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Compilation of UPSC relevant news from 1st September to 30th September 2026

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18TH BRICS SUMMIT 2026

India hosted the 18th BRICS Summit on September 12-13, 2026 at Bharat Mandapam, New Delhi, under its fourth BRICS Chairship with the theme "Building for Resilience, Innovation, Cooperation and Sustainability".

About BRICS

- The acronym **BRIC** was coined by economist **Jim O'Neill of Goldman Sachs in 2001**.
- It formalised as a political grouping in **2006** at the first BRIC Foreign Ministers' meeting on the margins of UNGA in New York, and held its **first summit in Yekaterinburg in 2009**.
- **South Africa joined in 2010**, making it BRICS. It first participated as BRICS at the **Sanya Summit in 2011**.
- Egypt, Ethiopia, Iran, Saudi Arabia, and UAE became full members from **January 2024**. **Indonesia joined as the 11th full member in January 2025**.
- Current **11 full members:** Brazil, China, Egypt, Ethiopia, India, Indonesia, Iran, Russia, Saudi Arabia, South Africa, and UAE.
  - Saudi Arabia's status carries a nuance- India officially classifies it as a full member, while Saudi Arabia described its own participation as an **'invited country'.**
- **10 Partner Countries** Inducted in 2025: Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Nigeria, Thailand, Uganda, Uzbekistan, and Vietnam. This broader framework accommodates growing global interest without altering the core structure.
- BRICS Presidency rotates annually in alphabetical order. A new rotation formula is being deliberated following rapid expansion.
- Total GDP in **nominal terms:** over **USD 32 trillion**- accounting for **28-30% of global GDP**.
  - In **PPP terms**, BRICS accounts for over **40% of global GDP**, surpassing the G7's 27.8% share.
- The grouping represents **49.5% of the global population** and **26% of global trade**.

Institutional Mechanisms

New Development Bank (NDB, 2014): Headquartered in **Shanghai**. Finances infrastructure and sustainable development as an alternative to World Bank and IMF dominance.

Contingent Reserve Arrangement (CRA): Provides liquidity support during financial crises, reducing dependence on Western-led financial systems.

Key Outcomes of the 18th BRICS Summit 2026

- The summit marked **BRICS' third decade of cooperation** and concluded with the unanimous adoption of the **New Delhi Declaration**.
- The Declaration is a **140-paragraph consensus document** covering multilateralism, conflict prevention, trade, technology, climate, health, and equitable global governance.

Financial, Economic and Trade Initiatives

- The **BRICS Payment Task Force** was mandated to advance the interoperability of payment channels for trade settlements in local currencies. The declaration notes that there is **"no one-size-fits-all approach"** to de-dollarisation.
- **BRICS Pay** was formally endorsed as a framework for intra-BRICS digital payments.
- India's proposal to host a **BRICS Risk Lab at GIFT City, Gujarat** was endorsed to build a self-reliant reinsurance ecosystem for Global South infrastructure projects.
- The **Jaipur Consensus** was welcomed to study an **Invoice Discounting Mechanism** to help MSMEs unlock working capital and strengthen international trade participation.
- Amendments to the **CRA Treaty** were approved and the **9th Test Run** initiated to strengthen BRICS' internal financial safety net without relying on the IMF.
- The **BRICS Tax Cross-Learning Lab** and **Authorised Economic Operator (AEO) Action Plan 2026** were launched to combat smuggling and illicit financial flows.
- A **New Investment Platform** was approved for phased, consensus-based development to promote intra-BRICS investment cooperation.
- The **BRICS-NDB Knowledge Portal** was launched and pilot transactions for **Multilateral Guarantees** were advanced to de-risk infrastructure and mobilise private capital.
- The **BRICS Startup Innovation Fund** was proposed to finance early-stage ventures.
- The declaration condemned **unilateral sanctions, non-tariff barriers**, and **carbon border adjustment mechanisms** without naming specific countries.

Science, Technology and Digital Infrastructure

- The **BRICS Remote Sensing Satellite Constellation** was expanded and terms for the **BRICS Space Council** were drafted to democratise outer space technology access.
- The **BRICS DPI Repository** was approved and pilot projects initiated to share open-source digital public goods including digital identity and payment systems.

- The **Global Research Advanced Infrastructure Network (GRAIN)** Action Plan was adopted to pool resources for megascience projects ensuring **technological sovereignty**.
- A feasibility study was tasked for a **direct high-speed submarine communication network** bypassing traditional routing choke points.
- The **Digital Centre of Excellence for Smart Grids** was established using AI for renewable energy integration. The **BRICS Incubator Network** was launched for innovation-led growth.

Agriculture and Food Security

- The **BRICS Grain Exchange** is aimed to launch by **2027**, championed by Russia, to strengthen food security and reduce grain price volatility.
- **BRICS AGRIN (Agro-Inputs, Genetic Resources, and Information Network)** established as a voluntary, farmer-centric framework for seeds, germplasm, and agricultural inputs.
- The **Global Forum on Farmers' Rights in Seed Systems** was launched to protect traditional agricultural knowledge.
- **Centres of Excellence on Agroecology and Regenerative Agriculture** were established for sustainable and climate-resilient farming.
- The **BRICS Network on Digital Agriculture** was launched to scale digital solutions across agriculture, agroforestry, fisheries, and aquaculture.
- India practised **culinary diplomacy** by serving **Gucchi Marmik** using rare Himalayan Gucchi mushrooms and **Koraput coffee from Odisha**, promoting **Vocal for Local**.

Health and Medicine

- The **BRICS Mission for Healthy Lifestyle** was endorsed along with a **Joint Roadmap for Healthy Lifestyle Promotion (2026-2029)**.
- **NIMHANS, India** was designated as coordinating centre for the **BRICS Training Hub Network** for mental health workforce development.
- An **Expert Working Group** was established to integrate traditional medicine into modern health systems for affordable Universal Health Coverage.
- The **BRICS BioDesign Centre**, spearheaded by **Andhra Pradesh MedTech Zone (AMTZ)**, was launched to advance cross-border healthcare innovation for the Global South.

Transport, Logistics and Climate

- The **BRICS Logistics Supply-Chain Cooperation Framework** was agreed for resilient and sustainable transport networks.
- The **GVC Action Plan 2026-2030** was adopted including a **Technical Council and Joint Study** to make global value chains more resilient.
- The **Sustainable Aviation Fuels Forum** was launched. The **BRICS Urban Mobility Hub** was created. **Voluntary Principles for Climate-Resilient Urban Infrastructure** were adopted.
- **Integrated Landscape-Based Greening and Wildfire Preparedness principles** were adopted to combat desertification and protect tropical forest carbon sinks.

Security, Law and Society

- BRICS strongly condemned the **Pahalgam terrorist attack of April 22, 2025** in which **26 people were killed** and called for **zero tolerance** toward terrorism. It also urged adoption of the **UN Comprehensive Convention on International Terrorism**.
- An **Expert Network and Repository for Tracing Fugitive Offenders** were established to deny safe havens to economic offenders and facilitate recovery of stolen assets.
- **BRICS CONNECT** was launched to strengthen gig workers' rights and enable cross-border portability of social security.
- An **Artist Registry** was established to protect cultural heritage and curb illicit trafficking of antiquities.
- The **BRICS Youth Cooperation Framework 2026** was adopted alongside a **Working Group on Sport Technology**.

India's Four BRICS Chairships

2012: Theme — **"BRICS Partnership for Global Stability, Security and Prosperity."** Proposed the NDB and conceptual foundation for the CRA.

2016 (Goa): Theme — **"Building Responsive, Inclusive and Collective Solutions."** Operationalised the NDB. Hosted the BRICS-BIMSTEC Outreach Summit. Mandated alignment with FATF standards.

2021 (Virtual): Theme — **"BRICS@15: Intra-BRICS Cooperation for Continuity, Consolidation and Consensus."** Adopted the BRICS Counter-Terrorism Action Plan. Launched the BRICS Vaccine R&D Center and Remote Sensing Satellite Constellation Agreement.

2026: Theme — **"Building for Resilience, Innovation, Cooperation and Sustainability."** Focused on DPI, local-currency payments, supply chain resilience, food security, and counter-terrorism.

Geopolitical Mandates

- BRICS officially backed the **Ezulwini Consensus and Sirte Declaration** for African representation in a reformed UNSC. China and Russia reiterated support for **India's and Brazil's aspirations** for a greater UNSC role.

- The declaration condemned unilateral wars and stressed dialogue and preventive diplomacy.
- It took a strong position on **Palestine and Lebanon** including humanitarian access and the **two-state solution**, and referenced **South Africa's case against Israel at the International Court of Justice**.
- References to US-Israel attacks on Iran, the assassination of **Iran's Supreme Leader Ali Khamenei**, and Iran's retaliatory attacks including on the UAE were omitted as a **last-minute West Asia compromise** between Iran and the UAE.
- BRICS formally endorsed the WTO accession bids of **Ethiopia and Iran** and backed **Ethiopia and Indonesia** for newly expanded seats on the **ICAO Council**.
- India proposed a **10-point roadmap based on "3Rs" (Representation, Responsiveness, and Rule-making)** to transform the international system from a **"pyramid of privilege"** to a **"platform of partnership."**
- China confirmed as host for the 19th BRICS Summit in 2027.

BRICS Taxation and Global Tax Governance

- The **BRICS Tax Heads Meeting** focused on international taxation, transfer pricing, digital tax administration, and engagement with the **UN Framework Convention on International Tax Cooperation (UNFCITC)**.
- India shared experiences in **faceless assessment, pre-filled tax returns, real-time invoice authentication**, and AI-enabled taxpayer assistance.
- Two new working groups were established on **international taxation and transfer pricing** and **revenue statistics**.
- The **first in-person BRICS Young Tax Professionals Capacity Building Programme** was held in India in **April 2026** and institutionalised as an annual programme.
- The **UNFCITC** process began via a **UN General Assembly resolution in 2023**. Negotiations began in 2025 with finalisation expected by **2027**.

Significance of India's 2026 Chairship

- India hosted over **400 BRICS meetings and engagements across 30 Indian cities**.
- The Summit facilitated the **highest-level Iran-UAE bilateral meeting** since the West Asian conflict began.
- India's engagement with Iran addressed concerns over its perceived tilt toward the US and Israel.
- India's meeting with China reaffirmed its political will to **normalise bilateral ties**.
- India strengthened its image as a **Global South balancer** with access to competing geopolitical camps.

Concerns

- **Saudi Arabia's Ambiguity:** Saudi Arabia described its own participation as an "invited country," creating structural ambiguity despite India's official 11-member classification.
- **Internal Divergences:** India-China tensions, Iran-UAE differences, and divergent positions on global conflicts constrain consensus.
- **Implementation Deficit:** Declarations on UNSC, IMF, WTO reform and local-currency trade require concrete institutional follow-through.
- **Geopolitical Polarisation:** BRICS must avoid becoming merely an anti-Western bloc while retaining strategic autonomy.

Way Forward

- **Institutionalise follow-through:** Create a BRICS implementation tracker with clear timelines for **BRICS Pay**, the **Grain Exchange**, the **Investment Platform** and other outcomes.
- **Deepen financial cooperation:** Expand **NDB** lending in local currencies and operationalise the **CRA** amendments to build a credible safety net.
- **Clarify membership norms:** Define clear criteria for full members and partners, along with a new Chair rotation formula. This will resolve ambiguities such as **Saudi Arabia's** status.
- **Manage internal divergences:** Use issue-based consensus and bilateral channels to ease **India-China** and **Iran-UAE** frictions.
- **Non-Western, not anti-Western:** Position BRICS as a reformist platform that complements the **G20** and the **UN** rather than confronting the West.
- **Push global governance reform:** Build common positions on **UNSC, IMF quota and WTO** reforms, guided by India's **3Rs roadmap**.
- **Strengthen security cooperation:** Build on the **Counter-Terrorism Action Plan** and push jointly for early adoption of the UN **Comprehensive Convention on International Terrorism**.
- **Prioritise people-centric outcomes:** Fast-track **food security**, **climate-resilient infrastructure** and **health** initiatives, as these deliver visible benefits to citizens.
- **Convert initiatives into public goods:** Scale up **DPI** sharing, the **GIFT City Risk Lab** and the **BRICS Startup Innovation Fund** for the wider **Global South**.

Conclusion

- The **New Delhi Declaration** marks BRICS' shift from broad statements to sector-specific cooperation.
- India used its fourth Chairship to act as a **bridge across competing camps** while advancing Global South priorities.
- The grouping's credibility now depends on **turning consensus into delivery** as China takes over the Chair in 2027.

ELECTORAL ROLL CONTROVERSY

On October 5, 2026, a Supreme Court Bench headed by CJI Surya Kant clarified it had not approved any modified version of Form 6 used during the Special Intensive Revision (SIR) of electoral rolls.

About the Election Commission of India

- The **ECI is a permanent constitutional body** established on **January 25, 1950** under **Article 324**, celebrated its **Golden Jubilee in 2001**, and is responsible for **superintendence, direction, and control** of elections to the **Lok Sabha, State Legislative Assemblies**, and the offices of the **President and Vice-President**.
- Originally a single-member body, it became a **three-member body on October 1, 1993** when **M.S. Gill and G.V.G. Krishnamurthy** were appointed as Election Commissioners. Decisions are taken by **majority vote**.
- The current Commission comprises **CEC Gyanesh Kumar** and Election Commissioners **Sukhbir Singh Sandhu and Vivek Joshi**.
- The CEC and ECs are appointed by the **President**, enjoy the **same status as Supreme Court judges**, and serve for **six years or until age 65**, whichever is earlier.

Constitutional Framework

- **Article 324(1):** Vests superintendence, direction, and control of elections in the ECI.
- **Article 324(2):** Composition determined by the President, subject to parliamentary law.
- **Article 324(3):** CEC acts as Chairman of the Commission when additional ECs are appointed.
- **Article 324(4):** President may appoint Regional Commissioners in consultation with ECI.
- **Article 324(5):** CEC can be removed **only in the same manner as a Supreme Court judge**. Service conditions cannot be altered to the CEC's disadvantage after appointment.
- **Article 324(6):** President or Governor must provide necessary staff to ECI upon request.
- **Article 325:** Prohibits exclusion from electoral rolls on grounds of **religion, race, caste, or sex**.
- **Article 326:** Provides for elections based on **adult suffrage**, subject to constitutional and statutory qualifications.
- **Article 327:** Empowers Parliament to make laws relating to elections including electoral rolls.
- **Article 328:** Empowers State Legislatures to make provisions for State Legislature elections.
- **Article 329:** Bars the judiciary from entertaining petitions **once the election process has started**. After results are declared, disputes can only be raised through **election petitions** before the High Court (Parliament and State Legislature elections) or the **Supreme Court** (President and Vice-President elections).

Advisory and Quasi-Judicial Functions

- The ECI has **advisory jurisdiction** over the post-election disqualification of sitting **MPs and MLAs** found guilty of corrupt practices. Cases decided by the Supreme Court or High Courts are referred to the ECI for its opinion.
- The ECI's opinion on disqualification is **binding on the President or Governor**, as the case may be.
- The ECI has the power to **disqualify a candidate who fails to file election expenditure accounts** within the prescribed time and manner, and also to **remove or reduce the period of disqualification**.

Legal Framework for Electoral Rolls

- **Section 19 of RPA 1950:** Eligibility involves being at least **18 years old and ordinarily resident** in the constituency.
- **Section 21 of RPA 1950:** Provides for **preparation and revision of electoral rolls**, including Special Intensive Revision (SIR).
- **Section 13B of RPA 1950:** Provides for **Electoral Registration Officers (EROs)** to prepare and revise electoral rolls at constituency level.
- **Section 32 of RPA:** Punishment for breaches of official duty in connection with **preparation, revision, or correction of electoral rolls**.
- **Registration of Electors Rules, 1960:** Prescribes statutory forms including **Form 6** for voter registration.
- **Four qualifying dates for enrolment:** Citizens turning 18 on **January 1, April 1, July 1, or October 1** can apply for registration in any quarter of the year.
- **Form 6** is the prescribed application for inclusion in the electoral roll, submittable before the ERO or online through the ECI or Chief Electoral Officer's website.

SIR: Background and Process

- SIR has been conducted **8 times from 1951 to 2004** and was ordered across **23 states and UTs from April 2026** for door-to-door voter verification.
- In an **intensive revision**, the electoral roll is prepared afresh. In a **summary revision**, it is only amended.
- The **Supreme Court upheld the validity of SIR (May 27, 2026)** in Bihar and other states, holding it is within ECI's powers under the RPA 1950 and affirming that **free and fair elections depend on the integrity and accuracy of electoral rolls**.

Form 6 Controversy

- In **July 2026**, a question was added to Form 6 requiring applicants to provide details of their inclusion in the electoral roll **after the last SIR** and whether relatives had appeared on it.
- Critics argue this change was made **without any amendment to the Registration of Electors Rules, 1960**, making it legally questionable and beyond the ECI's unilateral authority.

- The **Supreme Court on October 5, 2026** clarified it had not approved this modified version and would examine who introduced the change.

Concerns Regarding Independence of the ECI

- **Internal Dissent within the Commission:**
  - As per an Indian Express report, Election Commissioners **Sandhu and Joshi** recorded **written dissents on at least 14 occasions between November 2025 and August 2026**- on SIR decisions, Form 6 changes, and the centralisation of electoral roll management through **ECINet and ERONet**.
  - The **PIL (Shailendra Mani Tripathi vs Union of India, WP 401/2026)** challenges what it describes as **"subversion of multi-member decision-making"** within the ECI and seeks investigation into alleged deletion of **13 crore voter names**, restoration of original Form 6, and reversal of decisions taken without full Commission approval.
  - The ECI's position is that individual commissioner views do not constitute Commission decisions and that **final decisions were unanimous**.
- **Appointment Process Controversy:**
  - **Anoop Baranwal vs Union of India (2023):** SC mandated a collegium comprising the **PM, Leader of the Opposition (LoP), and CJI** for ECI appointments.
  - The **Chief Election Commissioner and Other ECs (Appointment, Conditions of Service) Act, 2023** replaced the CJI with a **Union Cabinet Minister nominated by the PM**, giving the Executive a **2:1 majority** in the selection process.
- **Asymmetric Removal Mechanism:**
  - The **CEC** requires **Parliamentary impeachment** for removal like a Supreme Court judge.
  - The two **Election Commissioners** can be removed by the **President simply on the CEC's recommendation** - creating a structural vulnerability and potential pressure to align with the CEC or Executive.
- **Financial Autonomy Gap:**
  - Unlike the **CAG or the Supreme Court**, the ECI's budget is **not charged upon the Consolidated Fund of India** but is a **"voted" expenditure**, subjecting it to annual parliamentary approval.
- **Electoral Roll Integrity Concerns:**
  - Approximately **13 crore voter names were allegedly deleted nationwide**, with concerns that deletions disproportionately affect **minority communities** in Bihar and West Bengal.
  - In **West Bengal**, **16.10 lakh appeals** were reportedly filed in the name of ECI against citizens whose names had been restored by judicial officers during SIR.
  - The **97 voters in Goa** were excluded after **ECINet software** prevented EROs from reversing deletions – demonstrating the risk of centralised digital administration overriding ERO statutory authority under Section 13B.
- **Technology and Transparency:**
  - ECI directed **CCTV and election footage destruction after 45 days** if no court challenge is filed. There is growing demand to extend this to at least **180 days** for credible post-election audits.
  - **AI-generated content and deepfakes** have tested ECI's ability to act without perceptions of bias.
  - The **Model Code of Conduct (MCC) lacks statutory backing**, raising concerns about selective enforcement.
- **Post-Retirement Appointments:** The Constitution does not **debar retiring CEC or ECs from further government appointments**, creating a potential conflict of interest that may affect impartiality while in office.

Key Judicial Pronouncements

- **Indira Gandhi vs Raj Narain (1975):** Free and fair elections are part of the **basic structure** of the Constitution.
- **T.N. Seshan vs Union of India (1995):** CEC is **"first among equals"**, not an absolute authority. Validated the multi-member Commission.
- **PUCL vs Union of India (2003):** Voter's **"Right to Know"** about candidates' antecedents is a Fundamental Right under **Article 19(1)(a)**.
- **Lal Babu Hussein vs Electoral Registration Officer (1995):** SC struck down ECI guidelines allowing voter deletions based on mere suspicion of foreign origin.
- **Md. Rahim Ali vs State of Assam (2024): Suspicion alone** is not sufficient grounds for deleting a name from the voter list.
- **Anoop Baranwal vs Union of India (2023):** Emphasised transparent ECI appointments, leading to the 2023 Act.
- **Supreme Court (May 27, 2026):** Upheld the validity of SIR, affirming ECI's powers under RPA 1950.

Way Forward

- Ensure ECI functions collegiately by majority under **Section 18 of the 2023 Act**, preventing unilateral CEC decisions.
- **Reform appointment process:** Revisit the 2023 Act to restore **judicial representation** or introduce a parliamentary committee to reduce executive dominance.
- **Equal removal protection:** Extend **Parliamentary impeachment-equivalent protection** to all Election Commissioners, not just the CEC.
- **Charge ECI budget:** Make it a **charged expenditure** on the Consolidated Fund of India to insulate it from annual parliamentary approval.
- **Statutory MCC:** Provide **legislative backing** to the Model Code of Conduct for non-selective enforcement.
- **Extend CCTV preservation:** Increase retention to at least **180 days** for credible post-election audits.
- **Restore ERO authority:** Protect **Section 13B ERO powers** from being bypassed by centralised software such as ECINet.
- **Independent probe:** Constitute an **SIT headed by a retired Supreme Court judge**, assisted by cybersecurity experts, to investigate electoral roll deletions and restore public confidence.

DRUG-FREE INDIA BY 2029

Union Home Minister chaired the 10th Apex Level Meeting of Narco-Coordination Centre (NCORD) in New Delhi and unveiled the "Vision Document on Drug Control (2026-2029)"- a three-year roadmap from July 2026 to July 2029.

India's Drug Problem: Key Drivers

Geographical Vulnerability

- India is geographically sandwiched between the **"Golden Crescent"** (Iran, Afghanistan, Pakistan) and the **"Golden Triangle"** (Myanmar, Thailand, Laos)- the two largest illicit drug production zones meeting nearly **90% of global demand** for heroin and methamphetamine.
- India serves both as a **major market and a significant transit route** for other countries.
- Smuggling routes constantly evolve using sophisticated and difficult-to-detect techniques.



Socio-Economic and Technological Factors

- Youth face academic competition, unemployment, and peer pressure, making them vulnerable to substance abuse.
- Criminal networks increasingly exploit synthetic narcotics, darknet markets, encrypted communications, cryptocurrency, drones, and autonomous vessels.
- The lack of institutionalised mental health support and the social stigma around seeking help leave vulnerable populations without direction.

Consequences of Drug Abuse

- **Health:** Addiction, mental illness, brain damage, overdose, and chronic health problems.
- **Social:** Family conflict, neglect, erosion of social networks, and reduced quality of life for families. Substance use impairs youth education, employment, and productivity.
- **Economic:** Decreased productivity, higher healthcare costs, and financial strain on families. India's **demographic dividend** is directly threatened.
- **Security:** The drug trade fuels organised crime, money laundering, and violence. **Narco-terrorism** is a direct consequence – drug cartels generate income that directly funds **cross-border terrorism and insurgency**.

Constitutional and Legal Basis

- **Article 47** of the Constitution directs the State to endeavour to prohibit the consumption of drugs injurious to health except for medicinal purposes – the constitutional foundation of India's anti-narcotics policy.
- The **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985** is the primary legislation controlling narcotics, prescribing imprisonment and property forfeiture for violations.
- **Section 9A of the NDPS Act** empowers the Union Government to control and regulate precursor substances that may be diverted for illicit drug manufacture.

