE**: Enabled **penalty-free ESIC registration** without retrospective liabilities; **1.17 lakh employers** and **1.03 crore employees** registered (as of **11 Jan 2026**).
  - **ESIC–ESI Scheme**: Administered under **ESI Act, 1948**; provides protection against **sickness, maternity, disablement, employment injury** & **medical care** for insured workers and dependent families.
- **EPFO Reforms**: Allow **75% withdrawal** while retaining **25% for retirement**; expanded **auto-settlement of claims** through simplified processes.

India–Israel Joint Ministerial Declaration on Fisheries and Aquaculture

At the **2nd Global Summit on "Blue Food Security: Sea the Future 2026"**, **India & Israel** signed a **Joint Ministerial Declaration** to strengthen ties in fisheries and aquaculture.

- **Focus Areas of Declaration on Fisheries & Aquaculture:**
  - **Advanced systems**: Recirculating Aquaculture Systems (RAS), biofloc, cage culture, aquaponics, mariculture, seaweed cultivation.
  - **Genetic improvement**, **broodstock**, **pathogen-free seed production**.
- **Key Themes**:
  - Sustainable fishing, capacity building, trade facilitation. Creation of **Indo–Israel Centres of Excellence**. Strengthens **Blue Economy** & **food security**.
- **Fisheries & Aquaculture:**
  - **India is the 2nd largest fish producer** after **China**; contributes **~8%** of global output.
  - **Production Growth**: **2023–24**: 184.02 lakh tonnes; **2013–14**: 95.79 lakh tonnes. Growth driven by **inland fisheries & aquaculture**.
  - **Key Initiatives**: **Blue Revolution (2015–16)** – laid foundation for sectoral growth; **PMMSY (2020)** —focus on **value chain reform**, **production**, and **welfare** of fishers and farmers.

Source Code of Smartphones

Union Government and **MAIT** have **denied reports** that **smartphone manufacturers** would be required to **disclose their source code**. They clarified that **no such proposal** is **under consideration**.

- **Source Code** controls a smartphone's **OS, hardware functions, and apps**; while **Android is partly open-source**, manufacturers add **proprietary and hardware-specific code**.
  - **Source code remains confidential** to protect **IP and cybersecurity**; global firms like **Apple don't disclose full code** to governments.
- **Full disclosure is rare**, mostly in **defence contexts**, as it can **increase cyberattack risks**.
  - In India, **no law mandates source code disclosure** by private firms.
- **ITSAR 2023** (by **NCSS, DoT**) initially referenced source code access but was **amended in 2025** to remove such clauses.
  - **Smartphones were excluded** from **MTCTE** (under Indian Telegraph Rules, 2017) after **Telecommunications Act, 2023**.
  - Smartphones now follow **BIS certification**; oversight is **consultative and non-intrusive**, requiring only **internal test reports**, excluding IP.
  - The policy framework aims to **balance cybersecurity, ease of doing business, and IP protection**, aligning with **global standards**.

Rani Ahilyabai Holkar

An **inquiry** has been ordered over the alleged **demolition of a Devi Ahilyabai Holkar statue** during **renovation at Manikarnika Ghat**, Varanasi. The project is part of a **private company's CSR initiative**.

About Rani Ahilyabai Holkar	Contributions
■ **Birth & Background:** Born on **31st May 1725**, **Chondi**, Maharashtra. ■ **Marriage & Early Life:** Married **Khanderao Holkar** in **1733**, son of **Malhar Rao Holkar** (ruler of Malwa & founder of **Holkar dynasty**). Widowed in **1745** after Khanderao's death at **Kumher Fort**. ● **Malhar Rao** prevented sati & trained her in **military** & **administration**. ■ **Ascension to Power:** Took charge after deaths of **Malhar Rao** (**1766**) & her son **Male Rao** (**1767**). Became ruler of **Indore** in **1767**. Appointed **Tukoji Rao Holkar** as army commander. Made **Maheshwar** (**MP**) the capital of the **Holkar dynasty**.	■ Rebuilt **Kashi Vishwanath** & **Somnath** temples; restored key **Jyotirlingas**. ■ Patronised scholars: **Khushali Ram**, **Moropant**, **Shahir Anantaphandi**. ■ Revered in **Varanasi**, esp. by **Pal** (**Gadariya**) community. ■ Promoted **women's education**, **widow remarriage** & opposed **sati**. ■ Uplifted **Bhil**, **Gond** tribes & **lower castes**. ■ Developed **Maheshwar** & **Indore** as trade hubs. Promoted **Maheshwari weaving**; **Maheshwari sarees** (GI tagged).

First Indian Appointed to Chair the ABDM

DB Venkatesh Varma has been **nominated as Chair** of the **UN Advisory Board on Disarmament Matters (ABDM)** for **2026–27**—**first Indian** to hold this post.

ABDM:

- **ABDM**, established in **1978**, advises the **UN Secretary-General** on **arms limitation and disarmament**.
  - Composed of **15 expert members** from different regions, selected by the Secretary-General; **Director of UNIDIR** is an **ex officio** member; **Chair rotates annually**.
- **Meets twice a year**, in **New York and Geneva**; agenda includes **Secretary-General's requests** and Board's own proposals.
- **Chair submits private report** post-session; **Secretary-General presents annual report** to **UNGA**.
- Functions: Advises on **arms control policies**, supports **UN disarmament research**, acts as **Board of Trustees of UNIDIR**, and guides **UN Disarmament Information Programme**.

Tex-RAMPS Scheme

The **Ministry of Textiles** signed **MoUs with 15 states** under the **Tex-RAMPS** scheme during the **National Textile Ministers' Conference** (**Guwahati**), themed **"India's Textiles: Weaving Growth, Heritage & Innovation."**

Textiles Focused Research, Assessment, Monitoring, Planning And Start-Up (Tex-RAMPS) Scheme

- **Objective**: Improve **coverage, quality, timeliness** & **credibility** of textile-related data and research; strengthen **textile data systems** across States/UTs for better planning and decision-making.
- **Nature**: **Central Sector Scheme**, fully funded by the **Ministry of Textiles** from **FY 2025–26 to FY 2030–31**, aligned with the **16th Finance Commission cycle**.
- **Scope & Coverage**: Supports **integrated planning** across **handlooms, handicrafts, apparel** & **technical textiles**.
- **Financial Assistance**: **₹12 lakh/year** to each **State/UT; ₹1 lakh/year per district**, linked to **district action plans**
- **Key Components**: Research & Innovation; Data, Analytics & Diagnostics; **Integrated Textiles Statistical System (ITSS)**; Capacity Development; Start-up & Innovation Support
- **Expected Outcomes**: Strengthens **cooperative federalism;** bridges **critical data gaps;** enables **evidence-based planning** to support India's goal of a **USD 350 billion textile industry**

Aadhaar Mascot Udai

UIDAI has introduced **'Udai'**-- New **Aadhaar mascot**. It aims to promote **accessible Aadhaar services** and simplify updates, authentication, offline verification, selective sharing, and responsible usage.

- **Aadhaar: 12-digit biometric identification no.** issued by **UIDAI**, a statutory body under **Aadhaar Act, 2016**. Serves as proof of identity and address, not of citizenship or date of birth.
- **Eligibility**: Anyone residing in India for **182+ days** in the past **12 months**, with **1 of 18 notified ID/address documents**.
- **Utility**: Enables **DBT**, **banking services**, **mobile connections**, and access to **govt/non-govt services**.
- **Justice KS Puttaswamy vs Union of India (2017)**: SC upheld **Aadhaar's constitutional validity**. Clarified under **Section 9**, Aadhaar **does not prove citizenship or domicile**.

Nipah Virus

Two suspected Nipah virus cases in **healthcare workers** in West Bengal triggered urgent state & central public health response, highlighting India's preparedness against **high-risk zoonotic diseases**.

- **Nipah Virus (NiV):** Highly infectious zoonotic virus, first identified in 1998–99, Kampung Sungai Nipah, Malaysia.
  - **Natural Reservoir**: Fruit bats (Pteropodidae); intermediate host: pigs.
  - **Virus Family**: **Henipavirus** genus of **Paramyxoviridae family**.

- **Transmission**: Animal-to-human and has the potential for **human-to-human** → high public health risk.
- **Symptoms & Clinical Features**: **Early–** Fever, myalgia, sore throat, respiratory distress; **Severe–** Acute encephalitis, convulsions, disorientation, coma, death.
  - **Asymptomatic cases** reported → complicates containment.
- **Diagnosis & Testing:** Classified as a **Biosafety Level-4 (BSL-4) pathogen**; testing done in **high-security labs**.
  - **Diagnosis**– RT-PCR, ELISA, serum neutralisation, histopathology, virus isolation.
- **Treatment & Prevention: No approved vaccine**; treatment is supportive care & isolation. **Kerala** used **monoclonal antibodies** & **Remdesivir**, reducing mortality from **91% (2018)** to **~33% (2023–25)**.
- **Nipah Outbreaks in India**: West Bengal (2007); Kerala (2018, 2023, 2025) → Emphasis on early detection, contact tracing, rapid response.

Catastrophe (CAT) Bonds

Kerala has urged the Centre to introduce **CAT bonds** as a **financial safety net** against disaster losses during **pre-Budget consultations for Budget 2026–27**.

- Kerala's repeated disasters strain finances, prompting calls for **CAT bonds** and a **Coastal Resilience Fund**, as outlined in its **2022 Risk-Informed Master Plan**, to tackle erosion along its **590-km coastline**.
- **CAT Bonds: Insurance-linked securities** that transfer **financial risk of major disasters** from governments to **investors**.
  - Governments act as sponsors and pay **premiums**; investors' **principal** is used for **recovery if disaster strikes**, else investors earn **high interest**.
  - Benefits– **high yields**, **market diversification** for investors; **quick payouts**, reduced **fiscal burden** for governments.
  - In India, **states & Centre currently bear full disaster relief costs**.
- **Global Usage: Mexico** & **Philippines** use **CAT bonds** to hedge against natural disasters.
- **Significance:** For India, they offer **fiscally sustainable**, **predictable**, and **rapid financing**, easing pressure on **budgets** and **emergency borrowing**.

India's Tourism Infrastructure Initiatives

Ministry of Tourism reported major progress in infrastructure, destination schemes, skilling, and global promotion under **Swadesh Darshan 2.0** & **PRASHAD Scheme** through mission-mode implementation.

- **Tourism Performance (2024):** India had **20+ million international tourist arrivals**, **~₹3 lakh crore** in forex exchange earnings, and **~3 billion domestic tourist visits**.
  - Received **0.64 million foreign medical tourists**; **e-Medical/e-Ayush visas** offered to **171 countries**, boosting India's healthcare & wellness tourism.
- **Swadesh Darshan 2.0:** Launched in **2023**, it's a **destination-centric**, **sustainable tourism mission** aligned with **Vocal for Local** & **Aatmanirbhar Bharat**. Included sub-schemes:
  - **Challenge Based Destination Development (CBDD)**: Competitive, outcome-based scheme covering Spiritual Tourism, Culture & Heritage, Vibrant Villages, **Ecotourism/Amrit Dharohar sites**.
  - **PM-JUGA**: Boosts tribal livelihoods via homestays, cultural tourism, and community participation.
- **PRASHAD Scheme**: Funds **integrated tourism infrastructure** at identified **pilgrimage destinations**.
- **MICE Tourism Push**: National Strategy and Roadmap for **MICE (Meetings, Incentives, Conferences, Exhibitions)** along with **'Meet in India'** sub-brand; **Digital MICE Catalogue** covers 60+ cities (including G20 host cities).
  - **Meet in India Conclave 2025 (Jaipur)** boosted global MICE visibility.

Petrodollar System

The **US capture of Venezuelan President Nicolás Maduro** has renewed focus on the declining influence of the petrodollar amid shifting global oil trade dynamics.