The Four-Pillar Roadmap (2026-2029)

- **Pillar 1: Intelligence-Led Enforcement and Operations**
  - Agencies will dismantle entire drug-trafficking networks rather than targeting only individual offenders.
  - A **bottom-to-top and top-to-bottom investigation model** will trace small seizures to their source and large consignments to their destination to uncover the wider network.
  - **BSF, CISF, Indian Coast Guard, Customs, and DRI** will carry out risk-based profiling and install scanners at land borders, ports, airports, and cargo points.
  - The **CBI, MEA, and Interpol** will pursue fugitives. The **Enforcement Directorate, Financial Intelligence Unit, and banking system** will trace illicit money trails.
  - **Target:** Dismantle **100 national and international drug networks** and bring back **100 fugitives** by March 2029.
- **Pillar 2: Precursor and Synthetic Drug Control**
  - Agencies will strengthen control over precursor chemicals and take action against **clandestine drug laboratories**.
  - **Target:** Destroy at least **75 clandestine drug laboratories in 2026** and achieve **end-to-end visibility of the narcotics supply chain by March 2027**. Destroy **100 illegal drug labs** overall by 2029.
  - MHA is working toward establishing **exclusive NDPS courts** for faster trials and convictions.
- **Pillar 3: Demand Reduction and Harm Reduction**
  - The government will reduce drug use through awareness, prevention, treatment, and rehabilitation.
  - **Target:** Increase **de-addiction centres to 1,751** to expand treatment access nationwide.

- Prepare **10,000 volunteers** and **1 lakh Nasha Mukt Bharat Mitras** for grassroots awareness.
- Make **educational institutions drug-free** through school and college-level early intervention.
- **Target:** Reach **50 crore people** through awareness campaigns by 2029.

➲ **Pillar 4: Capacity Building and Coordination**

- Central and State agencies will be strengthened through better intelligence sharing, joint action, and improved border monitoring.
- The roadmap will operate in **mission mode** with **quarterly reviews, measurable outcomes**, and outcome-based accountability for each ministry and State government.

Anti-Narcotics Task Force (ANTF)

Enforcement mechanism
The ANTF is a State and UT-level enforcement mechanism under the NDPS Act, 1985, headed by a senior police officer in every State and UT.

Operational duties
ANTFs collect intelligence, investigate offences, intercept consignments, and dismantle organised networks, coordinating directly with the **NCB**.

National Conference
The **3rd ANTF National Conference** adopted the **Vision Document (2026-2029)** with defined targets, timelines, and accountability frameworks

Key Government Initiatives and Institutions

➲ **Narco-Coordination Centre (NCORD):** In NCORD, a **4-tier mechanism** (Apex, Executive, State, District) was created in **2019** to coordinate anti-drug action across all agencies and levels of government.

➲ **Narcotics Control Bureau (NCB):** The apex drug law enforcement agency under the Ministry of Home Affairs and India's nodal point for obligations under **UN drug control conventions**.

➲ **Joint Coordination Committee (JCC):** Formed in **2019** under the **Director General, NCB** to monitor investigations of significant drug seizures and facilitate joint decisions between central agencies and State governments against major drug networks.

➲ **MANAS Helpline (1933):** A unified platform linking awareness, treatment, counselling, rehabilitation, and livelihood opportunities. The helpline supports persons with drug addiction.

➲ **NIDAAN Database:** A data-driven system for tracking narcotics offenders and supporting network-level investigations through a nationwide map of drug hotspots and trafficking patterns.

➲ **DarkNet Monitoring Cell (NCB):** Tracks online drug sales across encrypted platforms.

➲ **Anti-Narcotics Task Forces (ANTFs):** Established in all States and UTs and linked to the national strategy through NCB coordination.

➲ **Nasha Mukt Bharat Abhiyan (NMBA, 2020):**

- Originally launched in **272 most vulnerable districts**.
- Extended to all districts since **August 2023**. Focuses on higher educational institutions, university campuses, and schools.

➲ **Nasha Mukt Yuva for Viksit Bharat Sankalp Abhiyan (August 2026):** Launched by the Prime Minister to mobilise young people against substance abuse.

➲ **Online Drugs Disposal Fortnight Campaign:** Launched alongside the Vision Document. Narcotic substances worth more than **₹6,000 crore and weighing over 2.09 lakh kg** to be destroyed.

International Cooperation

➲ India has bilateral agreements with **27 countries**, MoUs with **16 countries**, and Security Cooperation Agreements with **2 countries** for combating illicit NDPS trafficking.

➲ Over **1,400 Central and State agencies** are connected through **Interpol** for transnational intelligence sharing.

➲ Between **July 2019 and July 2026**, India extradited **274 wanted criminals from 36 countries**.

➲ During **2019-2026**, assets worth **₹17,874 crore were attached** and **₹18,762 crore were recovered** in fugitive-related cases.

Progress Under Enforcement

➲ Between **2014 and July 2026**, over **1.19 crore kg of drugs** worth approximately **₹1.84 lakh crore** were seized – a massive increase from **26 lakh kg seized between 2004 and 2014**.

➲ Agencies registered **8.75 lakh cases** and arrested **10.97 lakh accused persons**.

➲ **Operation Ragepill (May 2026):** NCB's first-ever seizure of **Captagon – 227.7 kg** – a synthetic stimulant linked to West Asian conflict zones.

➲ **Operation White Strike (May 2026):** Seizure of **349 kg of cocaine worth approximately ₹1,745 crore** in the Mumbai region.

➲ **Operation Samudragupt (2022):** A joint **Indian Navy-NCB** initiative to combat drug trafficking in the **Indian Ocean Region (IOR)**.

➲ **Operation NARCOS (2022):** RPF's targeted push against drug smuggling through railways, involving coordinated checks and identification of trafficking hotspots.

➲ **Operation Crystal Fortress:** Targeting methamphetamine trafficking networks.

➲ **Operation WeedOut:** A DRI operation to bust cartels involved in smuggling hydroponic cannabis into India.

Challenges

- **Synthetic drugs** can be produced in small, difficult-to-detect clandestine labs not dependent on traditional trafficking routes.
  - The **Greater Noida Clandestine Methamphetamine Syndicate**, which was dismantled by the Narcotics Control Bureau (NCB) is a case in point.
- **Darknet and cryptocurrency-based trafficking** make drug transactions more anonymous and harder to trace.
- **Transnational drug networks** operate across multiple jurisdictions, making investigation and prosecution dependent on sustained international cooperation.
- **Coordination gaps** between enforcement, financial investigation, and rehabilitation agencies can weaken the overall response.
- **Demand-side gap:** Arrests and seizures alone cannot address addiction without effective treatment and rehabilitation.
- No publicly committed **baseline metric** exists against which the 2029 drug-free target will be objectively measured.

Way Forward

- India's broader **national goal of Drug-Free India by 2047** positions the **2029 roadmap as a critical intermediate milestone** – success by 2029 will determine the pace of the longer-term transformation.
- A sustainable response requires moving beyond arrests and seizures to a comprehensive **4P framework:**
- **Prevention:** Community awareness, educational institution campaigns, and youth mobilisation.
- **Prosecution:** Network-centric enforcement, exclusive NDPS courts, and financial investigation.
- **Protection:** Strengthening border surveillance, precursor control, and international cooperation.
- **Rehabilitation:** Scaling de-addiction centres, the MANAS helpline, and social reintegration support.

Conclusion

- The **Drug-Free India by 2029** roadmap reflects a necessary evolution in India's approach to narcotics- from isolated seizures to dismantling entire criminal networks.
- Narcotics are not merely a public health concern. They are a direct threat to **internal security, youth welfare, border integrity, and India's demographic dividend**.
- Success will depend on converting institutional coordination into measurable outcomes, integrating rehabilitation with enforcement, and sustaining international cooperation against networks that operate well beyond India's borders.
- A drug-free India is ultimately inseparable from the vision of **Viksit Bharat**.



Cover Story
Economy

UPI-MDR FRAMEWORK 2026

The National Payments Corporation of India (NPCI) announced that a Merchant Discount Rate (MDR) of 0.4% will apply to eligible Person-to-Merchant (P2M) UPI transactions above ₹2,000 from October 15, 2026.

Government Notification

- The government simultaneously notified that **UPI transactions up to ₹2,000 and all P2P transfers will remain completely free**, legally categorising **RuPay-powered debit cards and UPI transactions up to ₹2,000** as **"electronic modes of payment"** to protect them from MDR.
- This notification also creates the **legal basis for introducing MDR on UPI payments above ₹2,000**, thereby ending the zero-MDR regime that has been in place since **January 2020**.

About MDR

- **Merchant Discount Rate** is a fee paid by merchants for processing digital payments, distributed among banks, payment service providers, and payment application providers.
- MDR is **not a tax collected by the government**. Revenue stays within the payment ecosystem. Credit cards currently attract an MDR of **1-3%**. Debit cards attract up to **0.9%**. The new UPI MDR of **0.4%** is significantly lower than both.
- Before January 2020, P2M UPI transactions attracted an MDR of up to **0.30%**. Zero MDR was introduced in 2020 to accelerate adoption.

Types of Transactions

- **P2B (Person-to-Business):** A consumer transfers money to a business in exchange for goods, services, or utility bill payments- such as scanning a **merchant QR code** at a grocery store or paying for an online subscription.
- **B2P (Business-to-Person):** A business transfers funds directly to an individual-most commonly seen in **employee salary disbursements, customer refunds**, **insurance payouts, or gig-worker settlements.**

Key Features of the New UPI MDR Framework

Transactions that Attract MDR

- A **0.4% MDR** applies to eligible **P2M UPI transactions above ₹2,000** from October 15, 2026. For transactions of **₹75,000 and above**, MDR is **capped at ₹300 per transaction**.
- **Examples:** A ₹3,000 transaction attracts ₹12 MDR. A ₹50,000 transaction attracts ₹200. A ₹1 lakh transaction attracts the maximum ₹300.
- Specified sectors including **railways, telecom, insurance, and fuel** attract a **flat MDR of ₹5 per transaction** on payments above ₹2,000, instead of the standard 0.4% rate.

Transactions that are Free

- All **P2P transfers** remain free regardless of amount. MDR does not apply even if the transferred amount exceeds ₹2,000.
- All **P2M merchant transactions up to ₹2,000** remain free.
- **Small merchants** receiving up to **₹1 lakh per month** through UPI QR continue to benefit from zero MDR. A small merchant whose monthly UPI collections exceed ₹1 lakh for **three consecutive months** transitions from the P2PM category to the P2M category and becomes liable for MDR.
- **UPI AutoPay mandates** carry no prescribed MDR. Approximately **96% of all merchant UPI transactions** will remain unaffected.

UPI

- UPI was launched by **NPCI** under the regulatory oversight of the **RBI**. It completed **10 years in 2026**.
- Annual transaction volume grew from **2 crore in FY 2016-17** to over **24,162 crore in FY 2025-26**. In **August 2026 alone**, UPI processed **24.51 bn transactions worth ₹29.82 lakh crore**.
- The **IMF** has acknowledged UPI as the **world's largest real-time payment system** by transaction volume.
- UPI is accepted in **Singapore, UAE, Bhutan, Nepal, Sri Lanka, Mauritius, France, Qatar, and Greece**, with expansion planned for Malaysia, Japan, Israel, and the Maldives.

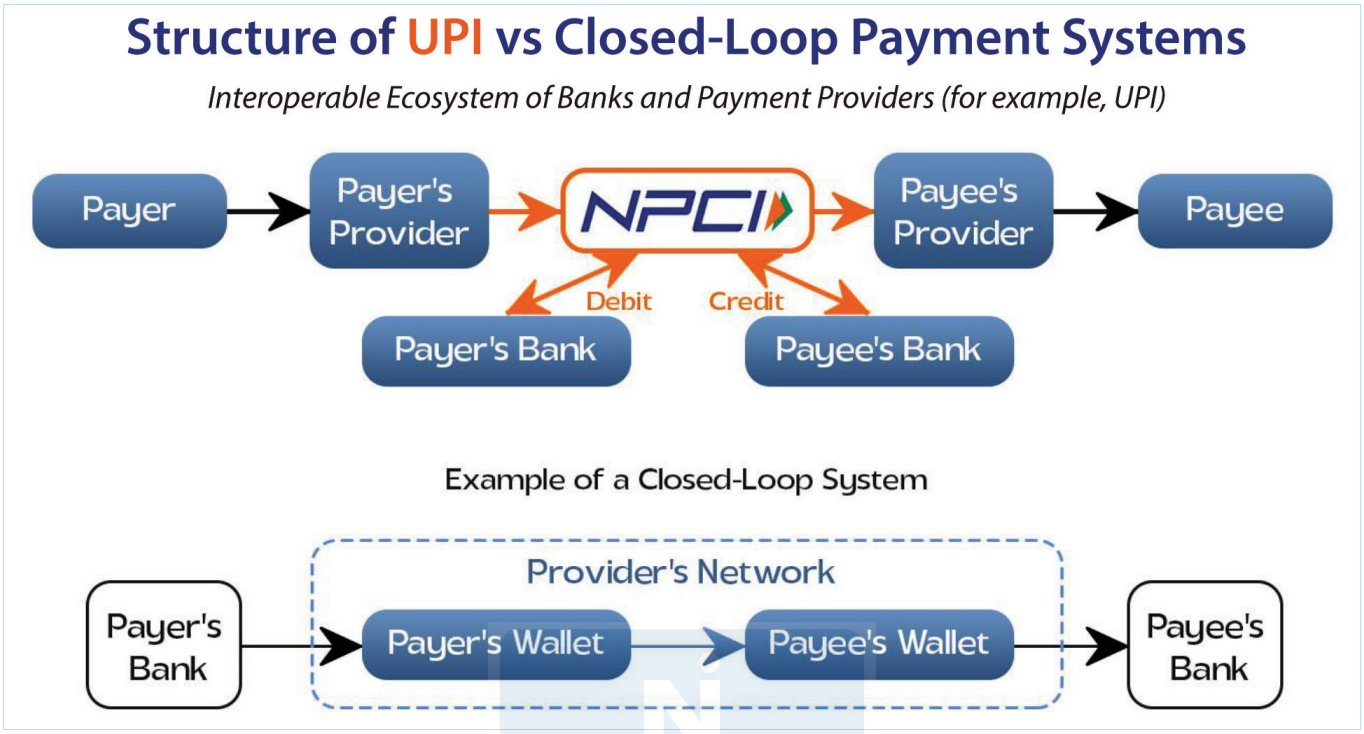
NPCI

- **Established: 2008**. Headquarters: **Mumbai**. Legal status: **Section 8 company under the Companies Act, 2013**.
- Promoted by **RBI and Indian Banks' Association (IBA)**, with ownership held by member banks.
- Operates **UPI, RuPay, IMPS, Bharat BillPay, FASTag (NETC), and AePS**.



Reasons for Introduction of MDR

- **Financial sustainability:** A revenue mechanism supports long-term UPI operations without dependence on govt. funding.
- **Infrastructure and cybersecurity:** Growing transaction volumes demand stronger fraud prevention, server capacity, and technology upgrades.
- **Innovation:** Revenue supports development of new digital payment solutions.



- **Consumer protection:** Keeping low-value and P2P transactions free protects everyday users and small merchants.

Significance

- **Financial Sustainability:** The framework moves UPI from a subsidy-dependent model to a partially self-financing one, which reduces reliance on government incentive schemes.
- **Calibrated Design:** About 96% of merchant transactions stay exempt, P2P transfers remain free and small merchants are protected. This preserves financial inclusion while drawing revenue only from high-value commerce.
- **Infrastructure Investment:** MDR revenue gives banks and payment providers a reason to invest in server capacity, fraud detection and cybersecurity, which matters as monthly volumes cross 24 billion.
- **Competitive Pricing:** At 0.4%, UPI MDR remains well below debit cards (up to 0.9%) and credit cards (1–3%), so UPI stays the cheapest merchant payment option.
- **Global Credibility:** A sustainable revenue model strengthens UPI's case as an exportable Digital Public Infrastructure for partner countries.

Concerns

- **Cost Pass-Through:** Merchants may raise prices or impose hidden surcharges despite NPCI's prohibition, which would indirectly burden consumers.
- **Reversion to Cash:**
  - High-value merchants in segments such as electronics, jewellery and wholesale may push customers towards cash.
  - That would undermine formalisation and tax compliance.
- **Threshold Gaming:** Merchants may split bills below ₹2,000 to avoid MDR, which complicates enforcement.
- **Compliance Complexity:** Tracking the ₹1 lakh monthly limit for small merchants, sector-specific flat rates and the ₹300 cap adds monitoring burden.
- **Adoption Risk:** Price-sensitive users and merchants may slow their shift to digital payments, which could dilute UPI's inclusion gains.

Way Forward

- **Strict Enforcement:** In-app grievance reporting and penalties for surcharging would make the prohibition credible.
- **Periodic Review:** RBI and NPCI should regularly reassess the rate, threshold and cap against data on adoption and cash usage.
- **Merchant Awareness:** Outreach should explain the exemptions so that misinformation does not drive unnecessary price hikes.
- **Equitable Revenue Sharing:** Payment service providers and app providers should receive a fair share alongside issuer banks so that innovation is sustained.
- **Transparent Utilisation:** Stakeholders should publicly report how MDR revenue is spent on security, fraud prevention and rural payment infrastructure.
- **Targeted Support:** Incentives for small, rural and newly onboarded merchants should continue so that the digital payment base keeps widening.

SANCTIONING RUSSIA AND IRAN ACT OF 2026

The US House of Representatives passed the Lindsey O. Graham Sanctioning Russia and Iran Act of 2026 on September 16, 2026, after the Senate approved it on August 7.

About the Act

- Named in honour of **late Senator Lindsey Graham** of South Carolina, who died in **July 2026** after spending over a year building bipartisan support for the legislation.
- The Act authorises tariffs of up to **100% on the five largest buyers of Russian oil and gas**. This places India, which sources nearly **45% of its crude from Russia**, directly in the crosshairs.
- The original proposal contemplated tariffs of **500%** on Russian energy purchasers. The final version reduced this to **100%**.
- The tariff provision is **discretionary**, not automatic. It grants the President authority to levy tariffs when statutory conditions are met.
- A country may face tariffs if it is among the **top five importers of Russian crude by volume** or among the **top five facilitators of Russian oil sanctions evasion**.
- The **US Trade Representative** will identify targeted countries, recommend tariff rates, and reassess the top five purchasers every **180 days**.
- Targeted countries normally receive **180 days to reduce Russian energy imports** or negotiate with Washington. The President can shorten this period.
- **Exemptions** apply for countries importing less than **15% of their natural gas from Russia** and actively reducing those imports.
- The Act explicitly targets **Russia's "shadow fleet" of tankers** facilitating sanctions evasion. It also incorporates a **five-year extension of existing sanctions against Iran**.
- Top five purchasers of Russian oil, apart from **China and India**, are **Türkiye, Slovakia, and Hungary**.
- Democratic Senator **Richard Blumenthal** summarised the intent bluntly: **"China and India, you better buy your oil and gas somewhere else."**

India's Dependence on Russian Oil

- India imports more than **88% of its crude oil needs**, making energy imports a strategic vulnerability.
- Before **February 2022**, Russia was a peripheral crude supplier to India. Following Russia's invasion of Ukraine, Western nations reduced Russian purchases and Russia began offering **steep discounts** to willing buyers including Indian refiners.
- Russia rapidly became **India's largest crude supplier**, displacing traditional West Asian sources.
- In **August 2026**, India imported **2.08 million barrels per day (bpd)** of Russian crude, accounting for **45% of total oil imports**. The share exceeded **50%** in the two preceding months.
- Russian crude served as a crucial **energy hedge** when West Asian supply disruptions affected Gulf oil flows.

Concerns for India

- **Energy Security:** Reducing Russian oil imports is not a realistic option given current global supply tightness. Removing millions of barrels of Russian crude from global markets when West Asian flows remain constrained would further tighten supply and raise prices worldwide, creating a **policy dilemma even for sanction-imposing countries**.
- **Inflation and Costs:** With **Brent crude already above USD 100 per barrel** and US domestic fuel prices rising, higher procurement costs could pass through to **transport, manufacturing, agriculture, and consumer prices** in India.
- **Refinery Economics:** Indian refiners have benefited from discounted Russian crude. Disruption could significantly alter **refinery margins and procurement economics**.
- **India-US Trade Relations:** The tariff mechanism could pressure ongoing **India-US bilateral trade negotiations**, where India had already made concessions on **digital services, data centres, energy imports, nuclear-sector access**, and selected import duties.
- **Strategic Autonomy:** External pressure to alter energy purchases constrains India's ability to pursue an **independent foreign policy** based on national interest.
- **US Domestic Context:** The legislation comes amid rising US fuel prices and approaching **US midterm elections**, raising questions about how aggressively the tariff framework will be implemented in practice.

India's Response

- The **Ministry of External Affairs** reaffirmed India's commitment to energy security through **diversified sourcing and evolving market dynamics**.
- India has communicated to US officials that such measures could affect both **India-US relations and global energy market stability**. The government indicated it will take necessary measures to protect India's **trade and economic interests**.

Way Forward

- Expand crude sourcing from the **Middle East, Africa, and the Americas** to reduce single-source dependence.
- Strengthen **Strategic Petroleum Reserves** as a buffer against geopolitical disruptions.
- Engage Washington on **exemptions and waivers** available under the Act's own framework.
- Deepen energy partnerships on **emergency stockpiles and alternative supply routes**.
- Advance **domestic refining efficiency and energy diversification** to reduce long-term import vulnerability.

26TH SCO SUMMIT

The 26th Meeting of the Council of Heads of State (CHS) of the Shanghai Cooperation Organisation (SCO) was held in Bishkek, Kyrgyzstan, from August 31 to September 1, 2026.

26th Summit

- The 2026 Summit, chaired by **Kyrgyzstan President Sadyr Japarov**, was held under the theme **"25 Years of the SCO: Together for Sustainable Peace, Development and Prosperity".**
- It adopted 28 documents, including the **Bishkek Declaration.**

About the SCO

- It was created in **2001 in Shanghai**, emerging from the **Shanghai Five** mechanism established in **1996** through border demarcation and demilitarisation talks among **China and 4 former USSR** nations – Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.
- **Uzbekistan joined in 2001**, transforming the Shanghai Five into the SCO.
- **India became a full member in 2017** and assumed the **rotating chairmanship in 2023**.
- **10 current member states:** China, Russia, India, Pakistan, Iran, Belarus, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan.
- **Observer states:** Afghanistan and Mongolia.
- **Dialogue partners:** Azerbaijan, Armenia, Bahrain, Egypt, Cambodia, Qatar, Kuwait, Laos, Maldives, Myanmar, Nepal, UAE, Saudi Arabia, Türkiye, and Sri Lanka.
- **Secretariat:** Beijing, China. **RATS Headquarters:** Tashkent.
- Member states represent approximately **30% of global GDP** and over **40% of the world's population**.
- **Objective:** Strengthening mutual trust and jointly addressing the **"Three Evils"** of **terrorism, separatism, and extremism**.
- **Council of Heads of State (CHS)** is the supreme decision-making body, meeting annually.
- **Regional Anti-Terrorist Structure (RATS)** is the permanent organ coordinating counter-terrorism efforts across member states.

Key Outcomes of the 26th SCO Summit

Bishkek Declaration

- Leaders signed the **Bishkek Declaration**, reaffirming cooperation on regional peace, security, development, and the SCO's future direction.
- The Declaration stressed the **non-military and non-bloc nature** of the SCO and reiterated the commitment of member states to an approach that excludes confrontational methods.
- It also criticised **Western sanctions against members** such as Iran and Russia, reinforcing the SCO's positioning in a multipolar context.

SCO Charter Amendments

- Leaders approved the **Protocol on Amendments and Additions to the SCO Charter**, updating the organisation's institutional framework.
- This enables newer members like India to actively participate in shaping the SCO's structural and legal evolution.
- **English was formally added as an official and working language** alongside Russian and Chinese proposed by India (2022-23).

Security and Counter-Terrorism

- Leaders approved the **Universal Centre for Countering**



Challenges and Threats to the Security of SCO Member States, enhancing intelligence sharing against terrorism, extremism, and organised crime.

- Programmes on **combating drug addiction up to 2030** and countering **synthetic drugs and their precursors** were adopted, along with regulations for the **Executive Committee of the SCO Anti-Drug Centre**.

Economic, Connectivity, and Climate

- An **action plan for development of ports and logistics centres (2026-2030)** was signed and a framework for the **SCO "Green Technology Corridor"** was established.
- A **Plan of Cooperation on International Information Security for 2026-2028** was adopted.
- An initiative on **Conservation and Sustainable Management of Biodiversity for 2026-2031** was adopted with a joint action plan.

Global Institutional Partnerships

- The **SCO-CSTO-CIS Roadmap** for trilateral cooperation among the SCO, **Collective Security Treaty Organization (CSTO)**, and **Commonwealth of Independent States (CIS)** was approved.
- An **MoU between the SCO Secretariat and the African Union Commission** was decided, expanding SCO's engagement with regional organisations.

SCO Plus Format

- The **"SCO Plus"** meeting was held as an expanded multilateral dialogue including non-member states and international organisations.
- **Theme:** "The UN as a Key Element of a Just World Order: The Contribution of the SCO Plus States to the Formation of a Multipolar World."

Chairmanship Transition

- The rotating SCO Chairmanship was handed to **Pakistan for 2026-2027** under the theme **"Turning Vision into Action: Connectivity, Innovation and Shared Prosperity."**
- **Lahore** was designated the **SCO Tourism and Cultural Capital for 2026-2027**.

India at the 26th SCO Summit

- PM Modi outlined **three core pillars** for the SCO's future: **Security, Connectivity, and Opportunity**.
- India strongly called for a unified approach to **counter-terrorism**, urging member states to dismantle terror financing and safe havens without **"double standards."**
- India reiterated that **conflicts cannot be resolved on the battlefield** and that **dialogue and diplomacy** are the only way forward on global geopolitical conflicts.
- India stressed that all **connectivity projects must respect the sovereignty and territorial integrity** of nations, serving as a principled indirect critique of **China's Belt and Road Initiative (BRI)** and the **China-Pakistan Economic Corridor (CPEC)**.
- India's **development and humanitarian assistance to Afghanistan** was noted as crucial for regional peace and stability.

Indian-Led Initiatives Endorsed

- **SCO Young Scientists Forum** and **SCO Young Authors' Conclave** endorsed for strengthening scientific and technical cooperation.
- India will host the **first SCO Civilisation Dialogue Forum in 2026**.

Significance of SCO for India

- **Counter-Terrorism:** Through **RATS**, India gains intelligence sharing and joint counter-terrorism cooperation critical for addressing **cross-border terrorism from its neighbourhood**.
- **Connect Central Asia Policy:** The SCO provides a diplomatic and economic gateway to **resource-rich Central Asian Republics** where India lacks direct land access. Central Asian nations are rich in **hydrocarbons and uranium**, supporting India's long-term energy security.
- **Strategic Autonomy:** Engaging the SCO (including China and Russia) while simultaneously participating in the **Quad** (with the US, Japan, and Australia) exemplifies India's policy of **multi-alignment in a multipolar world**.
- **Advancing SAGAR Vision:** India uses the SCO platform to promote its vision of **"Security and Growth for All in the Region (SAGAR)"** as a framework for inclusive regional development.
- **Balancing China and Pakistan:** The SCO allows India to assert its position and prevent anti-India narratives from consolidating within a critical Eurasian platform.

Challenges

- **Decision-Making:** Consensus structure lets India-Pakistan and India-China tensions block decisions; confidence-building mechanisms needed.
- **Geopolitical Balance:** Iran, Belarus and Sino-Russian influence project anti-Western image, clashing with India's strategic autonomy; SCO must stay non-bloc, inclusive.
- **Terrorism Enforcement Gap:** RATS coordinates but lacks enforcement; inconsistent member approaches demand stronger implementation and common databases.
- **Economic Imbalance:** China's disproportionate influence and India's smaller, less-diversified SCO trade demand balanced financing, equitable trade.
- **Connectivity Competition:** Rival BRI, INSTC and Trans-Caspian routes and sovereignty concerns slow progress; interoperable, sovereignty-respecting corridors needed.
- **Security Overshadowing Development:** Security focus sidelines economic and developmental cooperation critical for India.

Conclusion

- The 26th Summit showed institutional ambition but consensus-based limits. For India, SCO remains vital for strategic autonomy, Central Asian connectivity and security-economic interests.
- **Bishkek's test:** Non-selective counter-terrorism, sovereignty-respecting connectivity and balanced economic cooperation.

VIBRANT VILLAGES PROGRAMME

FY 2026-27 marks the concluding year of Phase-I of the Vibrant Villages Programme (VVP). It was launched in 2023, as a flagship border development programme to transform frontier villages into secure and prosperous communities.

Need for the Programme

- For decades, border villages faced **difficult terrain, poor connectivity, limited infrastructure**, and inadequate livelihood opportunities. These challenges resulted in **out-migration and declining populations** in several frontier areas, weakening both community resilience and border security.
- The **Border Area Development Programme (BADP)**, launched in **1986-87** along the western border, was the earlier intervention covering **111 districts across 16 states and 2 UTs**, with more than **39,000 development works sanctioned since 2004-05**. VVP adopts a more **integrated and targeted approach** beyond BADP's developmental support model.

Programme Structure: Two Phases

VVP-I: Northern Border Focus

- Announced in **Union Budget 2022-23** and formally launched on **April 10, 2023 at Kibithoo village, Anjaw district, Arunachal Pradesh**. It is a **Centrally Sponsored Scheme**, implemented in partnership with states.
- Covers **46 blocks across 19 districts** in **Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, and Ladakh**.
- **662 strategic villages** identified for comprehensive development, benefiting approximately **1.42 lakh people**.
- Financial outlay of **₹4,800 crore for 2022-23 to 2026-27**, with **₹2,500 crore specifically for road connectivity** under **PMGSY-IV**.
- The programme aims to bridge development gaps by providing **quality infrastructure, essential services, livelihood opportunities**, and **living conditions comparable to other parts of the country**.

VVP-II: All International Land Borders

- Approved by the **Union Cabinet on April 2, 2025** and formally launched on **February 20, 2026 at Nathanpur village, Cachar district, Assam**.
- It is a **Central Sector Scheme**, funded **entirely by the Government of India** and implemented by the **Ministry of Home Affairs (MHA)**.
- Financial outlay of **₹6,839 crore up to 2028-29**.
- Targets **1,954 villages across 334 blocks** in **15 states and 2 UTs**, including Assam, Bihar, Gujarat, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Tripura, Uttar Pradesh, West Bengal, and Jammu and Kashmir.
- VVP-II specifically aims to **prevent trans-border crime** by improving economic opportunities and strengthening community participation in border security.
- Together, both phases aim to develop more than **2,616 villages** with a combined outlay of **₹11,639 crore**.

Implementation Framework

- VVP is implemented through **Village Action Plans** tailored to border-specific, state-specific, and village-specific needs.
- A **convergence-based approach** ensures saturation of existing Central and State government schemes.
- The Ministry of Rural Development is strengthening road connectivity through PMGSY-IV.
- The **Ministry of Home Affairs (MHA)** is the nodal ministry coordinating with State Governments, district administrations, and border guarding forces.
- A **High-Powered Committee chaired by the Cabinet Secretary** may recommend relaxations in scheme guidelines for effective implementation in border areas.
- As of **July 2026**, under VVP-I, MHA sanctioned **1,248 projects worth ₹3,020.32 crore**. Additionally, **1,655 projects** were approved through convergence by Central Ministries.
- State-wise contributions include Arunachal Pradesh (2,990 activities), Ladakh (2,221), Uttarakhand (2,038), Himachal Pradesh (1,037), and Sikkim (530).

Livelihood Development Model

- VVP's hub-and-spoke model promotes social entrepreneurship, youth and women empowerment, border tourism, local culture and OBOP.
- In Arunachal, ITBP procures milk, vegetables, eggs and grains from border villages, assuring farmers a market.

Key Impacts

- **Border Security:** Populated villages are strategic assets; residents act as forces' **"eyes and ears."**
- **Reversing Out-Migration:** Residents of Arunachal's Kurung Kumey, Dibang Valley and Shi-Yomi are returning amid better infrastructure, livelihoods.
- **Local Economy:** SHGs, FPOs, cooperatives and tourism generate stable remote-area income.
- **Better Governance:** Saturation approach delivers Central-State scheme benefits via Village Action Plans.
- **Development-Security Convergence:** Empowered communities build resilient frontiers.

Conclusion

- VVP shifts border management from defensive infrastructure to development-security convergence.
- Through connectivity, livelihoods, curbing trans-border crime and empowerment, it transforms neglected peripheries into resilient centres of national integration, advancing **Viksit Bharat@2047**.

MARITAL RAPE EXCEPTION IN INDIA

The Supreme Court is examining the constitutional validity of the marital rape exception while considering the autonomy, dignity and bodily integrity of married women.

About Marital Rape

- UN Declaration on the Elimination of Violence Against Women **(DEVAW, Article 2)** explicitly defines violence against women as follows:
  - "physical, sexual and psychological violence occurring in the family, including battering, sexual abuse of female children in the household, dowry-related violence, marital rape, female genital mutilation and other traditional practices harmful to women."

Background

- **Exception 2 to Section 63 of the Bharatiya Nyaya Sanhita (BNS), 2023**, which replaced **Section 375 of the IPC**, provides that sexual intercourse by a husband with his wife, if she is **not below 18 years of age**, does not constitute rape.
- The present case arises from an appeal against the **2022 Karnataka High Court judgment**, which held that a husband could be prosecuted for rape and observed that marriage cannot provide absolute immunity against sexual violence.

Supreme Court's Observations

- While recognising the **individual autonomy** and dignity of married women, the Bench questioned whether a court can permit **rape prosecution** when the penal law expressly provides for an exemption.
- **The Court identified two constitutional questions:** Whether a husband can be prosecuted despite the existing statutory exception. Whether the **marital rape exception** itself is constitutionally valid.
- The Bench observed that the existing exemption remains **the law as it stands**, irrespective of the ongoing constitutional challenge. It further observed that a spouse subjected to involuntary sexual intercourse is **undoubtedly a victim**, while the legal question is whether such conduct can presently be recognised as **rape** under criminal law.
- The Court also indicated that any change in the existing legal position may ultimately require **legislative intervention**.

Arguments for Criminalising Marital Rape

- Criminalisation would strengthen **Article 21** by protecting **bodily integrity**, **privacy** and **personal dignity**, while reinforcing **Article 14** by ensuring equal legal protection for married and unmarried women.
- It would align Indian law with **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)** and other international human rights commitments that seek protection against all forms of sexual violence.
- More than **130 countries** have criminalised marital rape, recognising that marriage cannot imply permanent or irrevocable consent.
- The **Justice J.S. Verma Committee (2013)** recommended removing the marital rape exception and affirmed that marriage cannot be a defence against rape or sexual violence.

Arguments Against Criminalising Marital Rape

- Opponents argue that criminalisation may weaken the **institution of marriage** and increase matrimonial disputes.
- They contend that proving the absence of consent within marriage may be **evidentially difficult**, particularly when allegations are made after a considerable delay.
- Concerns have also been raised about the **possible misuse** of criminal law against husbands.
- The Government has argued that women already receive legal protection through provisions relating to **sexual harassment**, **assault**, **outraging modesty** and **matrimonial cruelty**.

Constitutional and Legal Issues

- The case examines whether the **marital rape exception** is consistent with the constitutional guarantees of **equality**, **dignity**, **privacy** and **personal liberty**.
- It also raises the question whether courts can permit prosecution despite an express statutory exemption before declaring that exemption unconstitutional.
- The judgment will define the respective roles of the **Judiciary** and the **Legislature** in determining the future of the marital rape exception.

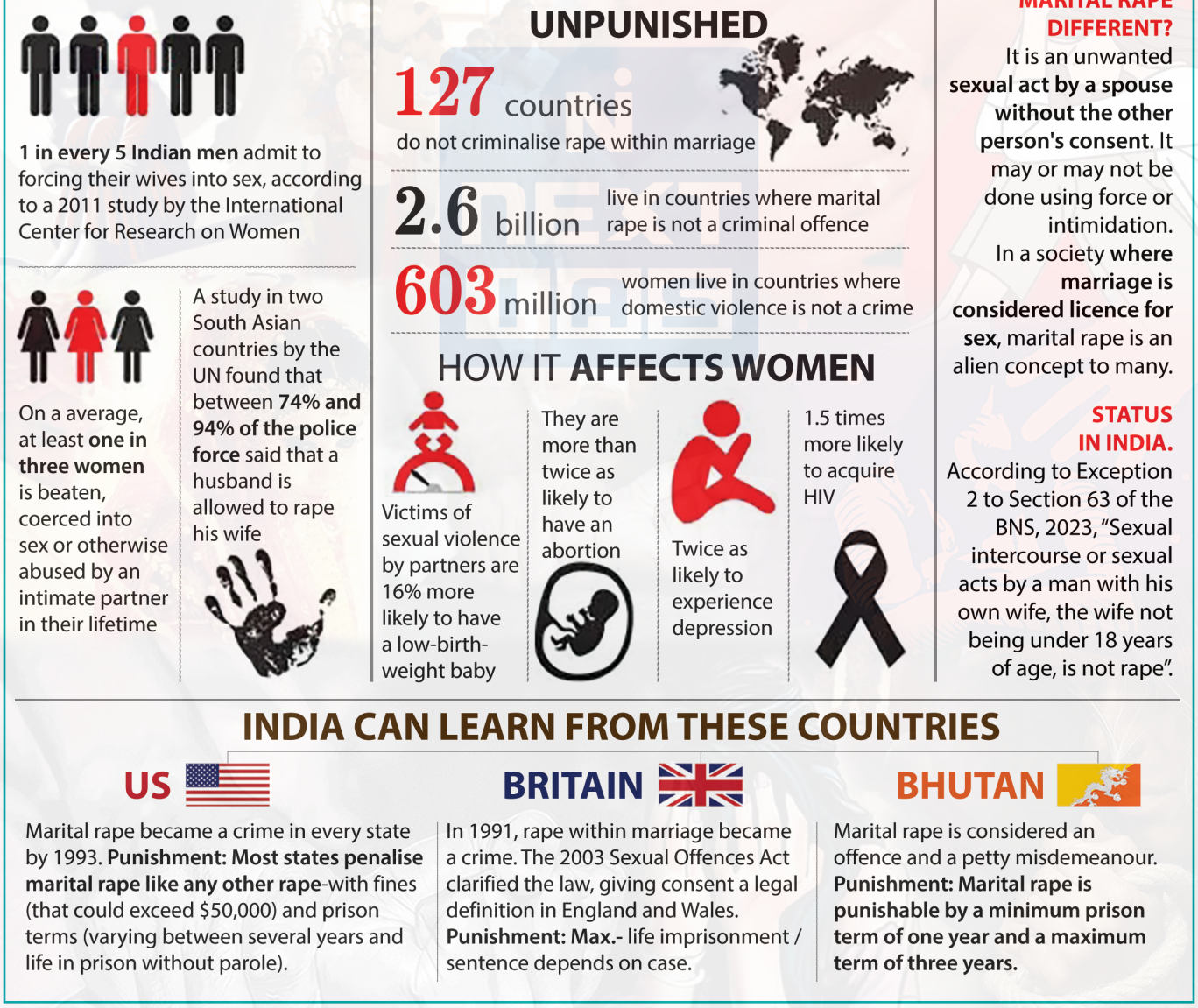
Way Forward

- **Legislative Reform:** Parliament should revisit **Exception 2 to Section 63 of the BNS**, as the **Verma Committee** recommended, affirming that marriage does not imply irrevocable consent.
- **Expeditious Adjudication:** A clear Supreme Court ruling on both constitutional questions would end the uncertainty created by the Delhi High Court's 2022 split verdict.
- **Constitutional Consistency:** Reform must build on **Puttaswamy (2017) on privacy, Joseph Shine (2018)** on marital autonomy, and Independent Thought (2017), which already read down the exception for wives below 18.
- **Calibrated Legal Design: Sec. 67 of the BNS** already penalises non-consensual intercourse during separation; extending this logic to subsisting marriages offers a coherent statutory pathway.
- **Procedural Safeguards:** Preliminary scrutiny by senior officers, time-bound investigation, in-camera trials and action against demonstrably malicious complaints can prevent misuse without deterring genuine victims.

- **Evidentiary Capacity:** Police, prosecutors and judges need training in consent-centred inquiry, supported by standard medico-legal protocols and prompt reporting mechanisms.
- **Victim Support:** Strengthen remedies under the Protection of Women from Domestic Violence Act, 2005. Along with this **One Stop Centres**, **counselling**, shelter and **free legal aid** should be mainstream.
- **Global Lessons:** Jurisdictions such as the **UK (R v R, 1991)** and Nepal offer models adaptable to India's constitutional and social context.
- **Social Transformation:** Gender sensitisation, consent education in schools and community engagement must dismantle the notion that marriage entitles a husband to his wife's body.
- **Data and Research:** Disaggregated data on spousal sexual violence through NCRB and NFHS should guide evidence-based policy.

Conclusion

- The marital rape exception raises critical questions of constitutional rights, gender justice and marital equality.
- Marriage is a partnership of equals, not a surrender of bodily autonomy; consent must remain continuous, not presumed.
- Reform through judicial review or legislative action must uphold women's dignity, constitutional values and due process for the accused.
- A balanced legal framework must protect victims, prevent misuse and strengthen public confidence in the rule of law.



COLLABORATIVE GOVERNANCE FOR VIKSIT BHARAT

A new model of governance in India is being discussed based on decentralisation, community participation, and collaboration between the State, society, and markets.

About Collaborative Governance

- It is a governing arrangement where one or more public agencies directly engage non-state stakeholders (citizens, civil society organizations, community groups, and the private sector).
- This arrangement is a formal, consensus-oriented, and deliberative collective decision-making process which aims at making or implementing public policy or managing public programs and assets.

From Government Delivery to Impactful Governance

- Government-centric governance focuses on **schemes, expenditure, and administrative processes**. Impactful governance focuses on whether interventions actually **improve citizens' lives**.
- Development challenges such as poverty, malnutrition, and sanitation are **"wicked problems"** involving multiple interconnected social, economic, and institutional factors with no single administrative solution.
- Such problems require **decentralised decision-making, community participation, professional expertise**, and **convergence across departments** rather than isolated interventions.
- People are **not merely recipients of services**. Their involvement in maintaining, monitoring, and improving services creates a **sense of ownership** and strengthens accountability in ways that top-down systems cannot replicate.

Constitutional Framework

- **Article 243G** read with the **Eleventh Schedule** assigns **29 subjects** to Panchayats.
- **Article 243W** read with the **Twelfth Schedule** provides **18 functional areas** to municipalities.
- Local governments can act as platforms for **convergent action** because issues such as nutrition, sanitation, livelihoods, health, and poverty are closely interconnected at the local level.
- Effective decentralisation requires adequate **Funds, Functions, and Functionaries** so that local governments can translate constitutional responsibilities into meaningful outcomes.

Lessons from India's Development Programmes

- **National Rural Livelihoods Mission (NRLM):** NRLM demonstrates how **women's collectives** can build social capital and participate in local development beyond savings and credit.
- Approximately **100 million women, organised through nearly 10 million self-help groups,** enable community-led management beyond conventional administrative structures. These institutions have given rural women a stronger voice in **local development and community decision-making**.
- **Swachh Bharat Mission:**
  - Sustained sanitation improvements require not only infrastructure but also **community mobilisation, behavioural change**, and local leadership.

Government Initiatives for Collaborative Governance

GeM
Government e-Marketplace



Facilitates online procurement for government departments, enhancing transparency, efficiency, and speed in public procurement.

UMANG
ONE APP. MANY SERVICES.

Developed by MeitY and National eGovernance Division



Provides a single mobile platform for PAN India government services.

CPGRAMS
Centralized Public Grievance Redressal and Monitoring System



A 24x7 online platform for time-bound redressal and monitoring of public grievances, enhancing transparency in service delivery.

e-HRMS 2.0
Available on Android and iOS



Provides government employees seamless access to human resource services.

- High-performing cities in **Swachhata Sarvekshan** rankings consistently show that **community participation and collaborative governance** are common factors behind their success.

- **Other Programme Lessons:**
  - **ASHA workers** demonstrate how locally embedded frontline workers strengthen **trust and accountability** in primary healthcare.
  - **Watershed and livelihood programmes** show that community participation in managing common resources improves **effectiveness and sustainability**.
  - **Total literacy campaigns** demonstrated how citizen participation and decentralised mobilisation complement formal government systems.

Pillars of Transformative Governance

- **Women's Collectives and Social Capital:** Women's collectives help communities organise, access public services, and raise local concerns. Their participation improves **awareness, livelihoods, service access**, and monitoring of public programmes.
- **Technology and Human Institutions:** India's **Digital Public Infrastructure, Direct Benefit Transfers**, and expanding banking access have improved service reach. However, technology cannot replace capable institutions. Complex social problems still require **trust, local knowledge**, and continuous citizen-institution interaction.
- **Professionals and Community Resource Persons:** Trained professionals improve planning and implementation. Community resource persons connect public institutions with citizens, making public systems **more responsive**.

Key Challenges

- **Centralised Decision-Making:** Administrative systems prefer centralised planning even when local problems call for context-specific solutions.
- **Economic Vulnerability:** Many households face the risk of **slipping back into poverty** due to low-productivity jobs, inadequate wages, and limited livelihood opportunities. Progress in social indicators has also been **uneven** across regions.
- **Weak Institutional Capacity:** Many Panchayats and urban local bodies lack sufficient **technical expertise, skilled professionals**, and administrative capacity. Limited untied funds increase dependence on higher levels of government.
- **Weak Accountability:** Monitoring focuses on **expenditure and physical targets** rather than quality of outcomes and citizen satisfaction.
- **Departmental Silos:** Departments often work independently even when the issues they address are closely interconnected, weakening convergence.
- **Short-term Considerations:** Electoral and political pressures can affect **long-term institutional reforms** necessary for sustained collaborative governance.

Way Forward

- **Empowering Local Governments:** Implement the 3Fs through activity mapping, as the Second ARC recommended, with predictable, untied funds and timely, empowered State Finance Commissions to enable genuine decision-making autonomy.
- **Own-Source Revenue:** Strengthen property tax and user-charge systems so local bodies reduce dependence on higher-level transfers.
- **Professionalising Local Capacity:** Place planners, engineers and community resource persons closer to communities, backed by continuous training under the Rashtriya Gram Swaraj Abhiyan.
- **Outcome-Linked Financing:** Link resources to developmental gaps identified through the Panchayat Advancement Index, pairing incentives for performance with handholding support for lagging Panchayats.
- **Breaking Silos:** Institutionalise convergence through integrated Gram Panchayat Development Plans and district-level platforms, drawing on the Aspirational Districts Programme's convergence experience.
- **Social Accountability:** Supplement administrative monitoring with regular social audits, community scorecards, citizen validation and open public data; Meghalaya's 2017 social audit law offers a replicable model.
- **Measuring What Matters:** Shift indicators from expenditure and physical targets to service quality, equity and citizen satisfaction.
- **Women and Community Institutions:** Formally link SHG federations with Gram Sabhas and local planning, building on NRLM's network of nearly 10 million groups.
- **Human-Centred Technology:** Integrate DPI, DBT and grievance platforms like CPGRAMS with frontline institutions, ensuring technology augments, rather than replaces, trust and local knowledge.
- **Long-Term Commitment:** Insulate decentralisation reforms from electoral cycles through statutory backing, cross-party consensus and sustained political will at every level of government.

Conclusion

- Viksit Bharat@2047 requires citizen-centric governance and collaborative solutions to complex challenges.
- Kerala's People's Plan Campaign, NRLM, Swachh Bharat and ASHA workers demonstrate how community ownership improves equity, accountability and sustainability.
- Decentralised institutions, women's agency, professional expertise and inclusive technology strengthen implementation.
- India must shift from schemes and spending towards collaborative governance, delivering quality outcomes and making citizens partners in nation-building.

RIGHT TO VOTE

A newspaper investigation revealed that 97 eligible voters in Goa were excluded from the electoral rolls after centralised ECINet software prevented Electoral Registration Officers (EROs) from reversing the deletions.