- Venezuela holds **~300 billion barrels** of proven oil reserves (**~17% of global stock**) but produces only **~1 million barrels per day**.
  - The **Trump administration** seeks to revive production by involving **US energy majors**, re-anchoring Venezuela's oil sector within the US economic orbit.
- **Petrodollar System**: Global oil trade is priced and settled in **US dollars**, boosting **dollar demand** and reinforcing **US dominance**. Originated in the **mid-1970s** after the **Bretton Woods collapse**.
- **Peak of Petrodollar Influence (b/w 2002 and 2008): High oil prices** & **US crude imports** led exporters to invest surpluses in **US Treasury markets**, which **suppressed US bond yields and contributed to lower global interest rates**.
- **Post-shale Structural Shift**: US became top oil producer and **net exporter since 2021**, altering petrodollar dynamics.
- **Changing Oil Revenue Usage**: Oil-producing countries like **Saudi Arabia** now fund **domestic deficits** over US investments.
- **De-dollarisation Trend**: **~20% of crude trade** now in **non-dollar currencies** (euro, yuan).

W Ursae Majoris and Stellar Evolution

Astronomers from **Aryabhatta Research Institute of Observational Sciences (ARIES)** & **Physical Research Laboratory (PRL) (DST)** study provides new insights into **W Ursae Majoris–type contact binary stars**.

- **W Ursae Majoris (W UMa) Stars**: Short-period, **dumbbell-shaped contact binaries** in which two stars orbit each other with shared outer atmosphere; useful for studying **stellar masses, radii, temperatures** & **evolution theories**.
- **Binary Star**: Two stars gravitationally bound orbiting a **common centre of mass (barycenter)**; differ in **mass, size, brightness**—**primary** star (larger) & **secondary/companion star** (smaller).

Life Cycle of a Star

- **Birth**: Form in **molecular clouds (**cold, massive clouds of gas and dust**)**; gas clumps collapse & heat up into a **protostar**. Star groups form **stellar clusters** in **stellar nurseries**.
- **Life**: **Protostar** shines from **gravitational collapse**.
  - Nuclear **Fusion** starts → **hydrogen to helium**, balancing gravity → forms **main sequence star** (longest phase of stellar life).
  - Star's **Mass controls lifespan**: **Low-mass stars** live longer; **massive stars** die young.
- **Death:**
  - **Hydrogen exhaustion** → core collapses, star expands & heat up.
  - **Low-mass stars**: Helium fuses → carbon; shed outer layers → **planetary nebula** → **white dwarf**.
  - **High-mass stars**: Fusion up to **iron** → core collapse & rebounds → **supernova explosion** → **neutron star or black hole**; ejected material enriches future **molecular clouds**.

Spina Bifida

India has one of the **highest Spina Bifida rates** (~**4/1,000 births**); affects over **25,000 children annually**.

- **Spina Bifida**: Congenital **neural tube defect**; spinal cord doesn't fully close in early fetal development.
- **Symptoms**: **Hydrocephalus** (excess fluid in the brain), urinary and bowel incontinence (lack of control), back lump, club foot, orthopaedic deformities, mild weakness to complete paraplegia.
- **Impact**: Causes **partial/complete lower limb paralysis**, often wheelchair-dependence. **75%** of Indian children lack **specialised care**, leading to **financial/emotional distress**, higher under-five mortality, disability & healthcare costs.
- **Prevention**: **Folic acid supplementation** (periconceptional) prevents **>70% cases**.
- **Emerging Research**: Fortifying commonly consumed beverages (tea) with **folate & B12** may help prevent **anaemia** & **neural tube defects**.

e-B-4 Business Visa for Chinese Nationals

India introduced **e-Production Investment Business Visa (e-B-4)** for **Chinese nationals**; enables **fully online travel** for **production & investment-related business**, no embassy visit needed.

- **Coverage**: Allows activities like **equipment commissioning/ installation**, **quality checks**, **maintenance**, **IT/Enterprise Resource Planning (ERP) ramp-up**, **training**, **vendor empanelment**, supply-chain development, plant design and bring-up, and travel of senior management & executives.
- **Processing & Validity**: Issued in **45–50 days of application**, valid for **6 months**.
- **Application Mechanism**: Apply via **Bureau of Immigration's e-Visa portal**; Indian firms register on **DPIIT's National Single Window System (NSWS).**
- **Significance**: Supports India-China business mobility & investment ties.

Avian Flu

Fresh **H5N1 avian influenza outbreak** in **Kuttanad, Kerala** disrupts **centuries-old duck-rearing**, impacting livelihoods, biodiversity & rural sustainability. Latest outbreak: **~55,000 birds dead**, 25,000 to be culled. Indigenous breeds like **Chara** & **Chembally** at risk of **local extinction**.

- **Avian influenza A(H5N1)**: Highly pathogenic virus; mainly affects **birds**, can infect **mammals**.
- **History**: First detected in **China (1996)**; first **India outbreak** in **Maharashtra & Gujarat (2015)**. Caused deaths in **wild birds**, incl. **California condor** (endangered species), and spillover to sea lions, dolphins, foxes, pumas, and bears.
- **Transmission**: Rare in humans; mainly via **direct contact** with infected birds or their secretion. **Human-to-human spread** is extremely rare but possible if the virus mutates.
  - **Listed under WHO R&D Blueprint** due to pandemic risk.
- **Symptoms**: Fever, cough, sore throat, muscle aches; severe cases → **respiratory failure**, **neurological issues**; some asymptomatic.
- **Treatment**: **Oseltamivir** (antiviral drug) effective, especially if given early.

BHASHINI's Shrutlekh Multilingual Translation Tool

MeitY showcased **Digital India BHASHINI's AI tool, Shrutlekh,** for real-time multilingual speech-to-text translation during key speeches.

- **Shrutlekha:** AI tool under **BHASHINI** (initiated by MeitY, part of National Language Translation Mission).
- **Function**: Real-time **speech-to-text transcription**, **multilingual translation**, **Automatic Language Detection (ALD)** & **Live Translation Display** in Indian languages.

BHASHINI (BHASHa INterface for India)

- **BHASHINI**, under **Digital India**, uses **AI/NLP** to enable access to digital content in **22+ Indian languages**. Features– **Shrutlekh** (speech-to-text), **document translation**, and a **crowdsourcing initiative (Bhashadaan)** for data contribution.
- Implemented by **Digital India BHASHINI Division**, MeitY.
- Supports **text, video, speech & document translation**.
- Integrated with **e-Shram**, **e-Gram Swaraj**, **CPGRAMS**, **AICTE** & **UGC**.

Indian Railways' Electrification Drive

Indian Railways has electrified **99.2% (from 96% in 2024)** of its Broad Gauge, covering **69,427 Route Kilometres (RKMs)** out of **70,001 RKMs** (as of **Nov 2025**)

- **Historical Significance:** Railway electrification in India **started in 1925**– first electric train b/w **Bombay Victoria Terminus** & **Kurla Harbour**
- **Near-Universal State Coverage**: **25 States/UTs**– 100% electrified
  - **5 States** (Rajasthan, Tamil Nadu, Karnataka, Assam, Goa) – **574 RKMs** pending (**0.8%**)
- **Economic & Environmental Benefits**: Electric traction is **~70% more economical** than diesel; reduces carbon emissions, air pollution, fossil fuel use
- **Global Railway Electrification (June 2025)**: **Switzerland** (100%), **China** (82%), **Spain** (67%), **Japan** (64%), **France** (60%), **Russia** (52%), **UK** (39%)
- **Renewable Energy Integration**: **898 MW solar capacity** commissioned (Nov 2025) vs **3.68 MW (2014);** Solar installations at **2,626 railway stations across India**

Mpemba Effect

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) scientists, an autonomous institute under **DST** developed **first supercomputer-powered simulations** explaining the **Mpemba effect.**

- **Mpemba effect**: **Phenomenon where hotter water freezes faster** than colder water.
  - First noted by **Aristotle** in **Meteorologica**; rediscovered by **Erasto Mpemba** in 20th century.
- **JNCASR Study Findings:** Water **does not freeze directly**; passes through **short-lived intermediate molecular states.**
  - Time spent in these states **varies with starting temperature.**
  - **Hotter water** can sometimes **bypass these delays**, reaching **ice nucleation** faster than colder water.
  - Confirms **Mpemba effect is real** & **not limited to water.** Occurs in **other fluid-to-solid phase transitions.**
  - Deepens understanding of **out-of-equilibrium phenomena,** offers insights for **better cooling & thermal control** in **next-gen electronics.**
  - Marks a major breakthrough in **nonequilibrium physics**, resolving long-standing experimental & theoretical debates.

Wolf Supermoon

The Wolf Supermoon (slightly larger and brighter) peaked on **2nd January 2026, marking the first full moon of the year**. Combines the Wolf Moon (January full moon) with a Supermoon (closest point to Earth).

- The **Wolf Moon** is **January's full moon**, named from **indigenous, Celtic, and Old English** traditions, linked to wolves howling in mid-winter.
- A **Supermoon** occurs when the Moon is at **perigee** (closest to Earth) during its **full phase**, appearing **larger and brighter**.
- A **Wolf Supermoon** happens when both events **coincide**, which is **relatively rare**.
- The **moon illusion** makes the Supermoon appear larger near the **horizon** due to **perceptual effects**, not actual size change

Rabies as Notifiable Disease

The Delhi government will declare human rabies a notifiable disease under the Epidemic Diseases Act, 1897, aiming for zero human deaths from dog-mediated rabies.

Notifiable Disease

- **Definition**: Diseases **legally required to be reported** to public health authorities (under **Epidemic Diseases Act, 1897**).
  - **Framework**: Monitored via **Integrated Disease Surveillance Programme (IDSP)** under **NCDC**.
- **Implications**: **Mandatory reporting** of all suspected/ probable/confirmed cases by **all healthcare providers**, ensuring accurate surveillance.
- **Common Notified Diseases**: **TB, Dengue, Malaria, Cholera, Hepatitis, Measles, Polio, Leptospirosis**; **Covid-19** was universally notified.
  - **Recent Additions**: **Snakebite (2024)**, **Human rabies (2025)**.
- **Decentralized System**: No uniform national list; states/UTs have the **authority to notify diseases**, leading to **state-wise variations**.

- **Global Rule**: Under **IHR (2005)**, countries must report **public health risks** with potential **international implications** to **WHO**.

Govt Lifts Import Curbs on Low Ash Metallurgical Coke

India withdrew import restrictions on **low ash metallurgical coke** (ash <18%) after imposing **provisional anti-dumping duty**.

- **Anti-dumping Duty**: Imposed on imports sold **below normal value**, causing **material injury** to domestic industry; aims to **restore fair competition**, not restrict volumes.
- **Metallurgical Coke (Met Coke)**: Made from **coking coal** via **destructive distillation** in coke ovens.
  - Acts as **fuel and reducing agent** in **blast furnace steelmaking**.
  - **Low ash, ultra-low phosphorus** variants vital for **high-grade steel**.
- **India's Scenario**: Proven **coking coal reserves**: **16.5 Bt (medium)**, **5.13 Bt (prime)**.
  - Still **imports ~85%** due to **unsuitable domestic quality**, making steel sector **vulnerable to supply shocks**.

China's People-Centred Global Governance Initiatives

At the **25th SCO Tianjin Summit, 2025,** China proposed the **Global Governance Initiative (GGI),** building on its earlier **Global Development Initiative (2021), Global Security Initiative (2022), and Global Civilization Initiative (2023)**.

- **GGI**: Advocates a **just, equitable global governance system** with **tangible welfare gains**.
- **GDI**: Promotes **people-centred development**, **livelihood protection**, and **2030 SDG alignment**.
- **GSI**: Stresses **peace via dialogue**, **respect for sovereignty**, and **non-interference**.
- **GCI**: Encourages **civilisational respect** and **shared human values**.

India's People-centric Global Initiatives

- International Solar Alliance, Coalition for Disaster Resilient Infrastructure (CDRI), Mission LiFE, DPI Model, Vaccine Maitri, Vasudhaiva Kutumbakam (G20, 2023).