Constitutional and Legal Basis of the Right to Vote

- **Historical Significance:**
  - India adopted **Universal Adult Suffrage** at the very beginning of the Republic – unlike many Western democracies where the right to vote was progressively won through prolonged fights over **property, gender, and race**.
  - This made India's democratic experiment distinctive and historically significant from its first general election in 1951-52.
- **Constitutional Basis:**
  - **Article 326** provides for elections to the Lok Sabha and State Legislative Assemblies on the basis of **adult suffrage**.
  - Every Indian citizen aged **18 years or above** is entitled to be registered as a voter, subject to constitutionally permitted disqualifications.
  - The voting age was originally **21 years** and was reduced to **18 years** by the **61st Constitutional Amendment Act, 1988**.
- **Statutory Basis:**
  - The **Representation of the People Act, 1950 (RPA 1950)** governs compilation of electoral registers and related issues.
  - **RPA 1951 (Section 62)** establishes the statutory right to vote in a specific constituency, provided the person's name appears on the electoral roll.
  - **Section 62(5) of RPA 1951** restricts individuals under confinement (prison or police custody) from voting, with an exception for those under preventive detention.

Constituent Assembly Debate

- **Dr. B.R. Ambedkar and K.T. Shah** initially argued for the right to vote to be a Fundamental Right.
- **Sardar Patel and C. Rajagopalachari** opposed this, fearing Princely States would refuse to join the Union if their electoral autonomy was immediately restricted.
- Universal adult suffrage was placed in **Article 326 (Part XV on Elections)** rather than Part III. The right was considered fundamental in importance but was kept outside the Fundamental Rights chapter to accommodate the political realities of the time.

Judicial Interpretation of the Right to Vote

- **Jyoti Basu vs Debi Ghosal (1982):** The Supreme Court held that the right to elect, the right to be elected, and the right to dispute an election are all **statutory rights, not Fundamental Rights**.
- **Kuldip Nayar vs Union of India (2006):** A Constitution Bench reaffirmed the right to vote as a **statutory right** under Section 62 of the RPA 1951, not a fundamental or constitutional right.
- **Rajbala vs State of Haryana (2015):** Described the right to vote as a **constitutional right**, but the larger bench ruling in Kuldip Nayar prevails.
- **PUCL vs Union of India (2003):** While voting itself is statutory, a voter's **"Right to Know"** background details of candidates is a **Fundamental Right** under **Article 19(1)(a)**.
- **PUCL vs Union of India (2013):** The Supreme Court recognised the right to cast a **"None of the Above" (NOTA)** vote as an integral aspect of free expression under **Article 19(1)(a)**.
- **Anoop Baranwal vs Union of India (2023):** Considered the link between voting and constitutional liberties under **Article 19(1)(a)** and democratic principles underpinning **Article 21**.
- **Democracy and free and fair elections** are firmly part of the **basic structure doctrine**, established in **Indira Nehru Gandhi vs Raj Narain (1975)**.

Status of the Right to Vote in Other Democracies

- **South Africa:** Constitution directly lists the right to vote as a **Fundamental Right** under the Bill of Rights.
- **Germany:** The Basic Law explicitly establishes the **right to vote as a fundamental right**.
- **Canada:** The Canadian Charter of Rights and Freedoms **guarantees every citizen** the right to vote.
- **France:** The right to vote is a **fundamental constitutional right** tied directly to national sovereignty.
- **United Kingdom:** The right to vote is a **statutory right** conferred by Parliament through the Representation of the People Act 1983.
- **United States:** The Constitution does not explicitly grant an affirmative right to vote, but the Supreme Court has recognised voting as a **"fundamental right"** under the Equal Protection Clause.

Importance of Electoral Rolls

- A person must be at least **18 years old and ordinarily resident** in a constituency to be registered under **Section 19 of the RPA 1950**. **Section 21** provides for the preparation and revision of electoral rolls.
- Errors in electoral rolls can lead to **wrongful exclusion and disenfranchisement**, duplicate or ineligible entries, impersonation and electoral malpractice, and dilution of **"one person, one vote."**

- The Goa episode is significant because a **technological and administrative failure** prevented local officials from rectifying erroneous deletions, directly restricting eligible citizens' participation.

Arguments in Favour of Right to Vote as FR

- **Basic Structure Protection:** Free and fair elections form part of India's basic structure.
  - A right so central to democracy arguably deserves **Part III constitutional protection**.
- **Protection from Ordinary Legislation:** As a statutory right, a simple parliamentary majority can curtail the right to vote. Fundamental Right status would subject restrictions to **stricter constitutional scrutiny**.
- **Direct Remedy under Article 32:** Currently, election petitions under Article 329(b) largely channel election disputes. Fundamental Right status would enable direct enforcement in the Supreme Court.
- **Welfare Benefits Linkage:**
  - Electoral roll errors do not only disenfranchise voters – they can **indirectly affect access to welfare scheme benefits** linked to voter identity documentation.
  - This makes the stakes of wrongful exclusion significantly higher.
- **Political Equality:** Universal voting rights embody **"one person, one vote, one value."** Fundamental Right status could strengthen protection against arbitrary exclusion.
- **International Norms: UDHR Article 21** and **ICCPR Article 25** (India is a signatory) treat political participation as a **human right**, aligning with India's international obligations.
- **Deepening Constitutional Democracy:** Recognising political participation as a constitutionally protected dimension of citizenship reinforces **democratic accountability**.

Arguments Against Right to Vote

- **Need for Legislative Flexibility:**
  - Electoral rules require continuous updating.
  - Fundamental Right status could subject ordinary legislative changes to **greater constitutional scrutiny**, reducing Parliament's flexibility.
- **Risk of Judicial Overreach:**
  - Wider constitutional protection could bring routine electoral disputes before courts.
  - This will reduce the flexibility of the **Election Commission of India** in administering detailed electoral rules.
- **Existing Remedies Sufficient:** Citizens can already challenge unlawful electoral actions through **Articles 226 and 32** where an independent Fundamental Right is implicated.
- **Slippery Slope:** Elevating the right to vote could trigger demands for constitutional status for the **right to contest elections** and other political rights, broadening judicial scrutiny over electoral matters.
- **Reconciliation with Article 329(b):** Any expanded judicial remedy would need to be reconciled with **Article 329(b)**, which restricts court intervention in ongoing elections.
- **Legitimate Deletions Must Remain Possible:** Constitutional protection must still allow legitimate deletion of deceased, permanently relocated, or otherwise ineligible voters without court intervention.

Institutional Accountability of the ECI

- **Article 324** gives the **Election Commission of India (ECI)** constitutional responsibility for superintendence, direction, and control of elections.
- Increasing digitisation of electoral administration requires **accountability to accompany centralisation**.
- Important safeguards must include **transparent and auditable digital records**, independent technology and cybersecurity audits, time-bound correction of wrongful deletions, adequate powers for **EROs** to rectify genuine errors, accessible voter grievance mechanisms, and clear responsibility for decisions taken through automated or centralised systems.

Way Forward

- **Build consensus before constitutional change:** Any proposal to confer Fundamental Right status should follow wide **parliamentary, constitutional, and public consultation**.
- **Strengthen voter access:** Ensure universal, accessible, and hassle-free voter registration, particularly for **migrants, persons with disabilities, the elderly**, and other vulnerable groups.
- **Robust safeguards:** Establish strong protections against wrongful deletion and arbitrary disqualification, with access to **timely notice, grievance-redressal mechanisms**, and effective judicial remedies.
- **Learn from comparative experience:** Examine how other democracies protect voting rights constitutionally while retaining reasonable regulation of **voter eligibility, electoral integrity**, and administration.
- **Focus on substantive participation:** Whether or not the legal status changes, the priority must be ensuring every eligible citizen can **register, access the ballot, and exercise choice freely and effectively**.

Conclusion

- Rather than treating constitutional elevation as an end in itself, the reform debate should aim to create an electoral framework where India's commitment to **universal adult suffrage** translates into **meaningful and equal political participation**.
- The immediate priority is strengthening **electoral roll accuracy, institutional transparency, and grievance redressal** to ensure that no eligible citizen is denied participation because of administrative or technological failure.

FROM MERCATOR TO EQUAL EARTH

The UN General Assembly passed the Togo-led "Correct the Map" resolution to replace the Mercator map with the Equal Earth projection, with India supporting it while asserting its position on the accurate depiction of J&K and Ladakh.

Limitations of a Flat Map

- The Earth is not a perfect sphere. It **bulges at the equator** due to its spin, is warped by the Moon's gravity, and is shaped by continents and oceans. The most accurate representation is a **spheroid**.
- A **map projection** transforms the Earth's three-dimensional surface onto a two-dimensional plane, inevitably introducing distortion.
- Every flat map must distort at least one of four properties: **Area** (relative size of landmasses), **Shape** (true outline of countries), **Distance** (actual space between points), and **Direction** (correct compass bearing).
- No single flat map can simultaneously preserve all four properties accurately.

Types of Map Projections

- **Conformal projections:** Preserve angles and local shapes. Example: Mercator.
- **Equal-area projections:** Preserve relative areas. Example: Equal Earth.
- **Equidistant projections:** Preserve distance accurately.
- **Compromise projections:** Balance distortions without precisely preserving any one property. Examples: Robinson, Winkel Tripel.
- The choice of projection depends entirely on the **purpose of the map**. Experts caution against directly comparing maps designed for different purposes.

The Mercator Projection

- Introduced in **1569 by Gerardus Mercator**, a Flemish geographer from present-day Belgium, specifically as a **navigational tool for maritime sailors**.
- It is a **conformal, cylindrical projection** created as if the Earth's surface were unwrapped from a cylinder around the globe.
- Its key strength is navigation. It represents **rhumb lines** (lines of constant compass bearing) as straight lines. By the **18th century**, it became the standard for navigation.
- On the Mercator grid, longitudes are evenly spaced but gaps between latitudes **widen towards the poles**, stretching landmasses at higher latitudes to preserve shape.
- The most famous distortion: **Africa appears similar in size to Greenland**, even though Greenland is **14 times smaller** and roughly the size of the **Democratic Republic of the Congo**. Antarctica also appears far larger than its true size.
- Critics argue the Mercator projection reflects a **Western-centric worldview** and served as a political tool during the **Scramble for Africa**.
  - It is described as an example of **Western cultural hegemony anchored at the Greenwich meridian**.

Evolution of Alternative Projections

- **Gall-Peters projection:** First presented by Scottish clergyman **James Gall in 1855** and was popularised by German historian **Arno Peters in 1973**. It preserves area accurately but makes landmasses look severely stretched and distorted.
- **Robinson projection (1963):** Devised by geographer **Arthur H. Robinson** to balance size and shape as a compromise projection. Meridians curve gently towards the poles. It was later used by **schools, textbooks, and the World Bank**.
- **Winkel Tripel projection (1921):** Created by German cartographer **Oswald Winkel** to reduce distortion across area, distance, and direction. In **1998**, it replaced Robinson in **National Geographic Society** maps.
- **Equal Earth projection (2018):** Developed by cartographers **Bojan Šavrič, Tom Patterson, and Bernhard Jenny**. It is an **equal-area, pseudocylindrical projection** designed specifically to fix the Gall-Peters problem – correcting area without creating severe shape distortions. Inspired by the **aesthetic curvature of the Robinson projection**, it preserves familiar continental outlines while accurately representing relative landmass sizes. Straight parallels allow easy latitude comparisons. It can be centred on different meridians for regional views.

Significance of the Change

- Africa's true expanse can fit the **USA, China, India, Japan, and most of Europe** within its borders - invisible on Mercator maps.
- Equal Earth corrects the **visual diminishing of the Global South**, reversing perceptions shaped by colonial-era cartography.
- It is best suited for **thematic and statistical data** such as population density, climate impacts, and resource distribution.
- The **World Bank** already uses Equal Earth for static maps and is phasing out Mercator on web maps. **Google Maps** retains Mercator as the default on its mobile app.
- Since **UN resolutions are not binding**, actual adoption by governments, institutions, and classrooms remains voluntary.

Different Projections

- **Navigation and direction:** Conformal projections like Mercator.
- **Thematic and statistical data:** Equal-area projections like Equal Earth.
- **General reference and world maps:** Compromise projections like Robinson or Winkel Tripel.
- **Polar or single-point studies:** Azimuthal projections, which project the Earth onto a flat plane from a central point.

NUCLEAR WASTE MANAGEMENT IN INDIA

The SHANTI Act (December 2025) opened nuclear power to private players while keeping high-level radioactive waste management exclusively with the Central Government, creating an unresolved long-term responsibility gap.

India's Nuclear Programme

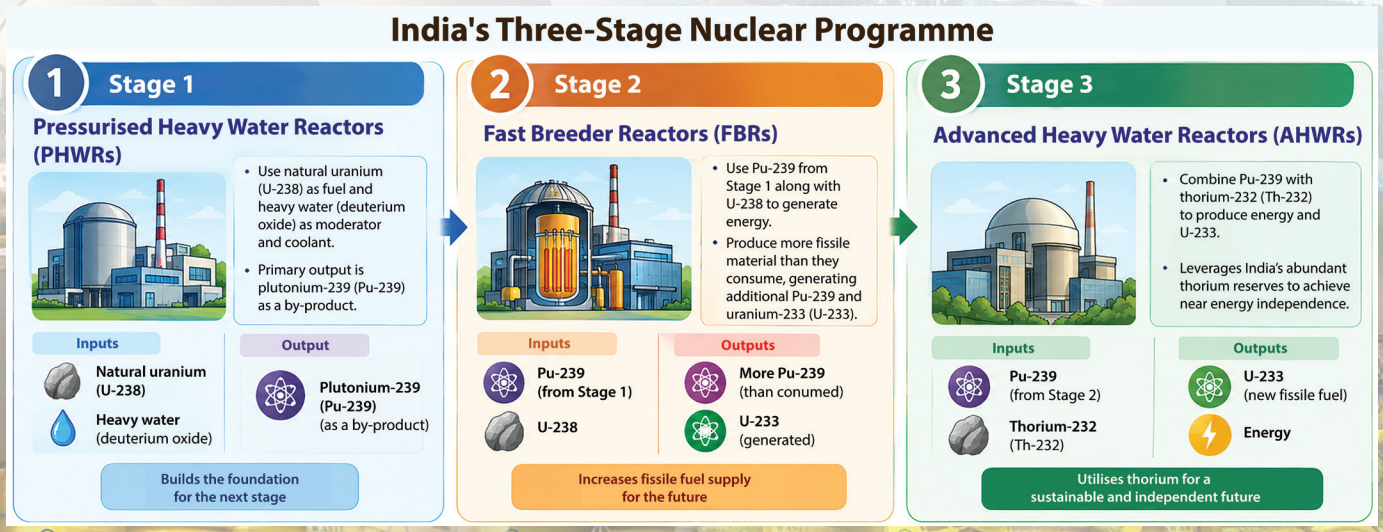
- The **Atomic Energy Commission** was established in **1948**.
- In **1956**, Asia's first research reactor, **Apsara**, was commissioned at the **Bhabha Atomic Research Centre (BARC), Trombay**.
- India became the **second Asian nation** to build a nuclear power plant in **1969 at Tarapur**, after Japan and long before China.
- **Dr. Homi J. Bhabha** envisioned India's nuclear programme through a **three-stage plan** aimed at achieving long-term energy security using domestic thorium reserves.
- **Natural uranium** is India's primary nuclear fuel, mined domestically principally at **Jaduguda mines in Jharkhand**.
- India currently operates **24 nuclear power reactors,** including the **Kudankulam Nuclear Power Plant – the** country's largest operating nuclear facility - in Tamil Nadu.
- The **Prototype Fast Breeder Reactor (PFBR) at Kalpakkam, Tamil Nadu,** achieved **first criticality in April 2026**, marking the entry of India's nuclear programme into **Stage 2**- a historic national milestone.

The SHANTI Act, 2025

- Parliament passed the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act** on **December 18, 2025**. President Droupadi Murmu granted assent on **December 20, 2025**.
- It repealed the **Atomic Energy Act, 1962** and the **Civil Liability for Nuclear Damage Act, 2010**.
- For the first time, private companies can **build, own, operate, and decommission** nuclear power plants under government licence.
- The Act also grants **statutory status to the Atomic Energy Regulatory Board (AERB)**.
- Activities including uranium and thorium mining, enrichment, reprocessing of spent fuel, high-level radioactive waste management, and heavy water production remain exclusively with the Central Government or government-owned entities.
  - **SHANTI section 3(2)(b)** permits licensed enrichment up to a notified threshold.
- **Union Budget 2025-26** allocated **₹20,000 crore for indigenous Small Modular Reactor (SMR) development**, with a target to operationalise at least **five indigenous SMRs by 2033**.

India's Closed Fuel Cycle Approach

- India follows a closed fuel cycle, in contrast to a conventional once-through fuel cycle that treats spent fuel as waste; instead, India reprocesses spent fuel to recover uranium and plutonium for further use.
- India, therefore, treats spent fuel not merely as waste but as a potential **resource for recovering reusable nuclear material**.
- Reprocessing significantly reduces the volume of high-level waste requiring geological disposal.
  - However, reprocessing **does not make radioactivity disappear** – residues remain hazardous for **thousands to hundreds of thousands of years**.
- India is advancing **"partitioning" technology,** where long-lived radioactive actinides are separated from waste and incinerated in fast reactors, further reducing the environmental footprint and the need for deep geological repositories.



Management of Nuclear Fuel

- **Cooling and interim storage:** Freshly discharged spent fuel is highly radioactive and heat-generating. It requires storage in **cooling pools** before further handling.
- **Reprocessing:** Spent fuel is chemically processed to recover reusable uranium and plutonium.
- **Waste conditioning:** Radioactive residues are converted into stable forms such as **vitrified waste** for long-term storage.
- **Near Surface Disposal Facilities (NSDFs):** India's existing disposal facilities for lower-level radioactive waste. The government stated in early 2026 that existing NSDFs have **sufficient capacity** to manage waste from nuclear power plants.
- **Final disposal:** Long-lived high-level radioactive waste eventually requires isolation through a **deep geological repository** - permanently underground in suitable geological formations with multiple containment barriers.

Challenge of Long-Term Waste Management

- **Intergenerational Responsibility:** Radioactive waste remains hazardous for **thousands to hundreds of thousands of years** – far beyond any normal institutional or planning timeframe.
- **Financial Uncertainty:** Waste management and geological disposal costs arise **decades after a reactor begins operation**. Without dedicated financial provisions, future costs fall disproportionately on the government and taxpayers.
- **Institutional Continuity:** Nuclear plants operate for decades. Radioactive waste management continues far longer. Responsibility must remain **institutionally defined** even when an operator changes ownership, exits the sector, or shuts down.
- **Public Acceptance:** Communities may resist hosting radioactive waste facilities due to concerns over **health, environmental safety, and long-term land use**.

Concerns Arising from Private Participation

- The SHANTI Act opened nuclear power generation to private companies, but **high-level waste management remains with the State**, creating a structural asymmetry.
- While private operators bear statutory cost liability under Sections 3(4) and 10(3)(e), sovereign execution of high-level waste disposal leaves the state vulnerable to long-tail financial underfunding and operator insolvency.
- The lack of a mature **regulatory framework for Small Modular Reactors (SMRs)** creates new risks as the sector expands.
- Adequate financial provisions must be established for waste management costs arising after a **nuclear power plant has ceased operation**.

Way Forward

- **Dedicated Nuclear Waste Fund:** Create a ring-fenced fund through a per-unit levy on nuclear electricity, accumulated over each plant's life, as in Finland's State Nuclear Waste Management Fund and the US Nuclear Waste Fund, to finance storage, transport and disposal.
- **Decommissioning Guarantees:** Require private operators to maintain escrow accounts or bank guarantees so decommissioning costs remain covered even if an operator exits or becomes insolvent.
- **Clear Liability Framework:** Licences should define operators' financial and operational obligations for spent fuel, including handover terms and cost-sharing with the Central Government.
- **Polluter-Pays Principle:** Internalise waste and decommissioning costs in tariffs so present beneficiaries, not future taxpayers, bear the burden.
- **Strengthening AERB:** Leverage AERB's new statutory status to ensure functional independence, technical expertise and a dedicated, graded regulatory framework for SMRs before large-scale deployment.
- **Early Repository Planning:** Begin systematic site identification and geological characterisation now; Finland's Onkalo, the world's first deep geological repository, took decades from site studies to completion.
- **Consent-Based Siting:** Adopt transparent, participatory siting with local benefit-sharing, drawing on Finland's municipal approval model and Canada's community-led process.
- **Advancing Technology:** Scale up partitioning, actinide transmutation in fast reactors and advanced vitrification to shrink waste volume and long-term radiotoxicity.
- **Transparency and Global Standards:** Publish periodic waste-inventory reports and consider acceding to the IAEA Joint Convention on spent fuel and radioactive waste safety to build public and investor confidence.
- **Intergenerational Stewardship:** Establish durable record-keeping and institutional memory so responsibility survives changes in ownership, governments and generations.

Conclusion

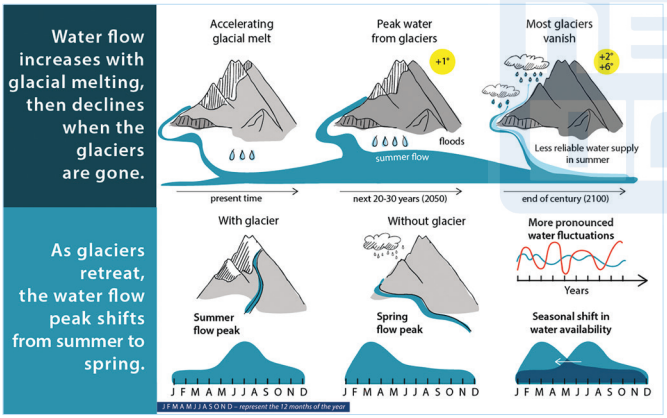
- India's three-stage programme and closed fuel cycle reflect a far-sighted strategy, with PFBR's first criticality in April 2026 marking the historic entry into Stage 2.
- The SHANTI Act, 2025 unlocks private capital for nuclear expansion, but it also crystallises a critical question: who pays for, and manages, waste that outlives every operator's profits.
- Reprocessing reduces waste volume, but radioactivity endures for thousands of years; responsibility, therefore, cannot be deferred indefinitely.
- A dedicated waste fund, clear private-sector liability, early repository planning and the polluter-pays principle are not optional additions but preconditions for sustainable nuclear expansion.
- Only by embedding long-term stewardship into nuclear economics today can India secure clean, reliable energy for Viksit Bharat@2047 and its net-zero commitment by 2070 without bequeathing an unfunded hazard to future generations.

MELTING OF HIMALAYAN GLACIERS

Recent floods in Nepal following an ice-and-rock avalanche have renewed concerns over rapidly warming Himalayan glaciers, glacial-lake outbursts, and their implications for India's water and economic security.

About ICIMOD and the Reports

- **ICIMOD** is a **regional inter-governmental body headquartered in Kathmandu, Nepal**, mandated to support mountain communities and ecosystems across the **Hindu Kush Himalaya (HKH) region, stretching from Afghanistan to Myanmar**.
- The reports were released to mark **World Day for Glaciers (March 21, 2026)** and coincide with **2025 being designated the International Year of Glaciers' Preservation** and the first year of the **Decade of Action for Cryospheric Sciences (2025-2034)**.
- **Two reports released simultaneously:**
  - "Changing Dynamics of Glaciers in the Hindu Kush Himalaya Region from 1990 to 2020".
  - "HKH Glacier Outlook 2026: Insights from 50 Years of Himalayan Glacier Monitoring"
- **ICIMOD Director General Pema Gyamtsho stated:** "The fact that ice loss rates have doubled this century should shock us all into action. This is not a distant problem. It is a crisis unfolding in real time."