Sunrise Festival 2025–26

Arunachal Pradesh held the **first Sunrise Festival (2025–26)** at **Dong village**, **Anjaw district**, the **easternmost point** where sunrise first touches Indian territory.

- **About**: Adventure-led **cultural tourism** festival to position **Arunachal Pradesh** as a global hub for **nature, culture, adventure** & heritage celebrations centered around the **sunrise**.
- **Cultural Significance**: **Dong**, home of indigenous **Meyor (Zakhring)** tribe (Sunrise People), deeply rooted in **sun worship**.
- **Showcasing Tribal Diversity**: Cultural performances by **Mishmi**, **Singhpho**, **Galo**, **Wancho**, **Nocte**, **Adi**, **Apatani**, **Nyishi**, **Monpa** tribes.

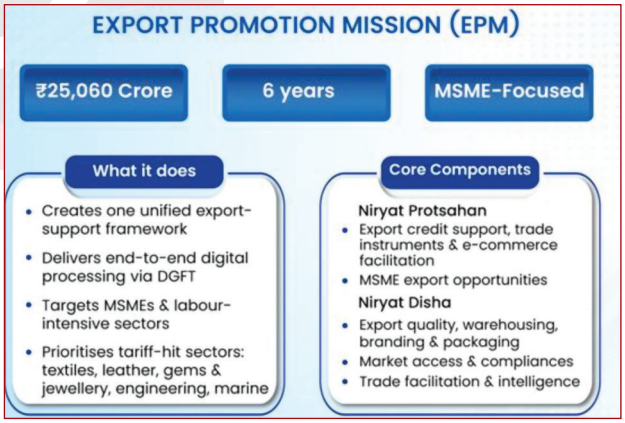
Dong Village

- **Location**: **Anjaw district**, at **India-China-Myanmar tri-junction**; 7 km from Walong (major theatre of the 1962 Chinese aggression).
- **Physiography**: Located on **left bank of Lohit River** (Brahmaputra tributary).
- **Global Recognition**: Known for **Millennium Sunrise** on **1st Jan 2000**.

Government Notifies Market Access Guidelines under EPM

The Ministry of Commerce & Industry notified the first set of market access guidelines **under the Export Promotion Mission (EPM)** to boost Indian exporters' global reach.

- **Financial Assistance**: For trade fairs, **Buyer-Seller Meets (BSMs), Mega Reverse Buyer-Seller Meets (RBSMs)** & trade delegations; focus on **MSMEs**.
- **Caps on Assistance**: Max **2 delegates/firm**, min **50 participants** (≥35% MSMEs).
- **Eligibility**: Firms – up to **3 BSMs/year**; MSMEs – up to **4 BSMs/year**.



National Investigation Agency (NIA)

In 2025, **NIA achieved a 92%+ conviction rate in counter-terror cases,** highlighting stronger internal security enforcement.

National Investigation Agency (NIA)

- **Status & Mandate**: **India's federal counter-terror agency** for investigating & prosecuting terrorism, insurgency, and national security crimes of pan-India impact.

- **Legal Powers**: Estd. in 2009 **under NIA Act, 2008; amended in 2019** – allows interstate and extra-territorial jurisdiction without State consent.
- **Core Functions**: **Analyses & disseminates** counter-terror intelligence, coordination with agencies, conduct capacity-building programmes.
- **Taking up a Probe**: Cases under **Section 6 (NIA Act, 2008)** via State referral or Centre suo motu; Centre's sanction needed for prosecution under UAPA & scheduled offences.
- **Specialised Focus & Trial**: Dedicated mechanism for **LWE terror-financing investigation**, can probe connected offences; trials held in NIA Special Courts.

India–Maldives Infrastructure Cooperation

The **Ministry of Civil Aviation** has asked the **Airports Authority of India (AAI)** to examine the **Maldives' proposal** to involve **Indian companies** in managing **Hanimaadhoo Airport**.

- **Background:**
  - **2012**: **GMR** airport contract (**USD 511 million**) cancelled; **2014** construction awarded to **Beijing Urban Construction Group (China)**.
  - **2016**: **Singapore Arbitration Centre** awarded **USD 270 million in** compensation to **GMR** for wrongful termination.
- **Hanimaadhoo International Airport**: Located on **Hanimaadhoo Island**, **Haa Dhaalu Atoll**; India extended **USD 800 million Line of Credit** via **EXIM Bank of India** for redevelopment.
- **Strategic Significance**: Enhances **India's connectivity, development assistance**, and **strategic influence** in the **Indian Ocean Region (IOR)**.

AAI: Statutory body under **Ministry of Civil Aviation**; constituted under **AAI Act, 1994**; operational since **1995** post-merger of **National Airports Authority** & **International Airports Authority**.

India as the World's Fourth Largest Economy

India is now the **4th largest economy** with a **GDP of USD 4.18 trillion**, surpassing **Japan**, and remains the **fastest-growing major economy**.

India is behind **US** (USD 30.6 trillion), **China** (USD 19.4 trillion) & **Germany** (USD 5 trillion)

- **Immediate Expectations:** India is projected to become the **3rd largest economy (in 2.5-3 years)** with a **GDP of USD 7.3 trillion by 2030**, overtaking Germany.
- **GDP in PPP Terms:** In **PPP terms**, India ranks **3rd** globally with **USD 14 trillion**, after **China** (USD 33 trillion) & **US** (USD 25 trillion).
  - **IMF projects** India's GDP (PPP) to reach **USD 20.7 trillion by 2030** and **USD 34.2 trillion by 2038**, becoming the **2nd largest**.
- **Robust Growth Momentum: India's Real GDP growth** in Q2 of 2025–26 was **8.2%**, a **six-quarter high**.
- **World Bank** projects **6.5% growth** rate for India in **2026**; **IMF** raises **2025 forecast** to **6.6%**; **ADB** revises **2025 forecast** to **7.2%**; **Moody's**– India to remain **fastest-growing G20 economy**.
- **Supportive Macroeconomic Indicators**: Low inflation, declining unemployment, strong credit flow, rising urban demand.
- **Vision 2047**: Aim for **high middle-income status** through **structural reforms**, **economic resilience**, and **social progress**.

HAL Launches Dhruv NG for Civil Aviation

HAL conducted the maiden flight of **Dhruv–New Generation (NG) in Bengaluru**, marking its entry into civil & export helicopter markets.

- **Positioning**: Indigenous, cost-effective **alternative to imported twin-engine helicopters**; full lifecycle support spanning manufacturing, maintenance, and upgrades.
- **Logistics**: Fleet support via **integrated support models**– Power-By-Hour & performance-based logistics.
- **Design**: **5.5-tonne**, twin-engine, multi-role, capable of day-night, all-weather operations; based on **Dhruv ALH Mk-III civil platform**.
- **Capability**: Powered by indigenous **Shakti engines**, with **Cat-A performance** & **AS4-compliant systems**; suited for **Oil and Natural Gas Corporation (ONGC) offshore operations**.
- **Certification**: **DGCA** type certification for indigenous manufacture of **Shakti civil engine** (national first); **restricted from European Union Aviation Safety Agency (EASA) certification** in **2023**.
- **Significance**: Based on **Dhruv platform** with **3.75+ lakh flying hours**; boosts **Aatmanirbhar Bharat**, cuts **import dependence**, and strengthens the **indigenous civil helicopter ecosystem**.

UN Office for the Coordination of Humanitarian Affairs

The **US announced** a $2 billion pledge for **UN humanitarian aid**.

- **Target Countries: 17 crisis-hit nations** incl. **Bangladesh**, **Haiti**, **Syria**, **Ukraine**, **DR Congo (Exclusions: Afghanistan** and **Yemen**)
- **Establishment** in 1991, by **UNGA, to** coordinate global humanitarian response during emergencies (**replaced UNDRO**)
- **Coordination Mechanism:** Uses **On-Site Operations Coordination Centres (OSOCC)** for rapid response
- **Funding Mechanisms: CERF** (global emergencies) & **Country-Based Pooled Funds (**country-specific crises)

Australia to Eliminate Tariffs on 100% of Indian Exports

Under **Ind-Aus ECTA**, Australia will provide **duty-free access to 100% of Indian exports from 1 January 2026**.

- **ECTA:** Early-harvest deal, Operational since Dec 2022
- **Full CECA negotiations** currently ongoing
- **Key Impacts: Exports to Australia: ↑ 8% in 2024–25**
  - **Beneficiaries:** Exporters, MSMEs, farmers, workers
  - **Trade sectors with strong growth:** Manufacturing, chemicals, textiles, plastics, Pharmaceuticals, petroleum products, gems & jewellery
- **Agri-export boost:** Significant rise in **fruits & vegetables**, **marine products**, **spices**, **coffee**
- **Labour-intensive sectors: Full tariff removal** expected to enhance **MSME opportunities**, **employment**, and **income generation.**

Rare Earth Permanent Magnet Manufacturing Scheme (REPM)

India has approved a **Scheme to Promote Manufacturing of Sintered REPM** to build an integrated **domestic REPM ecosystem**.

- **Tenure**: **7 years** (2-year gestation + 5-year incentives).
- **Support**: **Up to 5 beneficiaries** (1,200 MTPA each)
- **Need & Resource Base: Import reliance- 60–90%** (2022–25) from **China**; demand to **double by 2030**.
  - India has **13.15 MT monazite** with **7.23 MT rare-earth oxides** across states.
- **REPM:** Made from **neodymium, samarium**, etc. Used in **EVs, wind turbines, electronics, aerospace, defence**. High **magnetic strength**, **compact size**.
  - **Supporting Initiatives: National Critical Minerals Mission (2025), MMDR Act**.
  - **Global Access**: Via **KABIL**, **MSP**, **IPEF**, **iCET** for critical mineral security.

Narsapuram Crochet Lace

Narasapuram crochet lace (Andhra Pradesh) exports crossed **₹150 crore in FY 2024–25**, showing a strong **post-Covid revival**.

- **Origin**: Began in **1844**, survived **1899 famine** & **1929 Depression**; historically practiced by **2,000+ women** in Godavari region.
- **Technique**: Uses **fine cotton threads** and **single crochet hook** to create **intricate lace designs**.
- **Products**: Garments, home décor, accessories (doilies, pillow covers, stoles, lampshades, etc.).
- **Market**: **Exported globally** – UK, USA, France.
- **Recognition**: Holds **GI tag**, **ODOP award**; supported by **International Lace Trade Centre** & **EPCH** (under **Ministry of Textiles**).

Subansiri Lower Hydroelectric Project

The Union Minister of Power inaugurated the commercial operation of Unit–2 of the **Subansiri Lower Hydroelectric Project.**

- **Subansiri Project: Run-of-the-river** project; approved in **2003**; capacity **2,000 MW → India's largest hydro project** (on full commissioning).
- **Location**: **Gerukamukh**, **Assam–Arunachal Pradesh border**.
- **Agency**: **NHPC Limited**.
- **Strategic Importance:** On **Subansiri River** (**Brahmaputra** tributary). **1,000 MW** Power to **North-East**. **Free power** to **Arunachal Pradesh & Assam**.
- **Dam & Flood Control: 116 m concrete gravity dam** (largest in NE).
- **Engineering: India's heaviest hydro rotors**, **largest stators & inlet valves**. **First use** of **Rotec Tower Belt system** in dam concreting.

Subansiri River

- **Origin**: Tibetan Himalayas (**Chayul Chu** in Tibet), **Enters Taksing**, Arunachal Pradesh.
  - **Flow Path**: Through **Miri Hills**, joins **Brahmaputra** at **Jamurighat (Assam)**.
- **Significance**: **Largest tributary** of the Brahmaputra; **trans-Himalayan river**.

Kashiwazaki-Kariwa Nuclear Plant and Fukushima Disaster

Nearly 15 years after Fukushima, Japan plans to restart the Kashiwazaki-Kariwa plant, aiming to reduce dependence on imported fossil fuels (60–70% of electricity) and increase nuclear power's share to 20% by 2040.