Key Findings of the ICIMOD Reports

- The HKH region holds **63,761 glaciers** covering **55,782 sq km** with estimated ice reserves of **5,735.79 km^3**. It is the **largest concentration of ice outside the polar regions**.
- These glaciers feed **at least 10 major Asian river systems**, providing freshwater to nearly **2 billion people** across South and Southeast Asia.
- **Ice loss rate has nearly doubled:** from approximately **34 cm per year before 2000** to **73 cm per year after 2000**.
- The region lost **12% of its overall glacier area** and **9% of its total ice reserves** between 1990 and 2020.
- Glaciers have lost up to **27 metres of ice thickness since 1975**.
- Out of **302 annual glacier-wide mass-balance observations**, only **32 years recorded a positive mass balance**, confirming a dominant and worsening trend of ice loss over 50 years.
- The HKH Glacier Outlook 2026 synthesised data from **38 monitored glaciers**, revealing widespread wastage has doubled post-2000.
- Of these 38 glaciers, only **7 meet the global benchmark monitoring standards** of the **World Glacier Monitoring Service (WGMS)**. Regions including **Karakoram, Sikkim, Zanskar, and Bhutan** remain largely unmonitored.

Basin-Specific Vulnerability

- **Karakoram range:** Relatively stable with only **2% glacier area loss** (Karakoram Anomaly).
- **Ganga basin:** Alarming **21% glacier area reduction**.
- **Brahmaputra basin: 16% glacier area reduction**.
- **Smallest glaciers (below 0.5 sq km)** are shrinking most rapidly.

Factors Contributing to Glacier Melting

- **Global Warming and Climate Change:** The primary driver. Rising temperatures are preventing glaciers from rebuilding their mass during winter.
- **Elevation-Dependent Warming (EDW):** Higher altitudes (4,500-6,000 metres) are warming faster than lower regions, exposing glacier zones to intensified temperature rise.
- **Black Carbon and Surface Debris:** Accumulation of black carbon from fossil fuel combustion, waste burning, and supra-glacial debris absorbs heat and accelerates surface melt.
- **Loss of Insulating Snow Cover:** Declining seasonal snow and firn weakens natural insulation, making underlying ice more prone to fragmentation and rapid melting.
- **Erratic Western Disturbances:** Changing climatic patterns are reducing core winter snowfall and shifting precipitation seasonality, depriving glaciers of their primary replenishment source.
- **Steep Topography:** Longitudinal gradients exceeding 35 to 40 degrees transform minor upstream ice collapses into high-velocity, destructive debris surges downstream.

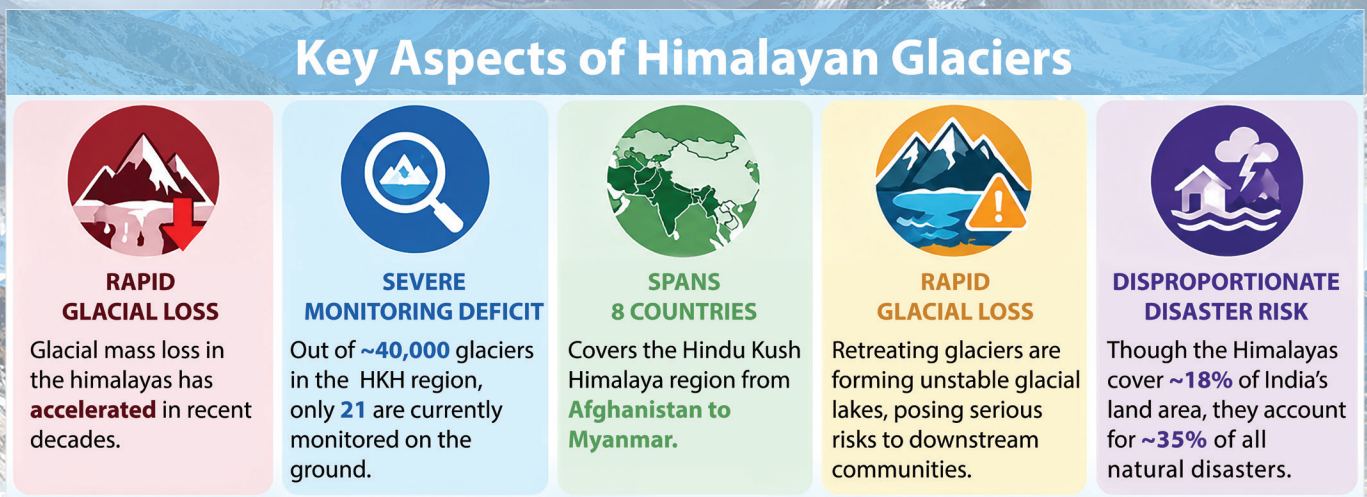
Consequences of Deglaciation

Glacial Lake Outburst Floods (GLOFs)

- Retreating glaciers form moraine-dammed lakes that may burst due to avalanches, earthquakes, or rockfalls, causing catastrophic floods of water and debris (GLOFs).
- **Recent example:** Sikkim (2023).

Cascading Disasters

- Deglaciation destabilises thermal and hydrological systems, triggering interconnected hazards including permafrost thaw, landslides, debris flows, and rock-ice avalanches.



Long-Term Water Insecurity

- Shrinking glaciers disrupt sustained meltwater supply, reducing river flows and causing long-term water scarcity for millions dependent on Himalayan rivers.

Agricultural and Ecological Disruption

- Warmer winters are causing crops such as apples and cherries to miss vital chilling requirements, resulting in poor yields, earlier pest outbreaks, and disrupted local ecosystems.

Socio-Economic and Infrastructure Destruction

- Flash floods and debris flows destroy settlements, farmland, roads, bridges, tourism infrastructure, and critically, hydropower installations.

Disaster Management Framework

Nodal Agencies

- The **Ministry of Jal Shakti (MoJS)** and the **Central Water Commission (CWC)** are the nodal bodies for glacial studies and GLOF hazard management in India.

National GLOF Risk Mitigation Programme (NGRMP)

- A dedicated **NDMA initiative (Phase-1: 2023-2026)** targeting high-risk states and UTs: **Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, Jammu and Kashmir, and Ladakh**.

Mitigation and Adaptation Strategies

- **Satellite-Based Early Warning:** Integrate multi-temporal Earth observation imagery such as **Sentinel-2** into operational early-warning systems to detect exposed ice patches before collapse occurs.
- **Multi-Hazard Risk Assessment:** Combine hazard models with vulnerability assessments of population, infrastructure, and hydrology to create **GIS-based multi-hazard risk maps**.
- **Community-Centric Monitoring:** Train local communities, porters, and shepherds to report early warning signs such as river turbidity changes or ice cracks using **mobile-based citizen science platforms**.
- **Bio-Restoration:** Plant vegetation to stabilise moraines and prevent erosion.
- **Structural Geo-Engineering:** Reduce glacial lake risks through controlled drainage, siphoning, or tunnelling of moraine-dammed lakes.
- **Robust Watershed Management:** Expand **PM Krishi Sinchayee Yojana (PMKSY-WDC)** to build check dams, percolation tanks, and farm ponds to enhance groundwater recharge.
- **Address Monitoring Blind Spots:** Expand systematic monitoring to Karakoram, Sikkim, Zanskar, and Bhutan to meet WGMS benchmark standards.
- **Reduce Black Carbon Emissions:** Targeted policies to reduce black carbon from fossil fuel combustion, agricultural burning, and waste incineration in and around mountain regions.
- **Integrated Preparedness Policies:** Ensure cross-sectoral coordination with both short-term contingency and long-term climate adaptation strategies embedded in national disaster and development planning.

Conclusion

- The rapid retreat of the **"Third Pole"** is an immediate and escalating reality threatening the water, food, and energy security of billions.
- The ICIMOD 2026 reports confirm the Himalayan cryosphere is approaching irreversible tipping points.
- Addressing this requires **transboundary cooperation, mainstreaming disaster risk reduction in development planning**, and empowering local institutions.
- India must integrate **advanced geospatial monitoring with community-based adaptation strategies** to effectively manage rising cryo-hydrological risks before the window for meaningful intervention closes.

DECLINE IN INDIA'S GROUNDWATER

The World Meteorological Organization (WMO), in its State of Global Water Resources 2025 report, highlights persistent groundwater stress and declining freshwater storage in parts of the world, including northern India.

Understanding Groundwater Depletion

- Groundwater Depletion occurs when extraction exceeds natural recharge through rainfall infiltration, seepage from surface water and other replenishment processes.
- Persistent depletion indicates a long-term imbalance between groundwater withdrawal and recharge, unlike a temporary fall in the water table.
- India faces severe water stress because it supports approximately **18% of the world's population** with only **4% of global freshwater resources**.
- Groundwater is critical for India's water security, supplying approximately **85% of rural drinking water** and around **60% of irrigation water**, as cited in the source material.

Key Findings of the WMO Report

- **Reference Period:** The report uses 2001–2020 as the reference period for assessing groundwater conditions.
- **Global Groundwater Levels:** In 2025, approximately **34% of groundwater observation stations** recorded below-normal to much-below-normal levels, while around **31%** recorded above-normal to much-above-normal levels.
- **Long-term Trend:** Global terrestrial water storage has shown a declining trend since 2014–2016, reflecting growing pressure on freshwater availability.
- **Northern India:** The region recorded below-normal **terrestrial water storage (TWS)** in 2025, indicating pressure on freshwater reserves.

Major Causes of Groundwater Depletion in India

- **Over-extraction For Agriculture:**
  - Agriculture accounts for the largest share of groundwater extraction in India.
  - Water-intensive crops such as **paddy and wheat**, particularly in regions with limited recharge, increase pressure on aquifers.
- **Subsidised Electricity:** Cheap or subsidised electricity lowers the cost of operating irrigation pumps, potentially encouraging excessive groundwater extraction and reducing incentives for conservation.
- **Reduced Natural Recharge:** Rapid urbanisation, concretisation and the loss of wetlands reduce infiltration and restrict groundwater replenishment.
- **Climate Variability:** Erratic rainfall, prolonged dry spells and rising temperatures can reduce effective recharge while increasing irrigation demand.

Related Government Initiatives/Efforts

- **Jal Shakti Abhiyan (2019):** Promotes rainwater harvesting, water conservation and groundwater recharge, particularly in water-stressed areas. ***Catch the Rain*** campaign subsequently strengthened the emphasis on rainwater conservation.
- **National Aquifer Mapping and Management Programme (NAQUIM):** Undertaken by the Central Ground Water Board (CGWB) to map aquifers and support scientific groundwater management.
- **Atal Bhujal Yojana:** Aims to improve community-led groundwater management through water budgeting, local planning and demand-side interventions in selected water-stressed areas.
- **Central Ground Water Authority (CGWA):** It regulates groundwater extraction under the applicable legal and regulatory framework, particularly for specified industrial, infrastructure and other non-agricultural uses.
- **Per Drop More Crop:** Promotes micro-irrigation, including drip and sprinkler systems, to improve water-use efficiency, implemented under the **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** framework.

Way Forward

- **Aquifer-based Management:** Shift from controlling extraction alone to managing the overall balance between groundwater withdrawal and recharge.
- **Crop Diversification:** Encourage less water-intensive crops through assured procurement, suitable price incentives and improved agricultural infrastructure.
- **Groundwater Budgeting:** Prepare aquifer and watershed-level water budgets using reliable monitoring data to align extraction with available resources.
- **Demand-side Management:** Promote efficient irrigation, appropriate electricity pricing and incentives for water conservation.
- **Recharge Enhancement:** Restore wetlands, protect water bodies, improve rainwater harvesting and adopt urban planning measures that facilitate infiltration.
- **Community Participation:** Strengthen local water-user institutions and participatory groundwater management to improve accountability and long-term sustainability.

Conclusion

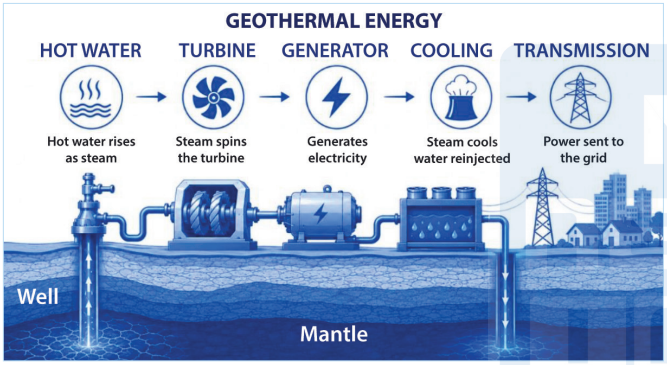
- Sustainable groundwater management requires an integrated approach combining **aquifer-level planning, demand management, scientific monitoring and community participation** to ensure long-term water and food security.

GEOTHERMAL ENERGY

ONGC Energy Centre commissioned India's first two geothermal wells at Puga Valley, Ladakh in July 2026, marking a landmark step toward firm renewable energy generation.

About

- Geothermal energy harnesses **natural heat within the Earth** to generate electricity or provide direct heating and cooling.
- It is **weather-independent and available round the clock**, making it a reliable source of **firm renewable energy** unlike solar and wind.
- Earth's internal heat originates from **radioactive decay of uranium, thorium, and potassium** and **residual heat** from planetary formation.
- This heat drives **mantle convection currents**, contributing to tectonic processes such as earthquakes, volcanism, and mountain building.



Earth's Internal Structure

- **Inner Core:** Solid iron-nickel layer approximately **2,400 km wide**.
- **Outer Core:** Liquid layer of molten iron and nickel.
- **Mantle:** Hot, dense rock extending nearly **2,900 km**.
- **Crust:** Thin outermost layer ranging from **5 to 8 km** beneath oceans and **24 to 56 km** beneath continents.
- Temperature reaches approximately **3,700°C** at the mantle-core boundary and **5,000 to 6,000°C** in the core.

Power Generation

- In geologically active regions, faults and fractures allow heat to approach the surface, creating **reservoirs of hot water and steam** within permeable rocks.
- Deep wells extract hot water and steam to drive **turbines connected to generators**.
- Cooled water is **reinjected into the reservoir** to support continued production.
- Geothermal heat is also used for **district heating, agriculture, aquaculture, and space heating and cooling**.

India's Geothermal Potential

- India has a theoretical geothermal potential of approximately 10.6 GW.
- The **Geological Survey of India (GSI)** has mapped **381 hot springs** and identified **10 geothermal provinces**.
- **42 sites** have been recognised as promising for electricity generation and direct heat use.
- Major provinces: **Himalayan, Naga-Lusai, Andaman and Nicobar Islands, Son-Narmada-Tapi (SONATA), West Coast, Cambay Graben, Aravalli, Mahanadi, Godavari, and South Indian Cratonic** regions.
- Global installed geothermal capacity reached **15.67 GW by end-2025**. **Indonesia, the US, Philippines, Türkiye, and New Zealand** together account for approximately **67% of global capacity**.

Puga Valley: A Landmark Development

- **ONGC Energy Centre** commissioned India's first two geothermal wells at **Puga Valley, Ladakh** in **July 2026** at an altitude of over **14,000 feet**.
- The two wells are **1,000 metres deep** and will facilitate reservoir evaluation.
- Temperatures of up to **135°C** have been recorded beneath Puga Valley.
- The project will pave the way for India's first **1-MW demonstration geothermal power project**.

Emerging Projects and Applications

- **Ankleshwar, Gujarat:** Pilot to assess electricity generation by retrofitting **unproductive oil and gas wells**.
- **Gandhinagar, Gujarat:** Solar-geothermal demonstration where three wells produce fluid at **70 to 80°C**, generating **50 to 90 kW** of electricity.
- **Tawang, Arunachal Pradesh:** Geothermal assessment underway at five sites.
- **Hyderabad:** Development of geothermal cooling for air-conditioning applications.
- **Shallow Geothermal:** Borehole Heat Exchangers being studied for heating and cooling.

Policy Framework

- The **National Policy on Geothermal Energy, 2025**, notified in **September 2025**, establishes geothermal as a **major pillar of India's renewable energy mix** with **MNRE** as nodal ministry.
- Focus areas include systematic exploration, technology development, **Ground Source Heat Pumps (GSHPs)**, Centres of Excellence, and a **national geothermal data repository**.
- It provides a regulatory framework for **public and private sector participation** and supports repurposing of **abandoned oil and gas wells**.

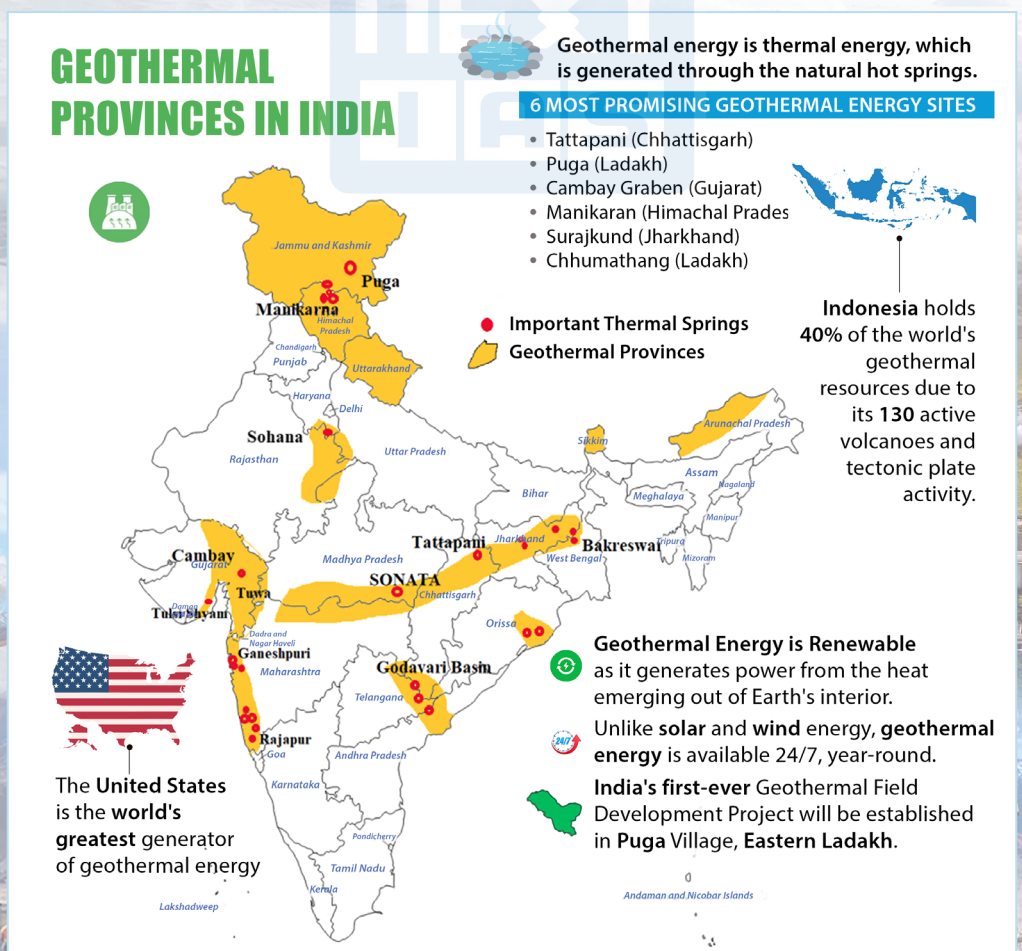
- The **RE-RTD Programme** under MNRE supports indigenous and cost-effective geothermal technologies.
- India has partnerships with **Australia and Iceland** and an **MoU with Saudi Arabia** for geothermal cooperation.

Key Concerns

- **High Upfront Cost:** Deep drilling and reservoir assessment require substantial capital. Resource uncertainty increases financial risk.
- **Geological Uncertainty:** Unevenly distributed resources require extensive geological and geochemical surveys to identify commercially viable reservoirs.
- **Induced Seismicity:** Fluid reinjection in **Enhanced Geothermal Systems (EGS)** can trigger micro-earthquakes and larger seismic events.
- **Water Concerns:** Operations may require significant water use. Poor management can affect groundwater availability or quality.
- **Environmental Impacts:** Potential issues include land disturbance, release of gases and minerals, thermal pollution, and groundwater contamination if geothermal fluids are not properly managed.
- **Resource Depletion:** Poorly managed extraction can reduce reservoir pressure and temperature, affecting long-term productivity.
- **Technological Challenges:** EGS, AGS, and deep drilling require advanced technology and specialised expertise currently limited in India.
- **Remote Locations:** Sites such as Puga Valley are geographically difficult to access, increasing infrastructure and transmission costs.
- **Limited Commercial Experience:** Despite 10.6 GW theoretical potential, India remains at the **demonstration stage**.
- **Regulatory and Investment Gap:** Large-scale deployment needs clear regulations, risk-sharing mechanisms, and sustained private investment.

Way Forward

- **EGS and AGS Technologies:** Can expand exploration beyond to areas with limited natural reservoirs.
- **Repurpose Existing Infrastructure:** Abandoned oil and gas wells can be retrofitted for geothermal applications using existing drilling expertise.
- **International Cooperation:** Deepen partnerships with Australia, Iceland, and Saudi Arabia for technology transfer and capacity building.
- **Private Investment:** Establish risk-sharing mechanisms and regulatory certainty to attract commercial-scale private participation.



DATA CENTRES IN INDIA

Google's planned 1-GW data centre in Visakhapatnam will use air-cooling technology after sustained civil society protests over water use, highlighting India's tension between digital expansion and environmental sustainability.

India's Data Centre Boom

- Data centre capacity in India has nearly **tripled from 520 MW in 2020 to around 1.5 GW today**.
- By 2030, capacity is projected to reach **6.5 GW**, representing a **fourfold expansion in just four years**.
- Electricity demand from data centres is expected to rise from **13 TWh in 2024 to 57 TWh by 2030**.
- The Union Ministry of Power informed the Rajya Sabha (July 2026) that AI data centres are projected to add 26.3 GW of electricity load by 2031-32, to be integrated into the grid and served primarily by renewable energy.
  - Of this pipeline, about 17 GW had already applied for grid connectivity with State Transmission Utilities (as of May 2026), while the remaining 9.3 GW had not.
- Global tech giants including **Google, Meta, Amazon, and Microsoft** have committed billions to build facilities across India.
- The government estimates that data centres will drive nearly **USD 200 billion in investment** over the coming decade.
- Most facilities cluster around **Mumbai, Hyderabad, Bengaluru, and the National Capital Region**, precisely the regions where **water and grid stress are already most acute**.

Water-Intensive Data Centres

- Data centres generate enormous amounts of heat through continuous server operation. A **1-GW data centre** will in principle produce **1 GW of heat**.
- Cooling systems account for approximately **30 to 40% of a data centre's total energy consumption**.
- Conventional **water-cooled chillers and cooling towers** require substantial quantities of freshwater.
- A **100 MW data centre** consumes approximately **2 million litres of water daily**, equivalent to the daily consumption of roughly **6,500 households**.
- India's data centres consumed an estimated **150 billion litres of water in 2024-25**. This figure is projected to more than double to **358 billion litres annually by 2030**.

Major Data Centre Cooling Technologies

- **Air Cooling:** Fans push cool air through server racks. Hot air is collected, cooled, and recirculated. Reduces direct freshwater consumption but increases power demand significantly.
- **Direct Liquid Cooling:** Brings coolant directly into contact with heat-generating components for more efficient thermal management.
- **Immersion Cooling:** Electronic components are submerged in a non-conductive liquid that absorbs heat during computing.
- **Evaporative Cooling:** Transfers heat from servers to water, which is subsequently evaporated through cooling towers or evaporative condensers.

Key Concerns

- **Water Stress:** Data centres cluster in India's most water-stressed regions. Their water use, 150 billion litres in 2024-25, may reach 358 billion litres by 2030.
  - Rajasthan extracts 147.11% of its annual groundwater recharge, several Maharashtra units are semi-critical, and Hyderabad faced rationing after a 20% summer supply drop in 2024.
- **Grid Stress:** India curtailed 300 GWh of renewable energy in Q1 2026 alone, while transmission additions met only about 80% of annual targets over five years. Where renewables cannot reach data centres, coal fills the gap, raising emissions.
- **Air-Cooling Trade-offs:** Air cooling cuts on-site water use but raises power demand, potentially shifting water use to power plants; chillers can also generate noise approaching 100 dB.
- **Thermal Pollution:** Data centres raise land surface temperatures by an average of 2°C within 10 km, up to 9.1°C in extreme cases, affecting about 340 million people globally.
- **Governance Gap:** State policies offer generous incentives, from electricity duty exemptions to fast-track clearances, yet no major state policy mandates a grid impact assessment before commissioning.