- **Kashiwazaki-Kariwa Plant:** World's largest nuclear plant, near Tokyo, operated by TEPCO (same operator as Fukushima).
- **Fukushima Disaster (2011):** Earthquake and tsunami disabled cooling systems, causing core meltdowns and radiation release, the worst nuclear disaster since Chernobyl (1986), leading to evacuations and exclusion zones.

India's Nuclear Plans: India's nuclear capacity is 8.18 GW as of 2025, aiming for 100 GW by 2047. The SHANTI Act (2025) opens nuclear reactor development to the private sector for investment and efficiency.

India's Iconic Bridges

Bridge	Key Features	Strategic/Economic Importance
Atal Setu (MTHL)	**India's longest sea bridge – 16.5 km sea, 5.5 km land**	Connects **Sewri to Nhava Sheva** (Mumbai); boosts connectivity & trade
Chenab Bridge	**World's highest railway arch – 359m above river, 1,315m long**	Part of **USBRL**, withstands **260 kmph winds, 120-year lifespan**
New Pamban Bridge	**India's first vertical lift railway sea bridge, 2.07 km**	Connects **Rameswaram to mainland, 72.5m lift** allows ship passage
Dhola–Sadiya (Bhupen Hazarika Setu)	**9.15 km**, over **Lohit River** (Brahmaputra tributary)	First permanent road link between **Assam & eastern Arunachal Pradesh**

Reservation for Agniveers in CAPFs

Union Home Ministry has decided to increase reservation for ex-Agniveers in Group C posts of CAPFs from 10% to 50%; a major policy shift under the Agnipath scheme.

- Ex-Agniveers are exempt from the Physical Standard Test and Physical Efficiency Test, but must appear for written exams.

Agnipath Scheme

- **Launch:** June 2022; recruits Agniveers to create a young, agile, tech-oriented force while optimizing defense personnel costs (short-term military recruitment programme).
- **Eligibility:** Indian citizens, meeting educational, physical, and medical standards. Age limit: 17.5–23 years for 2022 intake, 17.5–21 years for subsequent intakes (focus on youth induction).
- **Recruitment:** Recruited as personnel below officer (PBOR) rank in the army, air force and navy for four years, including six months of training.
- **Post-Service:** Up to 25% may be absorbed into the regular cadre; others receive skill certification for post-service employment.
- **Pay & Benefits:** Rs 30,000–40,000/month; 30% of pay contributed to the Agniveer Corpus Fund, matched by the government. A tax-free Seva Nidhi of Rs 11.71 lakh on exit, plus Rs 48 lakh non contributory life insurance during service. No pension or gratuity.

India Pledges USD 450 Million to Aid Sri Lanka

India announced a USD 450 million reconstruction package for Sri Lanka's recovery after Cyclone Ditwah. Previously, under Operation Sagar Bandhu, India provided humanitarian aid and set up an Army field hospital near Kandy.

Sri Lanka's Fragile Recovery

- Sri Lanka, under IMF support, showed fiscal stability post-2022 debt default with austerity measures, but these hurt the poor.
- IMF approved USD 206 million in emergency aid through its Rapid Financing Instrument (RFI).
- The WB estimates USD 4.1 billion in losses (~4% of GDP) from cyclone damage, making recovery harder than after the 2004 tsunami.
- India has already provided USD 4 billion in assistance, reinforcing its role as a first responder in the region.
- India's continued support strengthens the Neighbourhood First and SAGAR strategies, reinforcing regional leadership amid climate-related challenges.

DHRUV64 Microprocessor

On 15th **December**, **MeitY** announced the launch of **DHRUV64**, a **fully indigenous 64-bit microprocessor** developed by **C-DAC** under **MDP**.

DHRUV64

- **About:** Part of India's Processor Ecosystem: Includes SHAKTI (IIT-Madras), AJIT (IIT-Bombay), VIKRAM (ISRO-Semiconductor Lab), and THEJAS64 (C-DAC).
- **Features**:
  - **Type**: 64-bit, dual-core general-purpose microprocessor.
  - **Clock Speed**: ~1 GHz.
  - **Architecture**: RISC-V.
- **Applications**: Telecom base stations, industrial automation, automotive electronics, routers, networking, and government systems.
- **Part of DIR-V Program**: Aims to reduce dependence on foreign microprocessor tech and strengthen India's semiconductor ecosystem.
- **RISC-V**: Open-source ISA, allowing customization without licensing fees, suitable for various applications from embedded systems to high-performance computing.
- **Significance**: Strengthens India's technological sovereignty and enhances capabilities in strategic sectors like defence, space, and consumer electronics.

> THEJAS32 was the first India-designed chip DIR-V chip to be fabricated (in Malaysia) and THEJAS64 was the second, manufactured at SCL Mohali. DHRUV64 is the third on this list.

UN High Commissioner for Refugees

UNGA appointed Barham Salih as UNHCR by consensus. His 5-year term begins on 1 January 2026, succeeding Filippo Grandi of Italy.

- Salih is the 1st UNHCR chief from the Middle East since the late 1970s.
- **UNHCR:** Established in **1950** by **UNGA**. Strengthened by **1951 UN Refugee Convention**, headquartered in Geneva
  - Structure: **Executive Committee + Secretariat**. Headed by **High Commissioner elected by UNGA**.
  - **Funding: 100% voluntary contributions**.
- **Mandate:** Protection of **refugees, IDPs, stateless persons**. Upholds **non-refoulement principle**. Leads **global statelessness reduction efforts**.
- **Recognition: Nobel Peace Prize**: **1954 & 1981**.
- **Nansen Refugee Award (1954 by UNHCR):** Named after **Fridtjof Nansen**. Honours service to **refugees and stateless persons**. **1st awardee**: **Eleanor Roosevelt (1954)**.

Scientists Plan World's First Graviton Detector

Researchers from **Stevens Institute of Technology** & **Yale** are developing an experiment to detect **gravitons**, aiming to link **quantum mechanics** and **general relativity**.

- **Graviton**: Hypothetical elementary **particle carrying gravity** (similar to how photons carry electromagnetic force); detection would confirm gravity as a quantum force.
- **Detection**: Uses **superfluid helium resonator** cooled to quantum ground state to eliminate noise; **gravitational wave** may transfer a graviton, creating a **phonon** (vibration) detectable by lasers.
- **Detection Challenges**: Gravity's weakness (**weakest of the 4 fundamental forces– Gravity, electromagnetism, strong & weak nuclear forces**) makes graviton interaction with matter extremely rare; detection probability is very low.
- **Limitations**: Detected signals may be explainable by classical gravity; single graviton detection may be practically impossible (previous studies).
- **Significance**: Would be a major step toward a **unified physics theory & deeper cosmic understanding**.

DoT De-licenses Half of 6 GHz Band

DoT has **de-licensed the lower half of the 6GHz frequency band** for indoor use, paving the way for the adoption of **WiFi 6E and WiFi 7** technologies in India.

- **Spectrum**: Radio frequencies for wireless communication (20 KHz to 300 GHz).
  - **2.4 GHz**: Wide coverage but lower data speed.
  - **5 GHz**: High speed, shorter range.
  - **WiFi 6**: Uses both 2.4 GHz and 5 GHz for better efficiency.
  - **6 GHz**: Offers ultra-high speeds (9.6 Gbps), now license-free for WiFi, reducing congestion on 2.4 GHz and 5 GHz.
- **Multi-Link Operation (MLO)**: The 6 GHz band (5,925–6,425 MHz) supports MLO in WiFi 7, allowing devices to transmit across 2.4GHz, 5GHz, and 6GHz for higher speeds and lower latency.
- **Critical Use Cases**: 6 GHz is essential for VR, AR, and cloud gaming due to high bandwidth and low lag.
- **Global Context**: India adopts a mixed approach—6 GHz split between unlicensed (WiFi) and licensed (5G/6G), unlike the US (fully de-licensed) and China (mobile-only).
- **Operational Restrictions**: De-licensed 6 GHz use restricted to indoor environments; banned in moving vehicles and oil rigs.
- **Market Impact**: Removes regulatory uncertainty, enabling advanced hardware like the PlayStation 5 Pro in India.

SC to Examine Whether ED is a 'Juristic Person'

SC to examine whether ED is a 'juristic person' entitled to approach High Courts under Article 226.

- **Juristic Person**: A non-human legal entity (e.g., corporation) with rights and duties, including the capacity to sue or be sued.
- **Kerala's Contentions**: ED challenged a State-appointed Commission of Inquiry in the gold smuggling case, arguing that ED lacks legal standing to file the writ petition.
- **Tamil Nadu's Stand**: Supported Kerala, accusing the ED of abusing legal process in illegal mining cases, claiming writ petitions were "misconceived and unmaintainable."
- **Statutory Body vs. Body Corporate**: Both States argue that statutory bodies (like ED) only have powers explicitly granted by statute. ED is not empowered under FEMA, 1999 or PMLA, 2002 to sue, unlike a body corporate.
- **Judicial Precedent**: SC in *Chief Conservator of Forests vs. Collector (2003)*, stated that ability to sue is a matter of substantive law, not just procedural.
- **Article 226**: Empowers HCs to issue writs for enforcing Fundamental Rights and legal/statutory rights (Broader than Article 32).
  - Both individuals and legal entities can approach HCs.

GI-Tagged Kaladi to Be Upscaled Under ODOP

Union Minister of State (Independent Charge) for S&T directed the scientific upscaling of Kaladi, a **GI-tagged dairy product from Udhampur, J&K, under ODOP initiative**.

- **Kaladi**: Known as the **"mozzarella of Jammu"** for its milky flavor & stretchable texture. **Made from raw full-fat milk** and whey water as a coagulant.
- **Key Constraint**: Short shelf life limits market reach. The government aims to improve this through **scientific validation while preserving its taste**, texture & nutritional identity, with opportunities for recipe diversification.
- **Scientific Support**: CSIR-CFTRI, Mysuru & CSIR-IIIM, Jammu, will collaborate on nutrient profiling, characterisation, value addition, and **shelf-life enhancement for Kaladi scaling**.

ECONOMIC SURVEY 2025-26 & UNION BUDGET 2026-27

INDEX

ECONOMIC SURVEY (2025-26) 117-122

State of the Economy 117
Fiscal Developments 117
Monetary Management & Financial Intermediation 117
Inflation 118
External Sector 118
Agriculture and Food Management 119
Services 119
Industry's Next Leap 119
Investment and Infrastructure 119
Environment and Climate Change 120
Education and Health 120
Employment and Skill Development 120
Rural Development and Social Progress 121
Evolution of the AI Ecosystem in India 121
Urbanisation 121
Building Strategic Resilience and Strategic Indispensability 121
Key Challenges Highlighted by the Economic Survey 122
Measures to Strengthen the Indian Economy 122

UNION BUDGET (2026-27) 123-126

Key Highlights of the Union Budget 2026-27 123
Key Highlights of the Tax Reforms under Union Budget 2026-27 125
Concerns Regarding the Union Budget 2026–27 126
Measures to Strengthen India's Economy Beyond Budget 2026–27 126

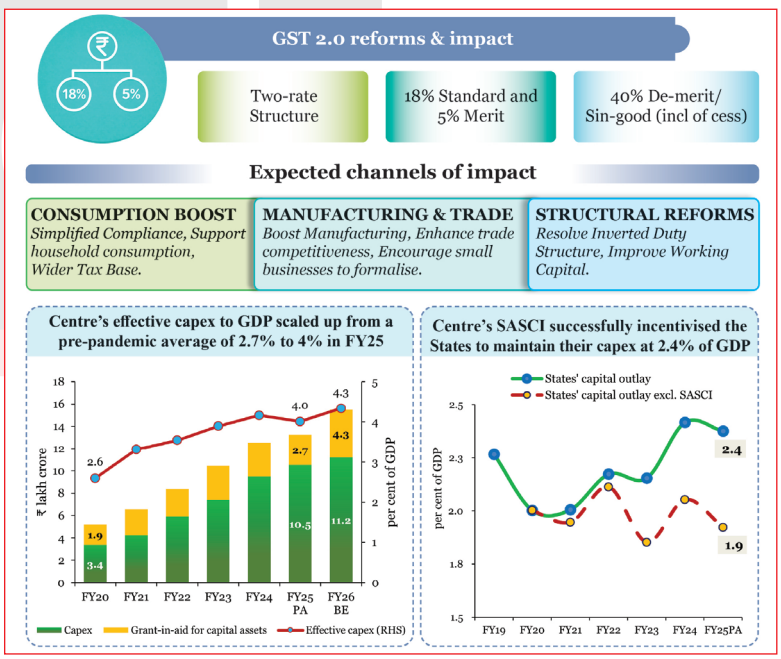
Economic Survey 2025-26

State of the Economy

- Global growth is resilient but risks persist from geopolitics, trade fragmentation, and financial stress.
- The **First Advance Estimates** place Financial Year 2025-26 (**FY26) Real GDP growth at 7.4%** and **Gross Value Added (GVA) growth at 7.3%**. India retains strong growth momentum and is expected to grow by **6.8% – 7.2% in FY 2026 - 27**, reaffirming its status as the **fastest-growing major economy** for the fourth consecutive year.
- **Private Final Consumption Expenditure** grew **7.0% in FY26**, reaching **61.5% of GDP**, the highest since 2012, supported by low inflation, stable employment, rising real incomes, strong rural demand from agriculture, and improved urban consumption due to tax rationalisation.
- Investment strengthened as **Gross Fixed Capital Formation (GFCF) grew 7.8%**, sustaining a **30% share of GDP**, driven by public capex and reviving private investment.
- On the supply side, services remained the main growth driver, with **services GVA at** an estimated **9.1% growth** for the full year.

Fiscal Developments

- Prudent fiscal management has strengthened India's macroeconomic credibility. **Centre's revenue receipts** rose from **~8.5% of GDP (FY16–20)** to **9.2% in FY25 (PA)**, driven by higher non-corporate tax collections (**~2.4% to ~3.3% of GDP**).
- The **direct tax base** expanded, with income tax returns rising from **6.9 crore (FY22)** to **9.2 crore (FY25)**.
- **Gross Goods and Services Tax (GST) collections** during Apr–Dec 2025 stood at **Rs 17.4 lakh crore (+6.7% YoY)**. **GST 2.0** proposes a simplified two-rate structure to boost consumption, improve compliance, and enhance manufacturing competitiveness.
    - Supporting this reform-led growth, the **Centre's effective capital expenditure (capex)** rose from a pre-pandemic average of 2.7% of GDP to about 4% in FY25, while **Special Assistance to States for Capital Expenditure (SASCI)** successfully incentivised States to sustain capital outlay at ~2.4% of GDP, reinforcing public investment as a key demand and growth driver.
- **State fiscal deficits** edged up to **3.2% of GDP in FY25**, even as India reduced its **general government debt-to-GDP ratio by ~7.1% points since 2020** while maintaining high public investment.



Monetary Management & Financial Intermediation

- India's monetary and financial sectors performed robustly in FY26 (Apr–Dec 2025).

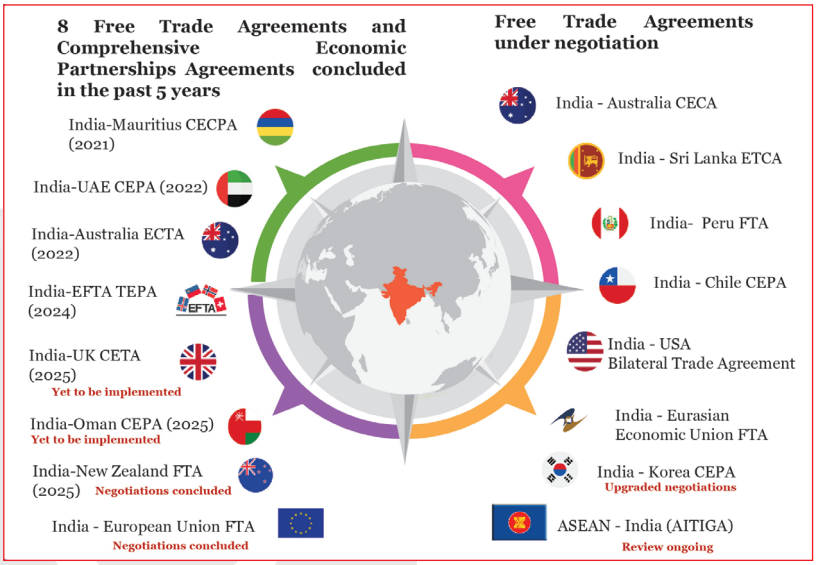
- Banking sector asset quality improved significantly, with **Gross Non-performing Assets (NPA) at 2.2%** and **net NPA at 0.5%** in September 2025, while **credit growth rose to 14.5% YoY** by December 2025.
- Financial inclusion deepened, with **Pradhan Mantri Jan Dhan Yojana (PMJDY) accounts reaching 55.02 crore**, alongside expanded credit access through **Stand-Up India**, **PM SVANidhi**, and **Pradhan Mantri Mudra Yojana (PMMY)**, which has disbursed **Rs 36.18 lakh crore** across **55.45 crore loan accounts**.
- **Capital market** participation surged, with **demat accounts exceeding 21.6 crore**, **12 crore unique investors** (nearly **25% women**), and **5.9 crore mutual fund investors**, increasingly from non-metro areas.
- Regulatory quality received global validation through the **IMF–World Bank Financial Sector Assessment Program (FSAP) 2025**, which highlighted a resilient and well-capitalised financial system, with **total financial sector assets at ~187% of GDP** and adequate buffers even under severe stress scenarios.

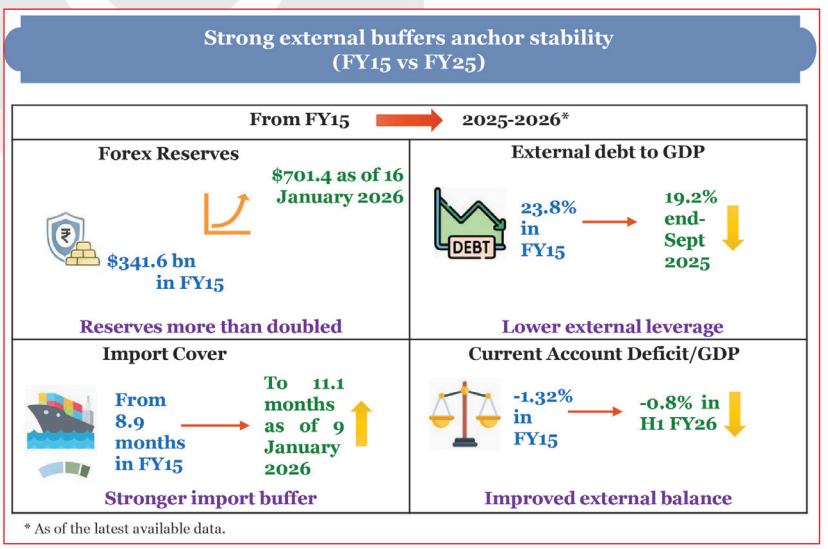
Inflation

- India recorded its **lowest-ever Consumer Price Index (CPI) inflation**, with **average headline inflation at 1.7% during Apr–Dec 2025**, driven mainly by disinflation in food and fuel (52.7% of CPI basket).
  - Among major **Emerging Markets & Developing Economies (EMDEs)**, India saw one of the **sharpest inflation declines**.

External Sector

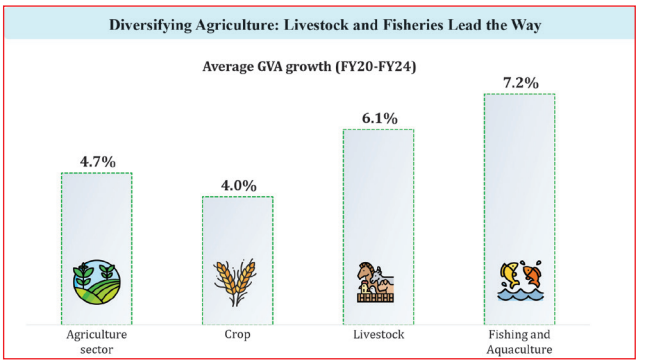
- India's **external sector** strengthened markedly, with its share in global merchandise exports rising from **1% to 1.8%** and services exports from **2% to 4.3%** between 2005 and 2024, alongside high trade partner diversification.
  - **UNCTAD's *Trade and Development Report 2025*** ranks India **third in the Global South** for trade partner diversification, outperforming all Global North economies.
  - **India diversified crude oil imports in FY26**, increasing shares from the US, UAE, Egypt, Libya, and Nigeria, while reducing reliance on **Russia and West Asian suppliers.**
    - This aligns with India's strategy to mitigate geopolitical risks.





- **Total exports touched a record USD 825.3 bn in FY25 (6.1% YoY growth)**, driven by **services exports at an all-time high of USD 387.6 bn (13.6% YoY growth)**.
  - In FY25, non-petroleum, non-gems and jewellery exports constituted nearly four-fifths of aggregate merchandise exports.
- The **current account deficit (CAD) remained moderate (~1.3% of GDP in Q2 FY26)**, supported by strong services and **record remittances of USD 135.4 bn**, as **forex reserves rose to USD 701.4 bn** (11 months import cover).

- Despite a subdued global environment, India attracted **USD 64.7 bn FDI (Apr–Nov 2025)** and ranked **4th globally in Greenfield investments in 2024**, emerging as the top destination for digital Greenfield projects during **2020–24**.



Agriculture and Food Management

- India's agriculture sector showed strong performance, with **livestock GVA rising ~195% (FY15–FY24)** and **fish production increasing over 140% (2014–24)**.
  - Supported by a good monsoon, **foodgrain output reached a record 3,577.3 lakh metric tonnes (LMT) in AY 2024–25**, while **horticulture (33% of agri GVA)** emerged as a key growth driver, surpassing foodgrains.
- Marketing and income support were strengthened through the **Agriculture Infrastructure Fund (AIF), e-NAM**, assured **MSP, PM-KISAN** and **PM Kisan Maandhan Yojana (PMKMY) pension coverage**, improving farm incomes and resilience.

Services

- India is the **7th-largest services exporter**, with its global share rising from **2% (2005)** to **4.3% (2024)**, and the services sector remains the **largest FDI recipient**, accounting for **~80% of total inflows in FY23–FY25**.
- The services sector remains the **urban employment backbone**, accounting for **30% of total jobs 61.9% of urban employment**.
- India has consolidated its position as a **global technology and innovation hub**, with expanding **Global Capability Centres (GCCs)**.
  - The country hosts the **world's third-largest technology startup ecosystem**, with rapid scaling in **GenAI startups**, reflecting strong momentum in advanced digital and innovation-led sectors.

Industry's Next Leap

- India ranks **12th globally in entrepreneurship policy and culture**, **4th in trademarks**, **6th in patents**, and **7th in industrial designs (WIPO, 2024)**, reflecting a strengthening innovation ecosystem.
- It has also achieved a major critical technology breakthrough, placing among the **top five globally in 45 of 64 critical technologies**, up sharply from just four during 2003–07.
- India's **innovation ecosystem** has strengthened steadily, with its **Global Innovation Index rank improving from 81 (2015) to 38 (2025)**. **DPIIT-recognised startups** have grown rapidly to nearly **2 lakh by 2025**.
  - Patent applications nearly doubled between **FY20–FY25**, reflecting stronger innovation and IP activity.
- **Production Linked Initiative (PLI) schemes** attracted **Rs 2.0 lakh crore investment**, generated **Rs 18.7 lakh crore output** and **12.6 lakh jobs**.