Way Forward

- **Mandatory Water-Use Disclosure:** Operators must report both direct and indirect water consumption transparently.
- **Water-Stress-Based Site Selection:** Large data centres should avoid regions facing severe groundwater stress.
- **Treated Wastewater for Cooling:** Freshwater should not remain the default cooling source. Treated wastewater must be actively promoted as an alternative.
- **Grid and Storage Expansion:** Strengthen transmission infrastructure and expand energy storage to accommodate rising AI-driven electricity demand.
- **National AI Energy Star Rating:** Allow buyers and regulators to compare the energy efficiency of facilities and AI models objectively.
- **National Sustainability Framework:** Establish minimum standards for renewable energy sourcing, water consumption disclosure, grid impact assessment, and thermal load evaluation for all data centres.

INDIA'S SPACE SECTOR

At the third National Space Day (August 2026) celebrations in Ahmedabad, ISRO Chairman V. Narayanan announced that ISRO is targeting eight launch missions in the current financial year.

Introduction

- Having evolved from a modest, state-led experimental project into an end-to-end space ecosystem, India's space programme is targeting ambitious milestones like the **Bharatiya Antariksh Station by 2035.**
- Routine manufacturing is shifting to private enterprise, allowing a non-privatized ISRO to focus purely on advanced research and interplanetary exploration.

Major Achievements

Chandrayaan Programme

- **Chandrayaan-1 (2008):** Provided evidence of water molecules and hydroxyl on the lunar surface.
- **Chandrayaan-2 (2019):** Orbiter continues providing high-resolution lunar data.
- **Chandrayaan-3 (2023):** Made India the first country to soft-land near the lunar south pole and the fourth nation to soft-land on the Moon.
- **Chandrayaan-4:** Planned **lunar sample-return mission**.
- **Chandrayaan-5/LUPEX:** India-Japan mission to explore lunar south polar volatiles including water.
  - Financial sanction received in 2025.
  - Implementation arrangement signed in August 2025.
  - Preliminary Design Review completed.

Planetary and Solar Science

- **Mangalyaan (2014):** India's 1st interplanetary mission to Mars.
- **Aditya-L1 (2023):** India's first space-based solar observatory at the **Sun-Earth L1 point**, approximately **1.5 million km from Earth**, studying the Sun's corona and space weather.
- **AstroSat (2015):** India's first dedicated multi-wavelength space observatory, observing in UV, optical, and X-ray wavelengths.
- **XPoSat (January 2024):** India's first mission to study **X-ray polarisation** of cosmic sources.
- **Venus Orbiter Mission (Shukrayaan-1):** Planned mission to study Venus's atmosphere, surface, geological processes, and atmospheric composition and dynamics.

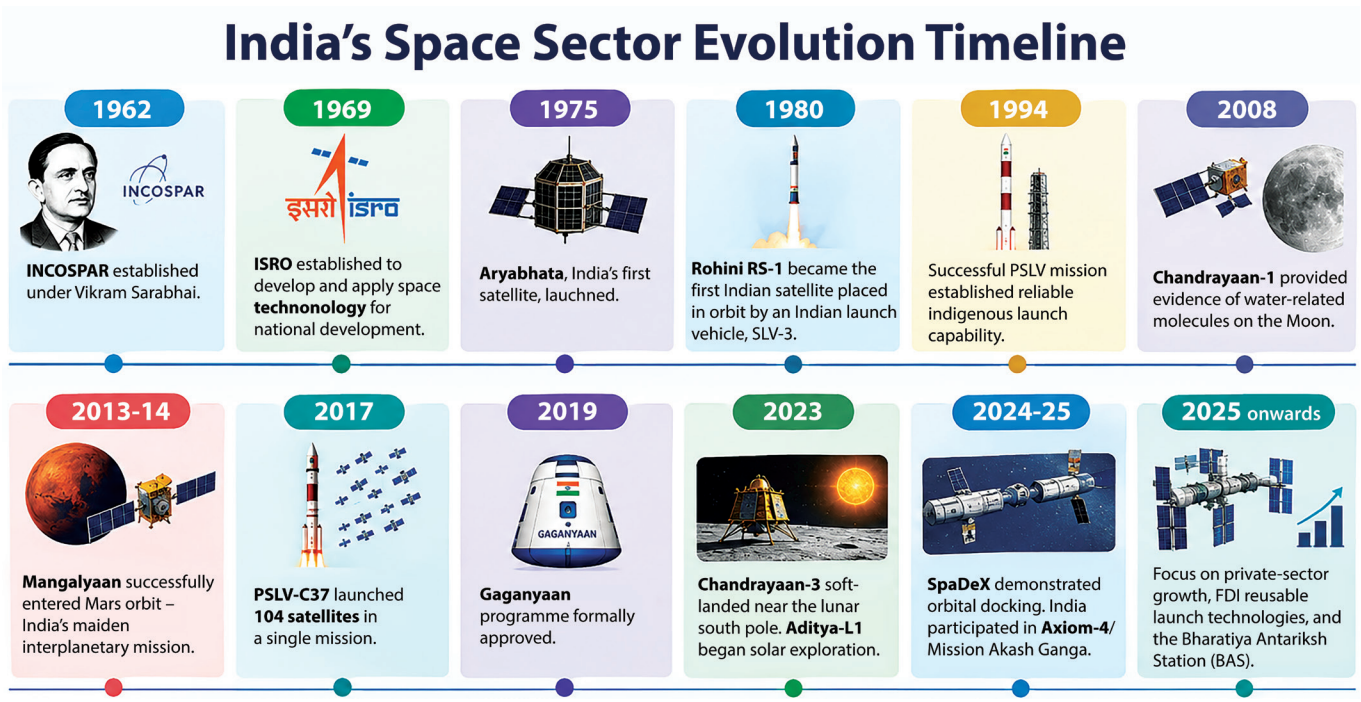
SpaDeX Mission

- Two spacecraft (**SDX01 and SDX02**) launched in **December 2024**.
- Autonomous docking demonstrated in **January 2025**. India became the **fourth nation** to demonstrate autonomous space docking and undocking.
- Technology supports future space stations, satellite servicing, and sample-return operations.

Axiom-4 / Mission Akash Ganga

- **Group Captain Shubhanshu Shukla** became the **first Indian to visit the ISS**, completing a **20-day mission including 18 days aboard the ISS**.

India's Space Sector Evolution Timeline



- Mission included scientific experiments relevant to microgravity research.
- Experience supports preparation for Gaganyaan and future human spaceflight missions.

NISAR Mission

- Jointly developed by **NASA and ISRO**, launched on **GSLV-F16 in July 2025** at a cost of over **USD 1.3 billion**.
- Uses advanced **dual-frequency Synthetic Aperture Radar (SAR)** to monitor changes in Earth's land, ice, and ecosystems.
- Supports climate change monitoring, disaster management, and agricultural assessment.

Gaganyaan: Human Spaceflight Programme

- Aims to send **Vyomnauts** to **low-Earth orbit** using the **Human-Rated Launch Vehicle Mark-3 (HLVM3)**.
- Three uncrewed missions planned before the crewed mission.
- First uncrewed test flight (G1) expected in **Q4 2026**. Crewed mission targeting **2027**.
- Crew escape systems and safety technologies are under advanced testing.

Bharatiya Antariksh Station (BAS)

- India's planned **five-module indigenous space station**, formally approved in **2024**.
- First module **(BAS-1)** planned for launch in **2028**. Full station targeted for completion by **2035**.
- PM Modi has outlined a vision to **establish BAS by 2035** and **land an Indian on the Moon by 2040**.
- BAS will build on technologies from Gaganyaan and SpaDeX.

India's Launch Vehicle Capability

- **PSLV:** India's workhorse for Earth observation, navigation, scientific, and commercial international launches.
- **GSLV:** Cryogenic upper stage vehicle for heavier satellites into **Geosynchronous Transfer Orbit (GTO)**.
- **LVM3:** Heavy-lift vehicle used for Chandrayaan-3 and selected for Gaganyaan.
- **SSLV:** Quick and cost-effective launch of smaller satellites.
- **NGLV (Next Generation Launch Vehicle):** Under development with a maximum payload capability of **30 tonnes to LEO**.
- **RLV (Reusable Launch Vehicle, "Pushpak"):** ISRO testing reusable technologies to reduce launch costs.
- India has launched **foreign satellites** from a total of **35 before 2014** to **399 as of January 2026**.
- **Kulasekarapattinam, Tamil Nadu** is emerging as India's **second rocket launch site** for SSLVs and private-sector launches.
- India currently has **56 operational space assets**. ISRO Chairman estimates national requirements will rise to **200-300 satellites** within five years.

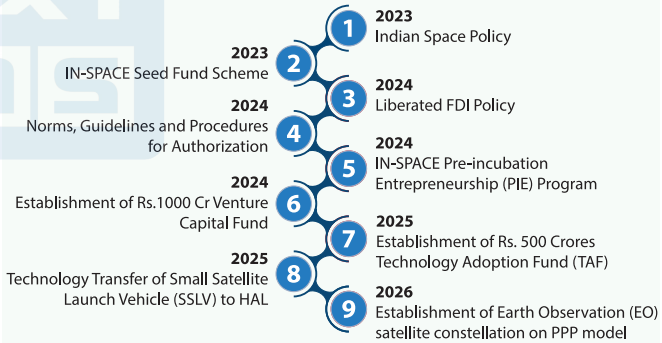
NavIC: India's Indigenous Navigation System

- **NavIC (Navigation with Indian Constellation)** is India's regional satellite navigation system, earlier known as **IRNSS (Indian Regional Navigation Satellite System)**.
- Provides **Standard Positioning Service (SPS)** for civilian users and **Restricted Service (RS)** for authorised users.
- Covers India and areas up to **1,500 km beyond the Indian mainland**.
- Supports transportation, disaster management, surveying, mapping, and location-based services.
- Reduces dependence on foreign navigation systems such as GPS.
- A **NavIC timing receiver** has been installed at Italy's **National Institute of Metrological Research (INRIM)**, strengthening international navigation cooperation.

Key Reforms and Institutions

- **IN-SPACe (2020):** Single-window agency to promote, facilitate, and authorise private sector space activities. Has enabled **71 ISRO technology transfers** to industry.
- **NSIL (2019):** Commercial arm of the Department of Space for technology transfer, satellite and launch services, and commercial space activities.
- **Indian Space Policy 2023:** Expanded private participation across the space value chain, defining roles for NSIL and IN-SPACe.
- **SpaceTech Innovation Network (SpIN):** Public-private collaboration for startups and SMEs in the space industry.

Institutional Frameworks by the Government to Encourage Space Start-Ups



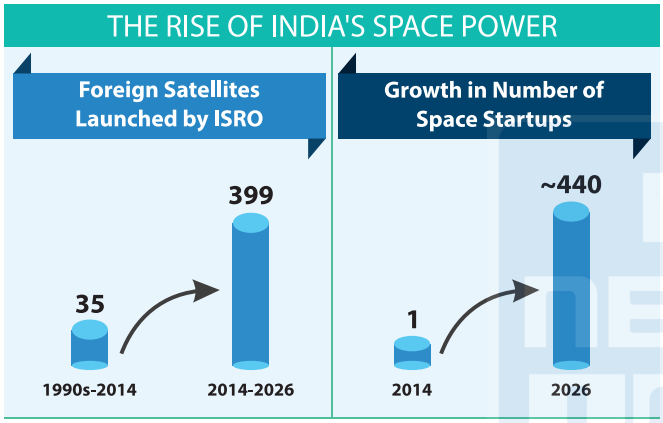
FDI Policy Reforms

- **100% FDI** under automatic route for manufacturing satellite components and subsystems.
- **Up to 74% FDI** under automatic route for satellite manufacturing, operations, and data products.
- **Up to 49% FDI** under automatic route for launch vehicles and spaceports.
- FDI beyond automatic-route limits requires government approval.

India's Space Economy and Private Ecosystem

- India's space economy reached **USD 9 billion (August 2026)**, accounting for **2-3% of the global space economy**. Target: **USD 40-45 billion by 2033-40**.
- Private investment surged nearly **six-fold: from USD 100.5 million (2021-22) to USD 618.5 million by March 2026**.

- Registered space startups grew from **1 in 2014 to approximately 440 by August 2026**.
- Key private companies: **Pixxel, Dhruva Space, Skyroot Aerospace, Agnikul Cosmos, Bellatrix Aerospace**.
- **Skyroot Aerospace** became India's **first space-tech unicorn**. Its **Vikram-1** became the first privately developed Indian orbital-class rocket to place a payload in **Low Earth Orbit (LEO)**.
- **Agnikul Cosmos** became the first Non-Government Entity (NGE) to launch a rocket from India's **first private launch pad "Dhanush"** at Sriharikota in **2024**.
- **Pixxel** launched its **"Firefly" constellation** – India's **first private Earth imaging satellite constellation** – in 2025.
- IN-SPACe approved a **Public-Private Partnership (EO-PPP)** for an Earth Observation satellite constellation led by **Pixxel with Dhruva Space, SatSure Analytics India, and Piersight Space**.



Notable Schemes Supporting Private Sector

- **₹1,000 crore Venture Capital (VC) Fund** under IN-SPACe.
- **₹500 crore** Technology Adoption Fund (TAF).
- **IN-SPACe Seed Fund Scheme, Pricing Support Policy, Mentorship Support, Design Lab for NGEs**, and skill development programmes.
- Union Budget 2025-26 allocated **₹13,416.2 crore** to the space sector.

Global Partnerships

- **India-USA: NISAR mission** (launched July 2025). Discussions in August 2026 on future cooperation in human spaceflight, lunar exploration, and scientific data sharing.
- **India-Japan: Chandrayaan-5/LUPEX** mission for lunar polar volatile exploration.
- **India-France:**
  - **TRISHNA mission** for high-resolution thermal infrared Earth observation.
  - Expanding into human spaceflight and advanced technologies.
- **India-Russia:** Cooperation in human spaceflight and planetary exploration. Russia contributing **VIRAL payload** to India's Venus Orbiter Mission.
- **India-Australia:** Supporting Gaganyaan crew recovery operations. Space-tracking terminal at **Cocos (Keeling) Islands**.
- India has built **300+ space cooperation agreements** with **61 countries and five multilateral organisations**.

Applications of Space Technology

- **Agriculture and Water Security:** Crop monitoring, weather forecasting, soil moisture assessment, water resource mapping, irrigation planning, and drought monitoring.
- **Disaster Management:** Flood monitoring, cyclone tracking, landslide assessment, forest fire detection, damage assessment, and emergency satellite communication.
- **Healthcare and Education:** Telemedicine connectivity, remote consultation, tele-education for rural areas, and emergency healthcare communication.
- **Key Geoportals: Bhuvan** (ISRO's geoportal), **VEDAS** (Earth observation data), **MOSDAC** (meteorological and oceanographic data), **Bhuvan Panchayat** (rural planning).

Challenges

- Dependence on critical technologies in **advanced propulsion, high-end sensors, space-grade electronics, and semiconductors**.
- **Infrastructure constraints** in specialised testing, launch infrastructure, and space-grade facilities.
- **Global competition** from established international firms with greater capital and mature supply chains.
- Most Indian space startups remain **early-stage** and face difficulties scaling from prototypes to commercially viable systems.
- **PSLV temporarily grounded** in 2026 following two consecutive failures – highlighting the risks in India's launch cadence.

Conclusion

- India's space sector has transformed from a government-led scientific programme into a **dynamic, commercially oriented ecosystem** combining ISRO's deep technical expertise with a growing private sector.
- With **Gaganyaan, BAS, Chandrayaan-4, Shukrayaan, and NGLV** defining the next decade, and approximately **440 startups** driving innovation, India is on a credible trajectory towards **Space Vision 2047** and its goal of capturing **8-10% of the global space economy**.
- Sustained investment in indigenous technologies, private innovation, and international partnerships will determine how fully India realises its ambitions in the **Asian century of space**.

1 POLITY & GOVERNANCE

DIGITAL INDIA LAND RECORDS MODERNISATION PROGRAMME (DILRMP) 3.0

The Department of Land Resources (DoLR), Ministry of Rural Development has launched the Operational Guidelines for DILRMP 3.0 (2026–2031) with an outlay of ₹565.5 crore.

About DILRMP

- **Origin:** It was launched in 2008 as the National Land Records Modernisation Programme (NLRMP) by merging the Computerisation of Land Records (CLR) and the **Strengthening of Revenue Administration & Updating of Land Records (SRA & ULR)**.
- **Renamed:** Brought under **Digital India** and renamed **DILRMP** in **2016**.
- **Nature:** Central Sector Scheme with 100% Central funding.
- **Implementing Agency:** Department of Land Resources (DoLR), Ministry of Rural Development.
- **Objective:** To develop an **Integrated Land Information Management System (ILIMS)** that improves **real-time land information**, optimises land use, supports **policy and planning**, benefits landowners and buyers, and reduces **land disputes** and **fraudulent/benami transactions**.

Key Features of DILRMP 3.0

- **Vision:** Shifts from simple digitisation to a **comprehensive GIS-enabled "Land Stack."**
- **State & National Land Stack:** States will develop **State Land Stacks** through API-based integration, forming a **federated National Land Stack**.
- **Universal Bhu-Aadhaar (ULPIN): 14-digit Unique Land Parcel Identification Number** for every land parcel.
- **Digitised Cadastral Maps:** Complete **digitisation and georeferencing** of land records.
- **Paperless Registration:** Online property registration, a **registration repository,** and **75 Sub-Registrar Offices** upgraded as **Registration Seva Kendras**.
- **Revenue Court Case Management System (RCCMS):** Digital integration of revenue courts with land records.
- **NAKSHA Pilot:** Completion of the **urban land records mapping** pilot.

Significance

- Enhances **transparency**, **scientific land-use planning** and **GIS-based surveys**.
- Reduces **disputes, encroachments and benami transactions**.
- Ensures **faster compensation** during land acquisition and disasters.
- Improves **access to secure land rights**, especially for vulnerable groups.

V-DEM DEMOCRACY INDEX

The latest V-Dem Democracy Report states that India's Electoral Democracy Index (EDI) has fallen to its lowest level since 1975.

About

- V-Dem (Varieties of Democracy) Index is a multidimensional global democracy assessment framework.
- **Published by:** V-Dem Institute, University of Gothenburg, Sweden.
- **Aim:** To measure and compare different dimensions of democracy and identify trends such as **democratisation** and **autocratisation**.
- It assesses indicators including electoral integrity, civil liberties, institutional autonomy, judicial accountability, freedom of expression and public administration.

Key Findings on India

- **The Electoral Democracy Index** is currently at its **lowest level since the Emergency (1975)**.
- India has witnessed a **gradual decline** in democratic indicators since **2009**.
- The report classifies India among countries undergoing **autocratisation**, with a marked weakening of democratic institutions.
- Indicators relating to **judicial accountability**, **corruption**, **Election Management Body (EMB) autonomy** and **impartial public administration** are at their **lowest levels in 50 years**.
- The report also notes a decline in **academic freedom**, **institutional autonomy**, **freedom to research and teach**, and highlights concerns regarding **academic, cultural and media freedom**, including harassment of journalists.

BAR COUNCIL OF INDIA (BCI)

The Supreme Court held that the Bar Council of India (BCI) has no statutory power to take disciplinary action against law students before their enrolment as advocates under the Advocates Act, 1961.

About

- **Statutory Body** established under **Section 4 of the Advocates Act, 1961**.
- Apex regulator of the **legal profession** and **legal education** in India.

- **Members** are elected from among advocates through **State Bar Councils** and represent the **Indian Bar**.
- **Attorney General of India** and **Solicitor General of India** are **ex officio members**.
- Elects a **Chairman** and **Vice-Chairman** for a **two-year** term.



Supreme Court Ruling

- Disciplinary jurisdiction extends only to enrolled advocates.
- The **Advocates Act, 1961,** confers **no express or implied power** on the BCI or State Bar Councils to punish law students.
- The BCI may regulate **legal education**, but its regulatory jurisdiction begins **only after a student is enrolled as an advocate**.
- **Universities** and other **competent authorities** alone have disciplinary control over law students.

NATIONAL COMMISSION FOR SAFAI KARAMCHARIS (NCSK)

The Department of Social Justice and Empowerment has appointed Shri Bhagwat Prasad Makwana as Chairperson, Shri Kaishab Bihari as Vice-Chairperson, and three Members to the National Commission for Safai Karamcharis (NCSK).

About NCSK

- **NCSK** is a **non-statutory body** under the **Ministry of Social Justice and Empowerment**.
- It was originally constituted as a **statutory body** under the **National Commission for Safai Karamcharis Act, 1993** on **12 August 1994**, initially for **three years**.
- After the **1993 Act lapsed on 29 February 2004**, it has continued through **periodically renewed Central Government resolutions**.
- **Composition:** One **Chairperson**, one **Vice-Chairperson**, and **five Members**, including **at least one woman Member**, appointed by the **Central Government**.

Functions

- Works for the **welfare, dignity, safety and socio-economic rehabilitation** of **Safai Karamcharis** and **manual scavengers**.
- Reviews and evaluates **rehabilitation and welfare schemes**.
- Investigates complaints and takes **suo motu cognisance** of violations.
- Monitors **working conditions, occupational safety, health and wages**.
- Advises the **Central and State Governments** through reports and policy recommendations.
- Monitors implementation of the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013** and performs functions assigned under **Section 31**, including monitoring compliance and inquiring into violations.
- Oversees implementation of **Supreme Court directions** relating to rehabilitation and compensation in sewer and septic tank death cases.

GRAM SABHA CONSENT FOR FOREST CLEARANCE

The Ministry of Tribal Affairs (MoTA) recently clarified that the Forest Rights Act (FRA), 2006 does not expressly provide for Gram Sabha consent for Stage-II forest clearance, triggering debate over the legal basis of such consent.

About FRA, 2006

- Officially called the **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.**
- Enacted to correct the historical injustice faced by forest-dwelling Scheduled Tribes (STs) and Other Traditional Forest Dwellers (OTFDs).
- **Nodal Ministry:** Ministry of Tribal Affairs (MoTA).
- Gram Sabha is the authority to initiate the process of determining and verifying forest rights.
- Recognises individual and community forest rights, including Minor Forest Produce (MFP), grazing, habitation, biodiversity and habitat rights of PVTGs.
- **Section 5** empowers the Gram Sabha and rights holders to protect forests, wildlife and biodiversity.

Gram Sabha Consent for Forest Clearance

- The FRA itself does not contain an explicit provision requiring Gram Sabha consent for diversion of forest land for non-forest purposes.
- The requirement evolved through executive guidelines issued under the **Forest (Conservation) Act, 1980 (now Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980)** before granting forest diversion approvals.
- **These guidelines require:**
  - Identification of eligible FRA claimants.
  - Recognition and vesting of their rights.
  - No Objection Certificate (NOC) from the concerned Gram Sabha, commonly called Gram Sabha consent.

FRONT-OF-PACK WARNING LABELS

The Supreme Court raised concerns over the Food Safety and Standards Authority of India (FSSAI) proposal to implement Front-of-Pack Warning Labels (FoPWL) for packaged foods high in fat, sugar and salt (HFSS) through a two-phase rollout.

About FoPWL

- **Front-of-Pack Warning Labels (FoPWL)** are **red hexagonal warning symbols** displayed prominently on packaged foods containing high levels of **added sugar, saturated fat or salt**.
- They aim to help consumers make **quick and informed food choices**.
- **FSSAI** has been examining FoPWL since **2018**.
- The proposed nutrient thresholds are based on the **Dietary Guidelines for Indians, 2024**, issued by **ICMR-National Institute of Nutrition (ICMR-NIN)**.
- An earlier **Health Star Rating** proposal (2022) was not implemented following stakeholder objections.