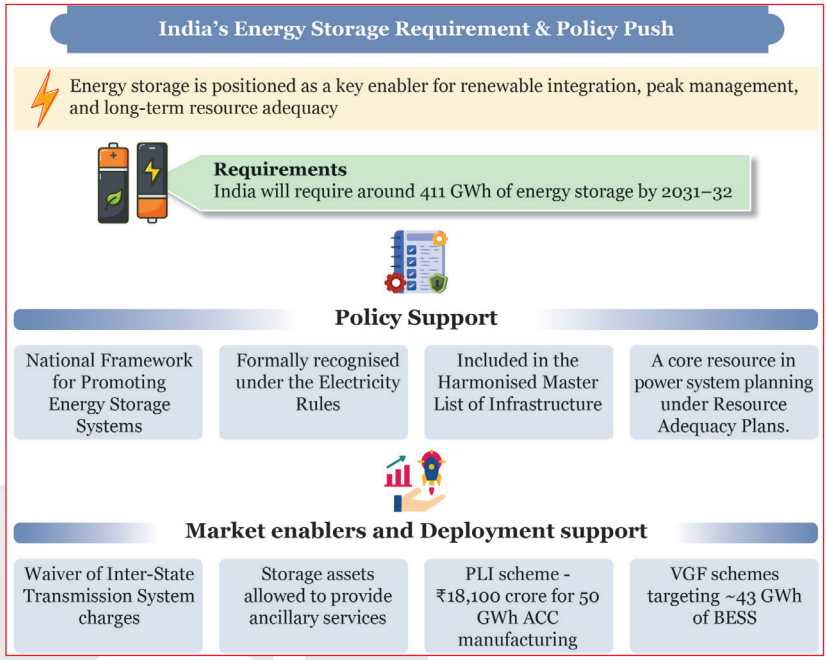
Investment and Infrastructure

- India's infrastructure push intensified **since FY18**, with **central capex rising 4.2 times from Rs 2.63 lakh crore (FY18) to Rs 11.21 lakh crore (FY26 BE)** and **effective capex at Rs 15.48 lakh crore (FY26 BE)**.
  - Connectivity expanded **FY14–FY26** through a **60% rise in national highway network**,with **near-100% rail electrification by Oct 2025**, and India becoming the **3rd-largest domestic aviation market by 2025**.
  - **National Highways network** expanded from **91,287 km (FY14)** to **1,46,572 km (FY26, up to Dec 2025)**, reflecting accelerated infrastructure build-out.
  - **Railway network length** stands at **69,439 route km (as of March 2025)**, maintaining one of the world's largest rail systems.
  - **Power demand–supply gap** reduced sharply from **4.2% (FY14)** to **zero (Nov 2025)**, indicating near round-the-clock power availability.
- The power sector strengthened **up to Nov 2025**, with capacity reaching **509.74 GW**, **DISCOMs turning profitable in FY25**.
- **Tele-density reached 86.76%,** and **5G services** are now available in **99.9% of districts in the country.**

- As of October 2025, over 81% of rural households have access to clean tap water under the **Jal Jeevan Mission.**
- India strengthened space infrastructure by becoming the **fourth nation to achieve autonomous satellite docking (SpaDeX).**

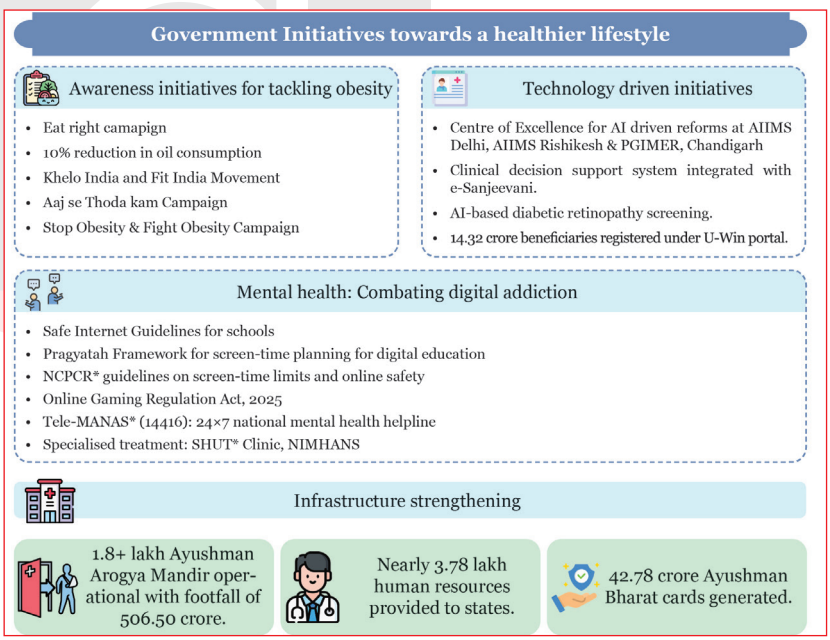
Environment and Climate Change

- As of December 2025, **38.61 GW of renewable capacity was added,** led by 30.16 **GW solar, 4.47 GW wind, 3.24 GW hydro, and 0.03 GW bio-power.**
- The **National Nuclear Energy Mission** targets **5 indigenously designed Small Modular Reactors (SMRs) operational by 2033**, expanding nuclear capacity from **8,780 MW to 100 GW by 2047**, supported by the **SHANTI Act 2025**, which enables private participation.
- Environmental governance was streamlined via **PARIVESH 3.0 single-window clearances, circular economy action plans**.



Education and Health

- India is advancing towards **universal access in education**, targeting **100% Gross Enrolment Ratio (GER) in school education by 2030** and **50% GER in higher education by 2035**.
  - The school system covers **~25 crore students across 14.7 lakh schools** with **over 1 crore teachers**, recording GERs of **90.9 (Grades I–V)**, **90.3 (VI–VIII)**, **78.7 (IX–X)** and **58.4 (XI–XII)**.
  - In higher education, **4.46 crore students** are enrolled, with GER rising from **27.1 (2019–20)** to **29.5 (2022–23)**.
  - Higher education access expanded, alongside **National Education Policy, 2020**-led reforms such as **National Credit Framework (NCrF) adoption**, **Academic Bank of Credit with APAAR (Automated Permanent Academic Account Registry) IDs with credits**, and **flexible entry–exit pathways in universities**.

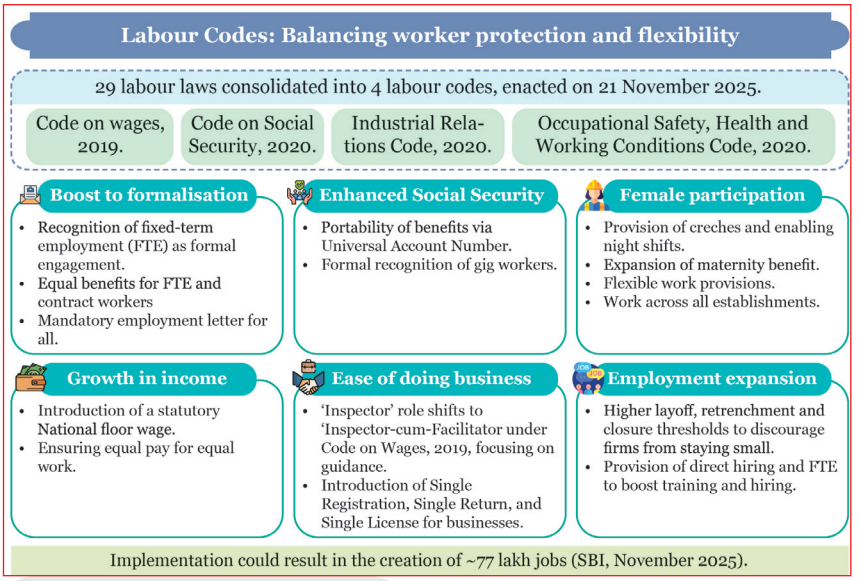


- India has made strong health gains, with **maternal mortality rate (MMR) reduced by 86% since 1990**, **five mortality rate (U5MR) down 78%**, and **neonatal mortality rate (NMR) down 70%**, all outperforming global averages.
  - **Infant Mortality Rate (IMR) fell by over 37%**, from **40 (2013)** to **25 (2023)** deaths per thousand live births.

Employment and Skill Development

- India's labour market remains resilient, with total employment at **56.2 crore (15+ age group) in Q2 FY26,** reflecting net **job creation of about 8.7 lakh over Q1 FY26 alongside economic expansion.**

- **Labour force participation rate rose from ~55% in April to ~56.1% by December**, while **unemployment stayed low at around 5% across Q1–Q2 FY26**.
  - **Female labour force participation rate rose from 23.3% (2017–18) to 41.7% (2023–24)**, alongside a sharp decline in **female unemployment from 5.6% to 3.2%**, indicating stronger and more inclusive labour market outcomes.
- Organised manufacturing employment rose **6% YoY in FY24** (over **10 lakh jobs**), while **Labour Codes** expanded social security to gig and platform workers.
- **e-Shram** registered **31 crore unorganised workers** (54% women), and the **National Career Service** connected **59 million job seekers** with **5.3 million employers**, mobilising **~80 million vacancies**.



Rural Development and Social Progress

- **Extreme poverty declined to 5.3% in 2022–23** under the revised **USD 3.0/day** poverty line of the **World Bank**. This progress has been supported by **tech-driven rural initiatives** such as **SVAMITVA** (mapping **3.28 lakh villages** and issuing **2.76 crore property cards**), **Namo Drone Didi**, and smart village models leveraging drones, solar power, and telemedicine.
- **Participatory governance platforms** like **Samarth**, **Meri Panchayat**, and **eGramSwaraj** have improved local planning and monitoring. Infrastructure expansion has ensured **99.6% rural connectivity**, **over 81% tap water coverage**, and **2.9 crore houses constructed**.
- Skill development and livelihoods were strengthened through **DDU-GKY**,and **DAY-NRLM**, with **over 9 lakh community resource persons** supporting women-led SHGs, food security, and stable rural incomes.
- The **Survey** justified scrapping **MGNREGS**, citing **deep structural flaws** and defeated the **Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025** as a comprehensive legislative reset.

Evolution of the AI Ecosystem in India

- India has strong AI fundamentals, with top-tier research output, a large talent pool, the **2nd most AI-literate workforce globally after the US**, and vast yet underused domestic data across key sectors.
- Built on India's **~1 billion connected users**, the AI data framework balances **openness, oversight, and domestic value creation** through **incentive-based compliance**.
  - It promotes **local model training, domestic R&D funding, and upskilling** to build sector-specific AI solutions for India's development needs.

Urbanisation

- The **Namo Bharat Regional Rapid Transit System (RRTS)** shows how high-speed regional connectivity cuts travel time, expands job access, supports polycentric growth, and eases pressure on major cities.
- Waste management improved sharply, with **door-to-door MSW collection covering 98% of urban wards** and **waste processing rising from 16% (2014–15) to 80% (2024–25)**.

Building Strategic Resilience and Strategic Indispensability

- The Survey calls for a shift from **Strategic Resilience to Strategic Indispensability**, urging India to move beyond defensive import substitution and become a **critical node in global supply chains**.

- It advocates **intelligent, time-bound import substitution** through a **tiered indigenisation framework**, while identifying **state capacity** as the key constraint—requiring an **entrepreneurial state**, regulatory experimentation, and protection for good-faith decision-making.