Key Features of the Proposal

- **Phase I:** Covers foods high in **two or more** nutrients and specified **highly sweetened beverages**.
- **Phase II:** Extends warning labels to foods high in **any one** nutrient.
- **Exemptions:** Single-ingredient foods and naturally high-fat, sugar or salt products such as **ghee, edible oil, salt, sugar, jaggery and honey**.
- The warning text is proposed to be **one point larger** than the nutrition information panel.

Supreme Court's Observations

- The Court emphasised that effective warning labels are essential to safeguard **public health**, particularly that of children, and to uphold the **Right to Health under Article 21**.
- Questioned limiting Phase I to products high in **two nutrients**.
- Favoured a **threshold-based** warning system with separate norms for **ultra-processed** and **minimally processed** foods.
- Expressed concern that Phase II may be delayed without a definite timeline.
- Recommended combining **text** with **pictorial warnings** and strengthening **nutrition education**.

Lessons from Global Experience

- Chile, Mexico, and Uruguay uses black octagonal warning labels such as **"High in Sugar", "High in Sodium" and "High in Saturated Fat"**
- Brazil introduced a magnifying-glass symbol on the front of packages to identify foods high in added sugar, saturated fat and sodium.

Key Concerns

- Foods high in a **single harmful nutrient** may escape warnings.
- Focusing only on **added** rather than **total** fat, sugar and salt may reduce effectiveness.
- The proposed label size may lack adequate visibility.
- Absence of **multilingual warnings**, unclear implementation timelines and limited penalties for **misbranding (up to ₹3 lakh)** may weaken enforcement.



EMERGENCY CREDIT LINE GUARANTEE SCHEME (ECLGS) 5.0

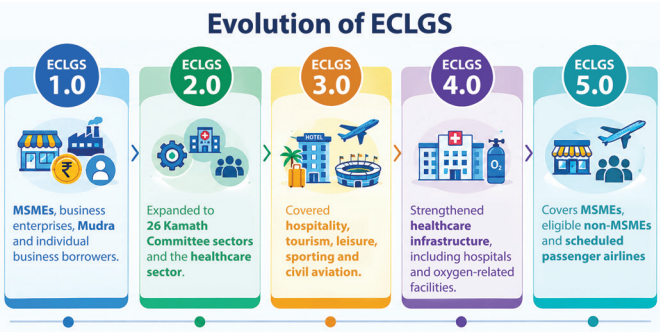
ECLGS 5.0 has gained attention for providing government-backed credit guarantees to businesses affected by external economic disruptions.

About ECLGS 5.0

- **ECLGS** was launched in **2020** under the **Aatmanirbhar Bharat Package** to mitigate the economic impact of the **COVID-19 pandemic**.
- It is implemented by the **National Credit Guarantee Trustee Company (NCGTC)** through **Member Lending Institutions (MLIs)**.
- **ECLGS 5.0** is operational till **31 March 2027** or until **₹2.55 lakh crore** of guarantees are issued, whichever is earlier.
- It provides **100% credit guarantee** for eligible **MSMEs** and **90% guarantee** for eligible **non-MSME borrowers**, with **no guarantee fee** payable by MLIs.
- The scheme is accessible through the **Jan Samarth Portal**.

Evolution

- **ECLGS 1.0:** MSMEs, business enterprises, Mudra and individual business borrowers.
- **ECLGS 2.0:** Expanded to 26 Kamath Committee sectors and the healthcare sector.
- **ECLGS 3.0:** Covered hospitality, tourism, leisure, sporting and civil aviation.
- **ECLGS 4.0:** Strengthened healthcare infrastructure, including hospitals and oxygen-related facilities.
- **ECLGS 5.0:** Covers MSMEs, eligible non-MSMEs and scheduled passenger airlines.



REGISTERED UNRECOGNISED POLITICAL PARTIES (RUPPS)

A BBC News Hindi investigation revealed that six Registered Unrecognised Political Parties (RUPPs) received nearly ₹1,700 crore in donations during 2023–24.

About RUPPs

- The Election Commission of India (ECI) registers political parties under **Section 29A** of the Representation of the People Act, 1951.
- A **Registered Unrecognised Political Party (RUPP)** is a party **registered with the ECI** but not recognised as a **State or National Party**.
- **Benefits available to RUPPs:**
  - **Income-tax exemption** on eligible donations.
  - **Common election symbol** for Lok Sabha and State Assembly elections.
  - Recognition of up to **20 star campaigners**.
- **Funding provisions:**
  - Donors contributing **above ₹20,000** annually must be disclosed to the **ECI**.
  - Donations exceeding **₹2,000** must be accepted only through **banking channels**.
  - Failure to furnish donation details under **Section 29C of the RP Act** results in loss of income-tax exemption.

Key Issues

- India had **over 2,800 RUPPs**, but only about **750** contested the **2024 Lok Sabha elections**, leading to many being termed **"letter-pad parties".**
- The **October 2025 ECI notification** listed **more than 800 de-listed RUPPs**, highlighting the scale of inactive parties.
- According to the **Association for Democratic Reforms (ADR)**, annual reports of only **26% of RUPPs** for **2022–23** were available in the public domain.
- The **RP Act** does not empower the **ECI** to deregister parties merely for inactivity or non-compliance.
- In **Indian National Congress v. Institute of Social Welfare (2002)**, the **Supreme Court** held that de-registration is permitted only in exceptional cases such as **fraud**, **loss of allegiance to the Constitution**, or where a party is **declared unlawful**.
- Weak disclosure norms and token electoral participation increase the risk of **tax evasion** and **money laundering**.

Reform Measures

- Amend the **RP Act** to empower the **ECI** to de-register parties that fail to contest elections for **10 consecutive years**, as recommended by the **Law Commission (255th Report)** and the **ECI (2016 Electoral Reforms Memorandum)**.
- Strengthen digital financial monitoring by the **Income Tax Department** and enforcement agencies.
- Instead of linking tax exemptions only to **winning seats**, prescribe a **minimum vote-share threshold** to ensure genuine electoral participation while protecting smaller political parties.

BANKERS' BOOKS EVIDENCE ACT, 2026

The Bankers' Books Evidence Act, 2026 came into force on 1 October 2026, replacing the Bankers' Books Evidence Act, 1891 to modernise the legal framework governing banking records as evidence.

About the Act

- It provides a **technology-neutral legal framework** for treating certified **banking records as prima facie evidence** in legal proceedings without producing original books.
- It recognises records maintained in **physical, electronic, digital, virtual, cloud-based** and other contemporary formats.
- The Act standardises the **certification of banking records** through **manual, digital or electronic signatures**, giving them legal validity.
- Digital records are admissible only if they are **true representations**, free from **unauthorised alteration**, and maintained in systems whose **integrity has not been compromised**.
- Courts may summon **bank officials** or require original records only after recording a **"special cause"** in writing when the bank is **not a party** to the proceedings.
- The Act continues to cover **banks**, including **Post Office Savings Banks**, and empowers the **Central Government** to extend its provisions to **NBFCs, fintechs and other notified financial entities**.

Significance

- It aligns banking evidence laws with **India's digital financial ecosystem**.
- It reduces litigation delays and the operational burden on financial institutions.
- It promotes **Ease of Doing Business (EoDB)** and complements the **Bharatiya Sakshya Adhiniyam, 2023** in recognising electronic evidence.

PRADHAN MANTRI KISAN MAANDHAN YOJANA (PM-KMY)

The Pradhan Mantri Kisan Maandhan Yojana (PM-KMY) has completed seven years since its launch in 2019, reinforcing old-age social security for small and marginal farmers (SMFs) through a contributory pension system.

About PM-KMY

- PM-KMY is a voluntary and contributory old-age pension scheme for small and marginal farmers (SMFs).
- It is a Central Sector Scheme implemented by the Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, in partnership with the Life Insurance Corporation of India (LIC).
- Eligible subscribers receive a minimum assured pension of ₹3,000 per month after attaining 60 years of age.

Contribution, Eligibility and Benefits

- The scheme follows an **equal contribution model**, under which the **farmer and the Central Government contribute equally**.
- Farmers aged **18-40 years** contribute **₹55-₹200 per month**, depending on the age at enrolment.
- It is open to **small and marginal farmers** with **cultivable landholdings up to 2 hectares**, whose names appear in the **State/UT land records as on 1 August 2019**.
- Contributions are deducted through an **auto-debit** facility from the linked bank account. Eligible farmers may also use **PM-KISAN** benefits to pay their contributions.
- After the subscriber's death, the **spouse receives a family pension of ₹1,500 per month** (50% of the pension), provided the spouse is **not already a PM-KMY beneficiary**.
- If the subscriber dies **before attaining 60 years**, the spouse may either **continue the scheme** by making regular contributions or **exit** as per the scheme provisions.

Exclusions

- Excludes beneficiaries of **NPS, EPFO, ESIC, PM-SYM and PM-LVM**, institutional landholders, income-tax payers, constitutional office holders, specified elected representatives, serving/retired government employees and registered professionals.
- **Multi-Tasking Staff (MTS), Class IV and Group 'D' employees** are exempt from these exclusions.

Coverage and Significance

- As of **February 2026**, the scheme had enrolled **24,96,252 farmers**, with **Haryana** recording the highest enrolment, followed by **Bihar**.
- Since its launch, the scheme has utilised ₹540.66 crore for its implementation and expansion.
- PM-KMY strengthens **life-cycle social security** and reduces **old-age financial insecurity** among **small and marginal farmers**.

INTERNATIONAL DAY OF DEMOCRACY

International Day of Democracy is observed every year on 15 September to promote democracy, human rights and meaningful citizen participation worldwide.

About

- The day was established by the UN General Assembly through a resolution adopted on 8 November 2007, with the first observance in 2008.
- It builds on the 1997 Universal Declaration on Democracy adopted by the Inter-Parliamentary Union (IPU) and the ICNRD process launched in 1988.
- It promotes democracy, human rights, equality, rule of law, accountable governance and inclusive citizen participation.
- **Theme (2026):** "What's Next for Democracy? Innovation and Alliances in a Changing World."

Democracy

- Democracy is a system in which sovereign power rests with the people, exercised directly or through elected representatives.
- The term comes from the Greek word **dēmokratía**, meaning **"rule by the people."**
- It upholds political equality, free and fair elections, freedom of expression, public participation and the rule of law.
- **Article 19** of the UDHR guarantees freedom of opinion and expression.

Significance

- The 2026 theme emphasises innovation, partnerships and resilient democratic institutions.
- Parliaments strengthen democracy through representation, law-making and accountability.
- The United Nations Democracy Fund (UNDEF) supports civil society, inclusive participation, gender equality, transparency and democratic institutions.

GLOBAL GENDER GAP INDEX 2026

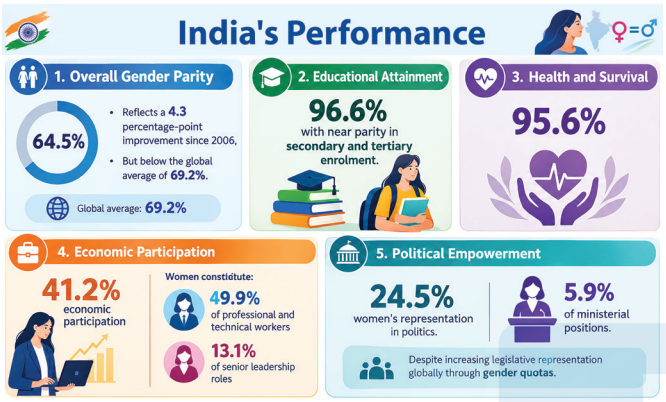
India retained its 131st rank out of 145 countries in the Global Gender Gap Index 2026, released by the World Economic Forum (WEF), with an overall gender parity score of 64.5%.

About the Index

- The index has been published annually by the **World Economic Forum (WEF)** since **2006**.
- It measures **gender parity** (not absolute development) on a **0–1 scale**, where **1 represents full parity**.
- The index assesses **four dimensions**:
  - Economic Participation and Opportunity
  - Educational Attainment
  - Health and Survival
  - Political Empowerment

Key Global Highlights

- **Iceland** ranked **1st** for the **17th consecutive year**, followed by **Finland** and **Norway**. **Chad (145th)** ranked last, preceded by **Iran (144th)** and **Pakistan (143rd)**.
- Globally, **69.2%** of the gender gap has been closed, while **full gender parity is estimated to be 120 years away** at the current pace.
- Women account for **less than one-fifth of AI engineers** globally, highlighting the emerging **AI gender gap**.



EPFO WAGE CEILING

The Union Cabinet has approved increasing the wage ceiling for mandatory EPFO coverage from ₹15,000 to ₹25,000 per month, marking the first revision since 2014.

About EPFO

- The **Employees' Provident Fund Organisation (EPFO)** was established in **1952** under the **Ministry of Labour & Employment**.
- **It administers three statutory schemes:**
  - Employees' Provident Funds Scheme, 1952 (EPF)
  - Employees' Pension Scheme, 1995 (EPS)
  - Employees' Deposit Linked Insurance Scheme, 1976 (EDLI)

Key Highlights

- **Wage ceiling:** Increased from **₹15,000** to **₹25,000** per month. Earlier, it was revised from **₹6,500 to ₹15,000** in **2014**.
- **EPF contribution:** Both the employee and employer contribute 12% of basic wages, dearness allowance and retaining allowance (if any).
- **Employer's contribution: 3.67%** is credited to **EPF** and **8.33%** to **EPS**.
- **Government contribution: 1.16%** of wages is contributed towards **EPS**, as per the statutory framework.
- **EPS ceiling:** Maximum monthly pension contribution rises from **₹1,250** to **₹2,080**.
- The revision reflects **rising wages**, **expanding formal employment** and aims to widen **provident fund, pension and insurance** coverage.
- The **additional annual fiscal support** for **EPS** is estimated at **₹1,089 cr**, taking the total government support to **₹11,339 cr**.

PROPOSED ARTICLE 371(K)

The Ministry of Home Affairs (MHA) has proposed a new Chapter K under Article 371 to provide constitutional safeguards and establish a directly elected governing body for Ladakh.

The Proposal

- The proposal seeks to create a **sui generis constitutional model** for a **Union Territory**, unlike the existing **Articles 371–371J**, which mainly apply to **States**.
- **Key Features:**
  - Provides for a **directly elected UT-level body**.
  - Proposed legislative powers over **land, culture, language, forests, environment and natural resources**.
  - May also legislate on certain matters otherwise reserved for the UT under **Article 240**.
  - An **in-principle understanding** was reached during discussions in **2026**, but a detailed draft is yet to be released.

Background

- After **Article 370** was **revoked in 2019** and the **Jammu and Kashmir Reorganisation Act, 2019** was passed, Ladakh became a Union Territory without legislature.
  - Because Ladakh is now run by officials rather than elected representatives, and its domicile rules have changed, local people fear losing control over their land, jobs, population balance and culture. This has led to demands for statehood and for tribal safeguards under the Sixth Schedule.
- Ladakh earlier had four MLAs in the J&K Legislative Assembly. The Leh and Kargil Autonomous Hill Development Councils have limited powers and are not covered by the Sixth Schedule.
- **Leh Apex Body (LAB)** and **Kargil Democratic Alliance (KDA)** have demanded statehood, Sixth Schedule protection and greater control over land, employment and governance.

Key Constitutional Facts

- **Articles 371 and 371A-371J**, under **Part XXI**, provide **special provisions** for specific States.
- The **Sixth Schedule** under **Article 244** grants co nstitutional autonomy through **Autonomous District Councils** in **Assam, Meghalaya, Mizoram and Tripura**. It has **never been extended outside the Northeast**.
- The **National Commission for Scheduled Tribes (NCST)** recommended **Sixth Schedule status for Ladakh** in **2019**.
- A new **Article 371(K)** can be inserted only through a **Constitutional Amendment under Article 368**, requiring a **special majority** in Parliament.

Articles 371 & 371-A to 371-J Part XXI of the Constitution of India: 'Temporary, Transitional and Special Provisions'.		
Articles	**State**	**Broad Focus**
371	Maharashtra and Gujarat	Separate development boards for regions like Vidarbha and Marathwada
371-A	Nagaland	Naga customary law, religion, land/resources
371-B	Assam	Committee for tribal areas
371-C	Manipur	Hill Areas Committee
371-D/E	Andhra Pradesh & Telangana	Local opportunities/education; Central University
371-F	Sikkim	Special constitutional arrangements
371-G	Mizoram	Customary law, religion, land
371-H	Arunachal Pradesh	Governor's special responsibility for law and order
371-I	Goa	Special provision concerning Assembly
371-J	Karnataka	Special provisions for Hyderabad-Karnataka/Kalyana Karnataka region

SUPREME COURT ON THE THREE-LANGUAGE POLICY

The Supreme Court has urged the Union Government to defer the mandatory implementation of the three-language policy for the current Class 6 batch until 1 January 2027, observing that only a few months remain in the academic year under the CBSE's NEP 2020 implementation.

Three-Language Policy

- The National Education Policy (NEP) 2020 retains the three-language formula of NEP 1968, while providing greater flexibility.
- Under **NEP 1968**, the policy envisaged:
  - **Hindi-speaking States:** Hindi, English, and one modern Indian language (preferably a South Indian language).
  - **Non-Hindi-speaking States:** Regional language, Hindi, and English.
- **NEP 2020** does **not impose any particular language** on any State.
  - **States, regions, schools, and students** may choose the three languages.
  - **At least two** of them must be **Indian languages (Bharatiya Bhashas).**
  - It also promotes **mother tongue/home language-based education**, **bilingual learning**, and offers **Sanskrit** as an optional language.

CBSE Framework

- The policy forms part of the **CBSE Scheme of Studies**, aligned with **NEP 2020** and the **National Curriculum Framework for School Education (NCF-SE) 2023**.
- From **1 July 2026**, **Class 9 students** must study **three languages**, with **at least two being Bharatiya Bhashas**.
- A **foreign language** may be studied only as the **third language** after two Indian languages or as an **additional fourth language**.
- The Board also made **two Indian languages mandatory for Class 6**, while providing transitional relaxation for students already studying different language combinations in higher classes.

Supreme Court's Observations

- The Court stated that **major educational reforms should be introduced gradually** with adequate preparation and sufficient **"breathing space"**.
- It recommended **avoiding disruption** for students already following the existing curriculum.
- It suggested encouraging the study of a third language through **incentives and engaging teaching methods**.
- It also proposed making the third language **optional for the current batch** and implementing the mandatory requirement from **1 January 2027**.

RISING WORKPLACE COMPLAINTS UNDER POSH ACT

Nifty 50 companies reported 1,327 complaints under the Prevention of Sexual Harassment (POSH) Act, 2013 in FY26, a 4.6% increase over FY25.

About the POSH Act, 2013

- The Act provides **statutory backing** to the **Vishaka Guidelines (1997)** laid down by the Supreme Court in **Vishaka v. State of Rajasthan**.
- It aims to **prevent, prohibit and redress sexual harassment**, protect women at workplaces, and provide an effective grievance redressal mechanism.
- **Workplace** includes **client sites, transportation during work, and virtual or remote workplaces**.
- Every organisation with **10 or more employees** must constitute an **Internal Complaints Committee (ICC)**.

- A **Local Complaints Committee (LCC)** is constituted at the **district level** for the **informal sector** and establishments with **fewer than 10 employees**.
- Complaints should ordinarily be **resolved within 90 days**, followed by implementation of recommendations within **60 days**.

Need and Significance

- It filled the legal vacuum before the enactment of a dedicated law on workplace sexual harassment. It operationalises **Articles 14, 15, 19(1)(g), and 21** of the Constitution.
- It fulfils India's commitments under **CEDAW**.
- It supports **safe workplaces**, **institutional accountability**, and **higher Female Labour Force Participation Rate (FLFPR)**.
- Under **SEBI's Business Responsibility and Sustainability Reporting (BRSR)** framework, POSH compliance is an important **ESG and corporate governance** indicator.

Notable Trends

- Complaints rose **6.3% in FY25** and **4.6% in FY26**, indicating a sustained increase in reporting.
- Higher reporting is driven by **mandatory employee sensitisation**, **SEBI disclosure requirements**, and **greater trust** in complaint mechanisms.
- Reported cases increasingly involve **verbal misconduct, peer-level harassment, abuse of authority, and digital harassment** through emails, messaging platforms, and social media.
- **Virtual workplaces and digital communications** are recognised as relevant evidence during inquiries.

Key Challenges

- Nearly **90% of India's workforce** is employed in the **informal sector**, where effective implementation remains weak.
- **LCCs** are often absent or non-functional, while many **MSMEs** remain unaware of statutory obligations.
- **Improperly constituted or inactive ICCs**, fear of retaliation, social stigma, and evolving forms of digital harassment continue to hinder effective enforcement.

CENSUS TOWNS IN INDIA

The Ministry of Housing and Urban Affairs (MoHUA) has stated that the 1981 definition of Census Towns no longer reflects India's rapidly evolving urbanisation pattern.

About Census Town

- A **Census Town** is a settlement that remains **administratively rural** but is classified as **urban for Census purposes**.
- Under the **1981 Census** criteria, a settlement must satisfy all three conditions:
  - **Minimum population:** 5,000
  - At least 75% of the male main working population engaged in non-agricultural activities
  - **Population density:** 400 persons per sq. km or more

Reasons for Revisiting the Definition

- **Outdated framework:** The criteria have remained unchanged for over **four decades**.
- **Male-centric criterion:** It considers only the **male main workforce**, excluding women's workforce participation.
- **Uniform thresholds:** They are unsuitable for **hilly and North-Eastern States**.
- **Flawed density measure:** Population density is calculated using **administrative boundaries** instead of **built-up areas**, leading to misclassification.
- **Rigid rural-urban binary:** It fails to capture **peri-urban settlements**, growth corridors and diverse regional development patterns.
- **Urbanisation gap: Census 2011** recorded **31.2%** urbanisation, while the **Economic Advisory Council to the Prime Minister (EAC-PM)** estimated it could have reached **about 63% in 2015** using satellite-based assessment.

Current Position

- The **Ministry of Housing and Urban Affairs (MoHUA)** has called for **modern, data-driven classification methods**.
  - The **Registrar General of India (RGI)** has ruled out changes for **Census 2027** because enumeration planning has already been finalised.
- The **Parliamentary Standing Committee** has recommended **wider stakeholder consultations** before revising the criteria.
- **RGI** has stated that changes are **not feasible for Census 2027**, but **future digital censuses** may adopt revised classification parameters.

SUPREME COURT ON ARTICLE 22

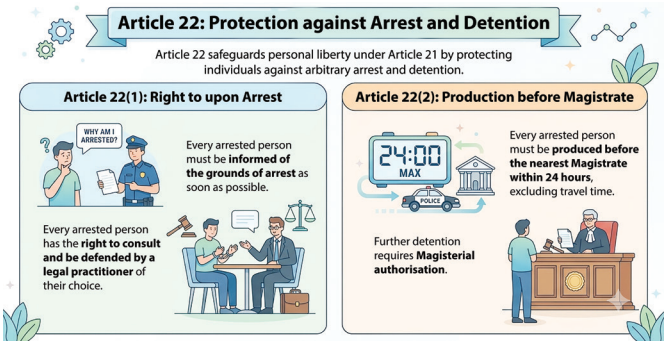
In Jaskaran Jeet Singh Deol v. State of Punjab (2026), the Supreme Court held that failure to properly communicate the grounds of arrest renders the arrest and subsequent detention illegal and unconstitutional, while prescribing safeguards against arbitrary re-arrest.

Supreme Court Rulings

- **Written Grounds of Arrest:** Grounds of arrest must be supplied **in writing** and in a **language understood by the arrested person**, extending the principle laid down in **Mihir Rajesh Shah v. State of Maharashtra (2025)** and building upon **Pankaj Bansal v. Union of India (2023)**.
- **Illegal Detention:** Release for violation of **Article 22(1)** is **not bail**, but release from **illegal and unconstitutional detention**, rendering the original arrest legally invalid.
- **Safeguards Against Re-arrest:**
  - **Prior judicial approval** of the Magistrate is mandatory.
  - Police must justify the earlier constitutional violation.
  - The application must be **endorsed by a superior police officer**.
  - Investigation must be transferred to **another investigating officer**.