Key Challenges Highlighted by the Economic Survey

- **Global Uncertainty:** The Survey highlights a shift from **rules-based globalisation** to **geopolitical fragmentation**, marked by **strategic trade, supply-chain weaponisation, volatile capital flows**, and rising **resource nationalism (Pax Silica)**, making access to **critical minerals, energy, technology, and finance** increasingly uncertain.
- **State Capacity as the Binding Constraint:** India's core challenge is **weak state capacity**, driven by **bureaucratic risk aversion**, fear of **retrospective audits and vigilance inquiries**, inability to reverse temporary policies (**policy hysteresis**), rather than mission-oriented governance.
  - The Survey warns that the rapid expansion of **unconditional cash transfers (Rs 1.7 lakh crore in FY26)**, though offering short-term relief, poses risks to **fiscal sustainability and medium-term growth**.
  - It cautions that rising transfers **crowd out productive capital expenditure**, especially in revenue-deficit States.
- **Competitiveness Issues: High energy, logistics, and raw-material costs** act as an implicit tax on downstream manufacturing, weakening exports.
  - The rupee remains **structurally soft**, backed by **capital inflows instead of durable export surpluses**, limiting external resilience.
- **Low R&D:** The private sector prioritises short-term profits and regulatory management over productivity-driven global competition.
  - Underinvestment in **R&D and frontier manufacturing** and the absence of **corporate stewardship of national productive capacity** constrain long-term industrial capability.
- **Societal Behavioural Constraints:** A deficit of **delayed gratification**, shortcut-seeking behaviour, weak **civic discipline**, and neglect of the **commons** undermine **reliable system-building and divert state capacity toward enforcement rather than development.**

Measures to Strengthen the Indian Economy

- **Manufacturing Push:** Accelerate transition towards **medium- and high-technology manufacturing**, with strong momentum in **electronics, EVs, pharmaceuticals**, backed by **PLI schemes**.
- **Agriculture Reorientation:** Survey flags **yield gaps versus global averages**, calling for better seeds, crop diversification, and stronger extension services, **FPO–PACS–SHG** integration, and **climate-resilient practices** to boost productivity and sustainability.
- **Infrastructure-led Investment:** Sustain high **public capex** to crowd in private investment, supported by rapid expansion of **highways, railways, ports**, and logistics efficiency.
- **Human Capital & Skilling:** Align education and skills with industry needs through **PMKVY 4.0, Skill Impact Bonds, apprenticeships**, and **NEP-led vocationalisation** with flexible, credit-based learning pathways.
- **Energy Transition & Sustainability:** Advance the **National Nuclear Energy Mission,** scale **battery energy storage**, and deepen the **circular economy** through EPR and waste action plans.
- **Urban Transformation:** Unlock urban productivity by **increasing FSI**, strengthening **ULB finances**, and expanding **public transport (metros, e-buses)** to address congestion and sprawl.
- **AI & Digital Strategy:** Adopt a **"Frugal AI" approach** focused on **application-specific AI**, supported by **trusted cross-border data flows with domestic value retention**, ensuring Indian data strengthens local innovation and R&D.
- **Climate Strategy:** The **Survey** advocates a **growth-aligned climate strategy**, prioritising **adaptation over near-term mitigation** and viewing development as a key form of resilience.
  - It cautions against rapid, infrastructure-blind energy transitions, citing grid stresses in Europe, and stresses the need for **innovation, institutional capacity, and reliable non-fossil energy such as nuclear power**.
- **Mental Health:** The Survey flags **digital addiction and screen-related mental health risks**, especially among children, and calls for preventive, school-linked measures and expansion of **Tele-MANAS** beyond crisis care.

Union Budget 2026-27

Union Budget 2026–27

The Union Minister of Finance and Corporate Affairs presented the **Union Budget 2026–27 in Parliament,** marking the first Budget prepared in the newly inaugurated **Kartavya Bhawan.**

- The budget framed as a **Yuva Shakti-driven Budget**, is anchored in the vision of **Viksit Bharat** and reflects the guiding principles of ***Action over Ambivalence, Reform over Rhetoric, and People over Populism*.**
- The Budget is guided by **three Kartavyas (duties)** aimed at accelerating economic growth, building people's capacities, and ensuring inclusive development.

The Three Kartavyas

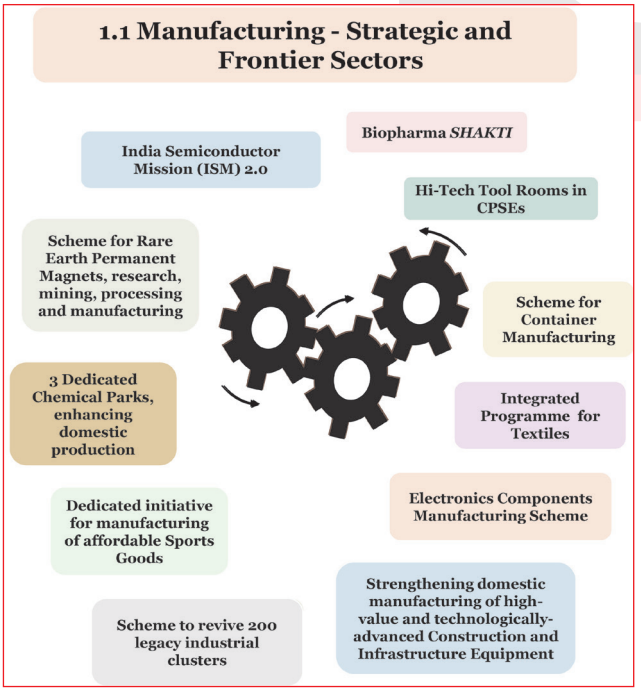
- **Sustain Economic Growth:** To enhance productivity, competitiveness, and build resilience against volatile global dynamics.
- **Fulfill Aspirations:** To build the capacity of the youth and citizens, making them strong partners in India's prosperity.
- **Sabka Saath, Sabka Vikas:** To ensure every family, region, and sector has access to resources and opportunities, focusing on the "Last Mile."

Key Highlights of the Union Budget 2026-27

First Kartavya: Accelerate & Sustain Economic Growth

- **Manufacturing & Industry (Strategic Sectors):** To position India as a global manufacturing hub, the budget focuses on 7 Strategic and Frontier Sectors:
  - **Biopharma SHAKTI:** To position India as a global hub, the Government **proposed** the **"Biopharma SHAKTI"** (Strategy for Healthcare Advancement through Knowledge, Technology and Innovation) mission with an outlay of **Rs 10,000 crore over five years** to develop India as a **global biopharma manufacturing centre**.
    - It focuses on **biologics and biosimilars**, supported by **3 new National Institutes of Pharmaceutical Education and Research (NIPERs)**, upgradation of **7 existing institutes**, and strengthening of **CDSCO** to global standards.
  - **India Semiconductor Mission 2.0:** Building on **ISM 1.0**, the Union Budget 2026–27 announces **India Semiconductor Mission (ISM) 2.0** to advance **technological sovereignty**.
    - It focuses on **manufacturing semiconductor equipment and materials** and strengthening **resilient supply chains**, with **industry-led R&D and training centres** to create a **skilled workforce** critical for **economic and national security**.
  - **Electronics Components Manufacturing:** The **Electronics Components Manufacturing Scheme** outlay is increased from **Rs 22,919 crore to Rs 40,000 crore** to deepen domestic value chains and boost electronics manufacturing.
  - **Rare Earth Corridors & Chemical Parks:** The Budget proposes **Rare Earth Corridors** in **Odisha, Kerala, Andhra Pradesh, and Tamil Nadu** for mining, processing, and manufacturing of **Rare Earth Permanent Magnets (REPM)**, along with **three Chemical Parks** under a **cluster-based, plug-and-play model** to reduce import dependence.
  - **Capital Goods & Container Manufacturing:** The Budget announces **Hi-Tech Tool Rooms by Central Public Sector Enterprises (CPSEs)**, a **Construction and Infrastructure Equipment (CIE) Scheme**, and a **Rs 10,000 crore Container Manufacturing Scheme** to strengthen domestic capital goods and logistics manufacturing.
  - **Textile Sector Push:** An **Integrated Textile Programme** comprising the **National Fibre Scheme**, **Samarth 2.0**, **Tex-Eco Initiative**, and cluster modernisation is launched, along with **Mega Textile Parks** to promote technical textiles and value addition.
  - **Gram Swaraj & Sports Goods:** The **Mahatma Gandhi Gram Swaraj initiative** aims to strengthen **khadi, handloom, and handicrafts**, while a **sports goods manufacturing initiative** seeks to position India as a **global hub for affordable, high-quality sports equipment**.
- **Rejuvenating Legacy Industrial Sectors:** A Scheme to revive 200 legacy industrial clusters announced, to improve their cost competitiveness and efficiency through infrastructure and technology upgradation.
- **Champion MSMEs:** A dedicated **Rs 10,000 crore "SME Growth Fund" will be launched** to incentivize high-potential firms and create **"Champion MSMEs"** that can compete globally.
  - The **Self-Reliant India Fund** will get an additional Rs 2,000 crore to continue supporting micro enterprises and ensure steady access to risk capital, with **'Corporate Mitras'** envisioned as key enablers to mentor, guide, and integrate these enterprises into larger value chains.

- **Infrastructure as "Growth Connectors":**
  - **High-Speed Rail:** 7 High-Speed Rail corridors between cities - Mumbai-Pune, Pune-Hyderabad, Hyderabad-Bengaluru, Hyderabad-Chennai, Chennai-Bengaluru, Delhi-Varanasi, Varanasi- Siliguri **will be developed** as **"Growth Connectors"** to spur economic activity.
  - **Sustainable Movement of Cargo:** To promote environmentally sustainable cargo movement, **new Dedicated Freight Corridors will connect Dankuni to Surat,** alongside the operationalisation of **20 National Waterways over the next five years**.
    - A **Coastal Cargo Promotion Scheme will incentivise a shift from road and rail to waterways** and coastal shipping to raise their share from 6% to 12% by 2047.
    - The **Seaplane VGF Scheme** will support indigenised seaplane manufacturing and operations to improve last-mile connectivity and promote tourism.
  - **Infrastructure Risk Guarantee Fund:** The Budget proposed an **Infrastructure Risk Guarantee Fund** to offer prudently calibrated partial credit guarantees to lenders during the infrastructure development and construction phase.
- **City Economic Regions (CER):** The Government **proposed "City Economic Regions"** (CERs), a new initiative to **map cities based on specific growth drivers.**
  - An allocation of **Rs 5,000 crore per CER** over 5 years is proposed to be implemented via a "challenge mode."
- **Carbon Capture (CCUS):** A scheme for **Carbon Capture, Utilization, and Storage** launched to decarbonize hard-to-abate sectors (Steel, Cement).



Second Kartavya: Fulfill Aspirations & Build Capacity

- AVGC Content Creator Labs: Recognizing the potential of the **"Orange Economy"**, the Government will support the Indian Institute of Creative Technologies, Mumbai, in setting up **"Animation, Visual Effects, Gaming and Comics (AVGC) Content Creator Labs** in 15,000 secondary schools and 500 colleges.
- **National Institute of Hospitality:** A proposal **was made** to set up this institute by upgrading the existing **National Council for Hotel Management and Catering Technology,** bridging the gap between academia and the tourism industry.
- **Khelo India Mission:** Building on the **Khelo India programme**, the Budget launches a **Khelo India Mission** to transform the sports sector through integrated talent development, coach capacity building, sports science integration, competitive leagues, and expanded sports infrastructure.
- **Medical Value Tourism:** The Government proposed establishing **five Regional Medical Hubs** in partnership with the private sector to boost India's status as a **wellness and medical tourism destination**, with integrated facilities including **AYUSH Centres**, diagnostics, post-care, and rehabilitation services.
- **Women in STEM:** To support girl students in STEM, **one girls' hostel will be established in every district through Viability Gap Funding (VGF) or capital support.**

Third Kartavya: Sabka Saath, Sabka Vikas

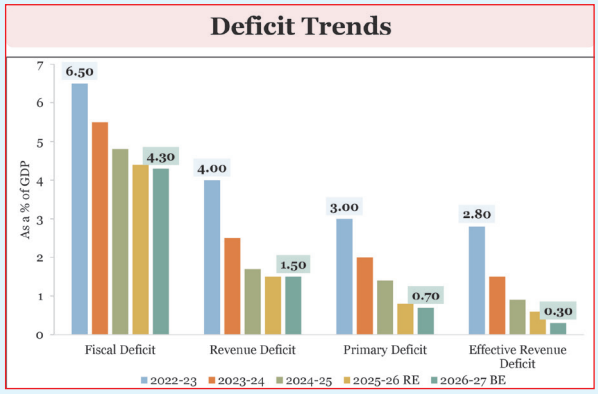
- **Bharat-VISTAAR:** To revolutionize agriculture, the **"Bharat-VISTAAR"** (Virtually Integrated System to Access Agricultural Resources) tool **will be launched**.
  - This multilingual AI platform **will integrate AgriStack and ICAR** data to provide customized advisory to farmers.
- **SHE Marts:** Building on the success of the **"Lakhpati Didis"**, community-owned retail outlets named **"SHE Marts"** (Self-Help Entrepreneur Marts) **will be set up** within cluster federations.
- **Mental Health Infrastructure:** Reaffirming its commitment, the Government **announced** the setting up of **"NIMHANS-2"** and **proposed** upgrading institutes in Ranchi and Tezpur to **"Regional Apex Institutions"**.
- **Purvodaya & North-East:**
  - **Buddhist Circuits:** A specific scheme **will be launched** to develop **"Buddhist Circuits"** in the North East Region (e.g., Arunachal Pradesh, Sikkim, Assam, Manipur, Mizoram and Tripura).
  - **East Coast Industrial Corridor:** Proposed the development of an **East Coast Industrial Corridor** with a well-connected node at Durgapur (West Bengal), creation of **five tourism destinations in five Purvodaya States.**
- **Divyangjan Support:** Targeted efforts **will be made** to empower the differently-abled through schemes like **"Divyang Sahara Yojana"** (implied in welfare focus).

Key Highlights of the Tax Reforms under Union Budget 2026-27

- **New Income Tax Act, 2025:** The government replaces the existing Income Tax Act, 1961 with a new, simplified **Income Tax Act, 2025**, effective from 1st **April 2026**.
- **Tax Rates:** No changes to the tax slabs for FY 2026-27; stability maintained.
- **TCS Rationalization: Tax Collected at Source (TCS)** on **overseas tour packages** and remittances for **education/ medical purposes** under LRS is reduced to a uniform **2%** (without any threshold).
- **Rationalization of TDS:** To remove ambiguity, **Tax Deduction at Source (TDS)** on the supply of **manpower services** is fixed at **1%** (for Individuals/HUF) or **2%** (for others).
  - Non-production of books of accounts and failure to pay TDS (where payment is made in kind) will be **decriminalized**.
- **Customs Duty Rationalization:** The tariff rate on goods imported for **personal use** is reduced from **20% to 10%**.
  - Customs duty is fully exempted on **17 cancer drugs** and medicines/foods for **7 rare diseases**.
- **Securities Transaction Tax (STT):** Marginally increased (from 0.1% to 0.15% in certain segments) to curb excessive speculation in equity markets.
- **Minimum Alternate Tax (MAT):** The Union budget also proposes to provide exemption from **Minimum Alternate Tax (MAT)** to all non-residents who pay tax on presumptive basis.
- **Tax Administration:** The Budget proposes a **Joint Committee of Ministry of Corporate Affairs and Central Board of Direct Taxes** for incorporating the requirements **of Income Computation and Disclosure Standards (ICDS) in the Indian Accounting Standards (IndAS)**, eliminating separate ICDS-based accounting from **tax year 2027–28**, and **rationalising the definition of accountant** under the Safe Harbour Rules to simplify compliance.
- **Immunity from Prosecution:** Non-disclosure of foreign assets worth less than **Rs 20 lakh** will be granted immunity from prosecution (retrospective effect from 1st October 2024).
- **Buyback Tax Shift:** Share buybacks will now be taxed as **Capital Gains** in the hands of the shareholder (shifting the burden from the company to the recipient).
- **Strategic Incentives for Investment & Industry:**
  - **Data Centers Tax Holiday:** Foreign companies providing global cloud services via Indian data centers will receive a **tax holiday until 2047**.
  - **IFSC (GIFT City):** Tax holiday extended from 10 to **20 years** for Offshore Banking Units.

Macroeconomic Fundamentals Highlighted in Union Budget 2026-27

- **Fiscal Deficit:** The target for **Budget Estimate (BE) 2026-27** is set at **4.3% of GDP**, adhering to the glide path of reducing it below 4.5%. It has improved from **4.4%** in the **Revised Estimates (RE) of 2025-26**.
- **Debt-to-GDP Ratio:** Estimated to decline to **55.6%** in BE 2026-27 (from 56.1% in RE 2025-26). The government aims to bring this ratio down to **50% by 2030-31** to free up resources for development.
- **Capital Expenditure (Capex):** The government continues to use public investment as the primary driver of economic growth.
  - **Capex Allocation** has been increased to **Rs 12.2 Lakh Crore** for FY 2026-27 (approx. 3.1% of GDP) (up from Rs 11.2 Lakh Crore).
  - When grants-in-aid to states for capital assets are included, the **Effective Capital Expenditure** stands at **Rs 17.1 Lakh Crore** (approx. 4.4% of GDP).
- **GDP Growth:** The Budget assumes a **Nominal GDP growth of 10.5%** for FY 2026-27, with Real GDP growth projected at **around 7%**.

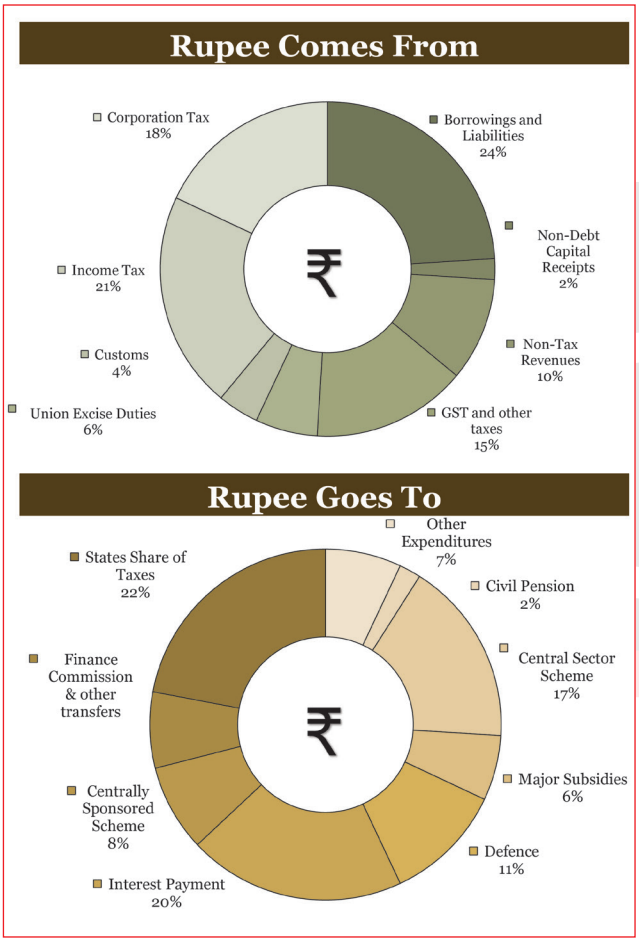


- **Revised Estimates 2025–26:** Non-debt receipts are estimated at **Rs 34 lakh crore**, while total expenditure is pegged at **Rs 49.6 lakh crore**, with **capital expenditure of about Rs 11 lakh crore**.
- **Budget Estimates 2026–27:** Non-debt receipts are estimated at **Rs 36.5 lakh crore**, with **net tax receipts of Rs 28.7 lakh crore**, while total expenditure is projected at **Rs 53.5 lakh crore**. To finance the fiscal deficit, **net market borrowings** are estimated at **Rs 11.7 lakh crore**, with **gross borrowings of Rs 17.2 lakh crore**, and the remainder to be met through **small savings and other sources**.

  - **Critical Minerals:** Customs duty exemptions granted on capital goods required for the **processing of critical minerals** (Lithium, Cobalt, etc.) and manufacturing of **Lithium-ion cells**.
  - **IT Sector Safe Harbour:** The threshold for availing **"Safe Harbour" rules for IT services** is enhanced to **Rs 2,000 crore**, with a unified category for software development and KPO services.
- **Customs Modernization & Export Promotion**
  - **Sectoral Relief:** Duty-free import limits for inputs in **Marine, Leather, and Textile** sectors have been increased to boost export competitiveness.

- **Aviation & Defence:** Duty exemptions provided for parts/components used in the manufacture and **MRO (Maintenance, Repair, Overhaul) of aircraft.**

- **Ease of Doing Business:** The Budget streamlines trade through a **single digital window for cargo clearance**, **instant customs clearance** for non-compliant goods, rollout of the **Customs Integrated System (CIS)**, and expanded **AI-based container scanning**.
  - It makes **Exclusive Economic Zone (EEZ) or on the High Seas fish catch duty-free**, revises **duty-free baggage allowances**, and allows **dispute settlement for honest taxpayers** with a reduced penalty.



Concerns Regarding the Union Budget 2026–27

- **Global Headwinds:** The Budget assumes **10.0 % nominal GDP growth (First Advance Estimates of FY 2025-26)**, which may be tested by **global economic slowdown, geopolitical conflicts, and trade disruptions**.
- **Revenue Buoyancy:** Large shortfalls in income tax and GST collections **sharply reduced fiscal space,** triggering across-the-board expenditure cuts, including in capital spending and key social sectors.
  - The Budget bets heavily on Supply-Side Economics (building roads, factories, and railways) to drive growth. However, **Private Consumption (which forms ~60% of GDP) has been limited, especially in rural areas.**
- **Implementation Lag:** High-technology schemes such as **Bharat-VISTAAR** and **Biopharma SHAKTI** require advanced institutional capacity and often face **bureaucratic and execution bottlenecks**, while other infrastructure projects also continue to struggle with land acquisition challenges.
- **Job Creation Gap:** A **capex-heavy strategy** focused on **semiconductors and biopharma** risks **jobless or K-shaped growth**, given limited labour absorption amid a widening **education–employment skill mismatch**.
- **Green Transition and Resource Constraints:** The shift to green technologies increases demand for **water, energy, and critical minerals**, raising **import dependence** and risks of **greenflation** that may elevate costs for **MSMEs and manufacturing**.
- **Uncertain Capital Flows:** Persistent **FPIs outflows** and an unclear **FDI outlook** raise concerns over **external financing stability and investor confidence**.
- **External Aid Prioritisation Challenge:** Budget 2026–27 allocates grants-in-aid to foreign countries, with **Bhutan as the largest beneficiary**, while **no funds for the strategically important Chabahar Port project in Iran** raise concerns over India's regional connectivity and strategic outreach.

Measures to Strengthen India's Economy Beyond Budget 2026–27

- **Reviving the Twin Engines of Demand:** India's growth needs both **investment and consumption** to fire together. Faster rollout of **SHE Marts** and **Bharat-VISTAAR** can raise rural incomes and boost demand.
- **Securing Strategic Autonomy in Critical Resources (CNIED):** As critical minerals become the **"new oil" of the green economy,** India must combine domestic initiatives like Rare Earth Corridors with overseas mineral security partnerships.
  - Simultaneously, boosting R&D spending beyond the current low share of GDP is essential to support semiconductors and biopharma ecosystems.
- **Skilling for New Sectors:** The *AVGC* and *Semiconductor* push must be matched with aggressive skill development.
- **Quality of Expenditure:** Move from "Outlays" to "Outcomes." Every Rupee spent on schemes like **Mahatma Gandhi Gram Swaraj** must be audited for tangible asset creation and income generation, not just fund utilization.
- **Correcting "Inverted Duty Structures":** In sectors like textiles and electronics, inverted duty structures (where raw materials are taxed higher than finished imports) hurt domestic manufacturing.
  - A sector-wise duty correction is needed to ensure **"Made in India" is cheaper than imported goods at the tax level**.