- A **departmental inquiry** must be initiated against the officer responsible.

- **Compensation: High Courts** may award **public law compensation** for violations of **Article 22(2)**, without affecting the victim's right to pursue separate civil remedies.
- **Statutory Backing:** The **BNSS, 2023** also requires police to communicate the **full particulars of the offence** to the arrested person.



MANDATORY BIOMETRIC AADHAAR AUTHENTICATION FOR SUBSIDISED LPG

From October 1, 2026, domestic LPG consumers across India must complete Biometric Aadhaar Authentication (BAA) to continue booking subsidised LPG cylinder refills.

About Biometric Aadhaar Authentication (BAA)

- It is an **Aadhaar-based biometric identity verification mechanism** introduced to authenticate domestic LPG consumers before providing **subsidised LPG refills.**
- The initiative is implemented by the **Ministry of Petroleum & Natural Gas (MoPNG)** through **Oil Marketing Companies (OMCs).**

Key Features

- **Objective:** To ensure subsidies reach **genuine domestic households**, eliminate **duplicate, fake (ghost) and ineligible LPG connections**, and prevent diversion of subsidised cylinders for **commercial or industrial use.**
- It strengthens **targeted subsidy delivery** and improves transparency in the LPG distribution system.
- According to **MoPNG**, **27.43 crore active domestic LPG consumers (89.9%)** have already completed BAA.
- Consumers who have not completed BAA can book **subsidised LPG refills only after successful authentication.**
- **Authentication can be completed:**
  - During **doorstep delivery** through the OMC mobile application.
  - At the LPG distributor's showroom.
  - Consumers can also use the **OMC mobile** application from home, with Aadhaar-based face authentication, to complete the BAA process
- Consumers unwilling or unable to complete BAA may continue purchasing LPG cylinders **without subsidy** by paying the applicable **market price.**

Significance

- This prevents the diversion of **subsidised domestic LPG** and reduces subsidy leakages.
- Ensures welfare benefits reach **eligible beneficiaries** while improving fiscal efficiency.
- The Government provided **₹22,000 crore** to **OMCs** in **FY 2022–23** and has budgeted **₹30,000 crore each** for **FY 2025–26** and **FY 2026–27** to keep domestic LPG affordable. Despite this, **accumulated under-recoveries of public sector OMCs exceeded ₹62,000 crore** as of **31 August 2026.**

NATIONAL SINGLE WINDOW SYSTEM (NSWS)

The National Single Window System (NSWS) has completed five years, marking a major step towards a transparent, technology-driven and investor-friendly regulatory ecosystem in India.

About NSWS

- **NSWS** was launched in **September 2021** and is implemented by the **Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry**.
- It is a **digital single-window platform** that enables investors to **identify, apply for and track statutory approvals** required to establish and operate businesses.
- It integrates approvals from **Central Ministries, State Governments and regulatory authorities** on a common digital platform.

Key Features

- **Know Your Approvals (KYA):** Identifies approvals required based on the proposed business activity.
- **Common Registration Form (CRF):** Enables **one-time submission** and reuse of information across multiple applications.
- **State Registration Form:** Provides seamless access to **State Single Window Systems**.
- **Applicant Dashboard:** Allows submission, real-time tracking of applications and response to departmental queries.
- **Document Repository:** Supports **one-time document upload** for use across multiple approvals.
- **E-Communication Module:** Facilitates online communication between applicants and concerned authorities.
- The portal currently hosts approval services from **32 Central Ministries/Departments** and **34 States and Union Territories**.

Significance

- Reduces **duplication, compliance burden and approval timelines** through digital processing and one-time data submission.
- Enhances **transparency, inter-departmental coordination and ease of doing business** through real-time tracking and online communication.

- Promotes a **seamless investment ecosystem** by integrating Central and State regulatory approval mechanisms on a unified platform.

VANDE MATARAM AND FREEDOM OF CONSCIENCE

The Supreme Court observed that the Government may regulate the scope, manner and duration of singing Vande Mataram, but it cannot violate freedom of conscience or religion, nor impose criminal consequences on persons who respectfully decline to sing it on genuine grounds.

Constitutional and Legal Status

- On **24 January 1950**, the **Constituent Assembly** adopted the **first two stanzas** of **Vande Mataram** as **India's National Song**, according it **equal honour** with the National Anthem, but **not identical legal status**.
- Unlike the **National Anthem**, the **National Song** has **no explicit constitutional protection**. Its status flows from a **Constituent Assembly resolution**, not from the Constitution.
- The **Prevention of Insults to National Honour (Amendment) Act, 2026** amends the **1971 Act** by making it an offence to **intentionally prevent the singing of the National Song** or cause disturbance to an assembly engaged in its singing.

Relevant Constitutional Provisions

- **Article 51A(a):** Makes it the Fundamental Duty of every citizen to respect the Constitution, National Flag and National Anthem, but does not expressly mention the National Song.
- **Articles 19(1)(a)** and **25** protect freedom of expression, conscience and religion, which become relevant when compulsory participation is challenged.

Judicial Position

- The Supreme Court held that the **State cannot compel participation** if it infringes a person's **genuine freedom of conscience or religious belief**.
- In **Bijoe Emmanuel v. State of Kerala (1986)**, the Court ruled that **respectful non-participation** in the National Anthem on genuine religious grounds is protected under **Articles 19(1)(a) and 25**, and **does not amount to disrespect**.



PBSHABD

Prasar Bharati's PBSHABD has completed two years, expanded its network to 3,600 registered media organisations, and extended free access until March 2027.

Background

- **Prasar Bharati** is **India's autonomous public service broadcaster**, established on **23 November 1997** under the **Prasar Bharati Act, 1990**.
- It functions through **Akashvani (All India Radio)** and **Doordarshan**.
- Its mandate is to ensure a **fair, balanced and credible flow of information** in the **public interest**.
- **Prasar Bharati News Service (PBNS)** initially functioned as an **internal news wire** for **Akashvani** and **Doordarshan**. In **March 2024**, it was expanded into the **PBSHABD** news-sharing platform.

About PBSHABD

- **Full Form:** Prasar Bharati Shared Audio-Visuals for Broadcast and Dissemination (PBSHABD).
- **Launched:** March 2024.
- It is a round-the-clock (24×7) news feed service operated by Prasar Bharati.
- It provides timely, authentic and ready-to-use news content from India and across the world.
- **Content is available in five formats:** Text, Video, Audio, Photographs and Infographics.
- News is offered in 15 Indian languages across around 50 news categories.
- Coverage includes national, regional and local developments.
- Users include registered media organisations, newspapers, television channels, digital publishers and content creators.
- The service is free of cost, with no subscription fee, and free access is available until March 2027.

Prasar Bharati

- **Headquarters:** New Delhi.
- **Objective of Prasar Bharati:** To provide public service broadcasting that informs, educates and entertains, while ensuring a fair, balanced and credible flow of information in the public interest.

DEEN DAYAL UPADHYAYA GRAMEEN KAUSHALYA YOJANA (DDU-GKY) 2.0

The Government is strengthening rural skill development through DDU-GKY 2.0.

About DDU-GKY

- **Launched:** 25 September 2014 by the Ministry of Rural Development (MoRD) under the National Rural Livelihoods Mission (NRLM).

- It is a demand-driven, placement-linked skill development programme for rural youth aged 15–35 years from poor households. The upper age limit is relaxable for specified vulnerable groups under scheme guidelines.
- It promotes social inclusion through mandatory coverage of SC/ST (50%), Women (33%) and Persons with Disabilities (5%).

DDU-GKY 2.0

- **Introduced:** May 2025 through revised operational guidelines.
- It strengthens industry-aligned skilling, employment outcomes, employment sustainability and post-placement support.
- It covers sectors such as Aerospace & Aviation, Agriculture, Healthcare, Beauty & Wellness, Green Jobs, Textiles and other emerging industries.
- **Union Budget 2026–27:** ₹750 crore allocated.



Key Features

- Provides end-to-end support from training to placement and career progression.
- Minimum training duration: 576 hours, comprising 396 hours of domain training and 180 hours of non-domain training.
- Minimum placement retention increased from 3 months to 6 months.
- Recognises wage employment, self-employment and gig employment.
- Introduces an end-to-end digital ecosystem with Aadhaar/face-authenticated attendance, digital assessments, real-time dashboards, public candidate portal, online grievance redressal and integration with the Skill India Digital Hub.

Special Initiatives

- **Roshni:** Initially launched for 27 Left Wing Extremism (LWE)-affected districts and later expanded to Aspirational Districts. It reserves 40% seats for women.
- **Himayat:** Special programme for Jammu & Kashmir and Ladakh. It supports wage, self and gig employment and is 100% Centrally funded.
- **North Eastern Region:** 10% of annual scheme allocation is earmarked.
- **Special Area Allowance:** Provides an additional 10% training cost for difficult areas.

Achievements & Significance

- Since inception, the scheme has trained 18.47 lakh+ rural youth and facilitated 12.43 lakh+ placements.
- It promotes rural employment, poverty reduction, inclusive growth, demographic dividend and contributes to the vision of Viksit Bharat @2047.

REMOVAL OF THE CHIEF ELECTION COMMISSIONER (CEC)

The Opposition has proposed moving a motion in Parliament seeking the removal of the Chief Election Commissioner (CEC).

Constitutional Provisions

- Article 324 establishes the Election Commission of India (ECI) and provides for the appointment, tenure and removal of the CEC and Election Commissioners (ECs).
- The Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023 governs their appointment and service conditions.

Removal of the CEC

- Under **Article 324(5)**, the CEC can be removed only in the same manner and on the same grounds as a Supreme Court Judge, namely proved misbehaviour or incapacity.
- A removal motion may be introduced in either House of Parliament.
- It requires the support of 100 Lok Sabha members or 50 Rajya Sabha members.
- After admission, the **Speaker** or **Chairman** constitutes an **inquiry committee**.
- If the charges are proved, **both Houses** must pass the motion by a **special majority**:
  - Majority of the total membership of the House; and
  - Two-thirds of members present and voting.
- The President then issues the removal order.
- No CEC has ever been removed from office.

Other Election Commissioners

- The President can remove an Election Commissioner or Regional Commissioner only on the recommendation of the CEC.

Significance

- The stringent removal process safeguards the independence, impartiality and credibility of the Election Commission of India.

11TH AYURVEDA DAY 2026

The 11th Ayurveda Day was celebrated on 23 September 2026 under the theme "Ayurveda for a Healthier Tomorrow."

About Ayurveda Day

- Ayurveda Day has been observed since 2016. Since 2025, it is celebrated annually on the fixed date of 23 September, coinciding with the autumnal equinox, symbolising balance in nature and health.
- Major releases include the first Ayush Services Sector Report (RIS), Ayush Vision 2030, Standard Treatment Guidelines for Skin Disorders, and Safety Dossiers on Gokshura (Tribulus terrestris) and Chandrasura (Lepidium sativum).

About Ayurveda

- Ayurveda means **"Knowledge of Life"** and is one of the AYUSH systems of medicine.
- Its roots are traced to the Vedas, especially the Atharvaveda.
- It is based on the balance of Vata, Pitta and Kapha (Tridosha), along with Agni, Dhatus and Malas.
- Classical texts include the Charaka Samhita and Sushruta Samhita.

Growth and Government Initiatives

- Ayurveda flourished at **Takshashila** and **Nalanda** and spread to **Tibet, China** and other parts of Asia through cultural exchanges.
- The **Ayush sector** is valued at about **₹6.5 lakh crore** and is projected to exceed **USD 200 billion by 2030**.
- Key initiatives include National Ayush Mission, Ayush Arogya Mandirs, All India Institute of Ayurveda (AIIA), eSanjeevani Ayush, AYURGYAN Scheme, and AYUSH Swasthya Yojana.
- Current efforts emphasise scientific validation, research, innovation, integrated healthcare and community wellbeing.

ATTORNEY GENERAL OF INDIA (AGI)

A Supreme Court advocate sought the Attorney General of India's consent to initiate criminal contempt proceedings against the Chief Election Commissioner (CEC).

About

- Under Section 15 of the Contempt of Courts Act, 1971, a private person can file a criminal contempt petition before the Supreme Court only with the prior written consent of the Attorney General or the Solicitor General.
- **Article 76** of the Constitution provides for the office of the Attorney General of India (AGI).
- The President appoints the AGI, who must be qualified to be appointed as a Judge of the Supreme Court.
- The AGI is the highest law officer of the Union Government and its principal legal adviser.

Qualifications

- Must be a citizen of India.
- Must have been a Judge of a High Court for at least 5 years, or an advocate of a High Court for at least 10 years, or be a distinguished jurist in the opinion of the President.

Functions and Powers

- Advises the Union Government on constitutional and legal matters.
- Performs legal duties assigned by the President.
- Represents the Union Government before the Supreme Court and other courts.
- Enjoys the right of audience in all courts in India.

Rights, Privileges and Tenure

- Under **Article 88**, can **speak and participate** in the proceedings of **both Houses of Parliament**, their **joint sittings**, and **Parliamentary Committees**, **without voting rights**.
- Enjoys the **privileges and immunities of a Member of Parliament** while participating in parliamentary proceedings.
- **Not a full-time government servant**. However, cannot **advise or appear against the Government of India**, defend an accused in criminal proceedings without Government permission, or accept a company directorship without Government approval.
- The Constitution does not prescribe a fixed tenure or removal procedure.
- The AGI holds office during the pleasure of the President.

ANTI-GOONDA BILL, 2026

The President of India returned the West Bengal Public Safety and Control of Anti-Social Activities Bill, 2026 to the State Legislature for reconsideration.

About the Bill

- It is a preventive detention Bill intended to curb goondas and anti-social activities affecting public order.
  - A goonda includes a habitual offender or a person generally regarded as desperate and dangerous.
  - Anti-social activity includes acts causing public alarm, danger to life or property, disturbance of public order, unlawful dispossession, and illegal mining, quarrying, sand or forest-related activities.
- It permits **detention without trial** for up to **12 months**.
- It also authorises **externment** from a specified **area, district or districts** for up to **12 months**.
- It empowers authorities to conduct **search and seizure**, penalises **harbouring** detained or externed persons, grants **good-faith immunity** to officials, and makes offences **cognizable and non-bailable**.

Constitutional Provisions

- **Article 22** permits **preventive detention** subject to constitutional safeguards, including **communication of grounds of detention** and **review by an Advisory Board**.
- **Public Order** is a **State List (Entry 1, List II)** subject.
- **Preventive detention** for reasons connected with the **security of a State or maintenance of public order** falls under the **Concurrent List (Entry 3, List III)**.

- Under **Article 200**, the **Governor** may assent, withhold assent, return a non-Money Bill, or reserve it for the **President**.
- Under **Article 201**, the **President** may assent, withhold assent, or return a **non-Money Bill** for reconsideration.
- **Article 254** provides that where a **State law** on a **Concurrent List** subject conflicts with a **Central law**, the **Central law prevails**, unless the State law receives **Presidential assent**.

Key Concerns

- The Centre raised concerns over its possible overlap with the **Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances (PITNDPS) Act, 1988**, which may result in **repugnancy under Article 254** of the Constitution.
- The Bill's **broad definitions** have raised concerns over **vagueness**, **executive discretion**, and possible impact on **personal liberty**.
- The **Calcutta High Court** dismissed PILs as **premature** because the Bill had not yet become law.
- Similar **preventive detention laws** exist in several States, including **Gujarat's Prevention of Anti-Social Activities (PASA) Act, 1985**.
- The issue highlights the need to balance public order, individual liberty, and constitutional federalism.

DIGITAL CONNECTIVITY RATING PLATFORM

The Telecom Regulatory Authority of India (TRAI) has launched the Digital Connectivity Rating (DCR) Platform to provide a standardised assessment and public rating of the digital connectivity readiness of properties across India.

About the DCR Platform

- It is an **integrated digital platform** launched by **TRAI** under the **Ministry of Communications**.
- It operationalises the **TRAI (Rating of Properties for Digital Connectivity) Regulations, 2024** (amended in **2026**) and the **Rating Manual, 2026**.
- **Aim:** To assess, rate and promote **Digital Connectivity Infrastructure (DCI)** and **in-building digital connectivity** in properties.
- It brings **Property Managers (PMs), Digital Connectivity Rating Agencies (DCRAs)** and **consumers** onto a common digital interface.
- **Property Managers** can register **constructed and under-construction** properties, upload required documents, appoint a registered **DCRA** and track the rating process.
- **DCRAs** conduct assessments using prescribed standards and a dedicated **mobile application** for on-site testing.
- The platform evaluates **4G/5G coverage, fibre readiness, Wi-Fi infrastructure** and **indoor connectivity** in areas such as **lifts, basements and common spaces**.
- It issues **digitally verified QR code-enabled rating certificates**, enabling easy public verification.
- Consumers can search ratings by **property name, certificate ID or location**, ensuring **credible, transparent and comparable** information.

About TRAI

- **Established:** 1997 under the Telecom Regulatory Authority of India Act, 1997.
- **Ministry:** Ministry of Communications.
- **Mandate:** Regulates telecommunication services, including tariff regulation, protects consumer interests, and promotes fair competition through a transparent and level-playing-field policy environment.

PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA (PM-AJAY)

The Government launched the PM-AJAY Mobile App and PM-AJAY Portal to ensure faster, transparent and quality implementation of the Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY).

About PM-AJAY

- **Launched:** FY 2021-22 as a 100% Centrally Sponsored Scheme.
- **Ministry:** Ministry of Social Justice & Empowerment.
- **Objective:** Achieve the socio-economic and educational empowerment of Scheduled Castes (SCs) through an integrated approach.
- Formed by merging Pradhan Mantri Adarsh Gram Yojana (PMAGY), Special Central Assistance to SCSP (SCA to SCSP) and Babu Jagjivan Ram Chhatrawas Yojana (BJRCY).
- **Major Components:**
  - Development of **SC-majority villages** into **Adarsh Grams**.
  - **Grants-in-Aid** for livelihood, skill development and socio-economic projects.
  - Construction and repair of hostels for SC students.
- **Eligibility:** Infrastructure support for villages with 40% or more SC population and 500+ population; Grants-in-Aid prioritise SC beneficiaries with annual income up to ₹2.5 lakh.
- **Digital Governance:** The PM-AJAY Mobile App and Portal enable end-to-end digital implementation, improving transparency, monitoring, accountability and real-time coordination among stakeholders.



JUDICIAL APPOINTMENTS IN INDIA VS SOUTH AFRICA

The Supreme Court's observations in Arvind Malhotra v. High Court of Himachal Pradesh (2026), which upheld the confidentiality of collegium deliberations and declined to direct a High Court Collegium on elevations, revived the debate on judicial appointments. An Indian Express article contrasted this approach with South Africa's more open and representative Judicial Service Commission model.

Key Issues Raised		
Issue	**Argument For**	**Concern/Counterpoint**
Transparency vs Confidentiality	Confidentiality protects candidates and judges from external pressure and reputational damage.	Excessive secrecy fosters perceptions of arbitrariness, favouritism and lack of accountability.
Collegium vs Representative Institutions	A representative commission can include members from the judiciary, legal profession, academia and other constitutional institutions.	Excessive political participation may threaten judicial independence.
Judicial Independence vs Public Accountability	Independence requires protection from executive and political interference.	Independence cannot mean a complete absence of accountability.

Comparison: Judicial Appointments in India vs South Africa		
Parameter	**India**	**South Africa**
Appointing mechanism	Collegium system, evolved by the judiciary itself	Judicial Service Commission (JSC), a constitutional entity
Constitutional/legal basis	Art. 124 (SC) provides for appointment by the President after consultation. The Collegium has no specific constitutional or statutory provision and evolved through the **Three Judges Cases.**	The JSC is expressly provided for in the Constitution.
Composition	SC: CJI + four senior-most judges. HC: Chief Justice of the HC + two senior-most judges of that HC	Senior judges, members of the legal profession and legal academics, with limited political representation
Who initiates	CJI initiates and forms his opinion in consultation with the Collegium. The CJI also ascertains the views of the senior-most SC judge from the concerned High Court	Commission calls for nominations, then drafts a shortlist
Public participation	Minimal. The process is largely internal.	Public comments are sought on shortlisted candidates.
Transparency	Limited. Deliberations are confidential, which can create perceptions of arbitrariness and favouritism.	High. Interviews are held in public and broadcast on national television and radio.
Decision-making	Consensus within the Collegium, guided by the MoP (1999)	Suitability is decided through public interviews. If members cannot agree, the matter is put to a vote.
Confidentiality	Deliberations are largely confidential.	Interviews are public, but the identity of who votes for or against a nominee is kept confidential.
Role of Executive/Parliament	The government's role is limited, mainly through the MoP and processing of recommendations.	Limited political representation within the JSC
Accountability of judges	Impeachment through Parliament is the formal mechanism.	No special immunity. The JSC can investigate misconduct complaints, and for gross misconduct, impeachment may be recommended through Parliament, subject to constitutional procedures.

Key strength	Insulation from political interference, which strengthens judicial independence	Transparency, inclusiveness and public legitimacy
Key criticism	Opacity, lack of accountability and no constitutional or statutory basis	Excessive political participation could threaten independence, though South Africa limits it.

Additional Information

- **Memorandum of Procedure (MoP):** The set of rules and procedures for appointing judges to the SC and HCs, framed jointly by the government and the judiciary, with the Union government framing it in 1999.
- **Three Judges Cases:**
  - SP Gupta v Union of India (1981)
  - Supreme Court Advocates-on-Record Association v Union of India (1993)
  - In re Special Reference No. 1 of 1998

DISTINGUISHED JURIST

A Supreme Court judge, while addressing the National Law University (NLU), Delhi, highlighted the Constitution's unused provision permitting the appointment of a "Distinguished Jurist" as a Supreme Court judge.

Constitutional Provision

- Under Article 124(3), a citizen of India is eligible for appointment as a Supreme Court judge if they:
  - Have been a High Court judge for at least five years; or
  - Have been a High Court advocate for at least ten years; or
  - Are, in the opinion of the President, a distinguished jurist.
- In practice, the President acts on the Collegium's recommendations, which have drawn only from High Court judges and advocates.

Meaning of Distinguished Jurist

- The Constitution neither defines the term nor prescribes objective criteria.
- It broadly denotes a person of exceptional eminence in legal scholarship, teaching or research, including constitutional law and jurisprudence.
- Clause (c) requires no prior judicial or courtroom experience.

Historical Background

- On 24 May 1949, H.V. Kamath moved the amendment in the Constituent Assembly to widen the President's field of choice, drawing on the qualifications for judges of the International Court of Justice.
- Felix Frankfurter, a Harvard professor appointed to the US Supreme Court in 1939, was cited as a model; Dr. B.R. Ambedkar accepted the amendment.
- The 42nd Amendment (1976) extended a similar pathway to High Courts under Article 217, but the 44th Amendment (1978) repealed it.

Reasons for not being Used

- **Collegium Practice:** Recommendations favour serving judges and senior advocates, with no proactive search for academics.
- **No Feeder Pathway:** After the 44th Amendment, academics cannot enter High Courts as jurists, denying them judicial experience.
- **Bar Restrictions:** Rule 49 of the Bar Council of India Rules bars full-time salaried employees, including law teachers, from practising, limiting their courtroom exposure.
- **Seniority Concerns:** Lateral entry may disturb seniority and Chief Justice succession.
- **Undefined Criteria:** The absence of standards makes selection appear subjective.

Significance

- Jurists bring doctrinal depth, comparative insight and academic rigour to constitutional adjudication.
- They can diversify the Bench and strengthen dialogue between courts and legal scholarship.
- Comparative practice supports it: law professors regularly serve on Germany's Federal Constitutional Court.

Way Forward

- Frame transparent criteria, such as scholarly contribution and integrity, through the Memorandum of Procedure.
- Consider restoring a High Court jurist pathway and allow structured academic exposure to litigation.
- Induct jurists alongside experienced judges so that courtroom practice and scholarship complement each other.

Conclusion

- Unused for over 76 years, Article 124(3)(c) reflects the framers' vision of a Bench enriched by scholarship; activating it judiciously could strengthen the Supreme Court's constitutional role.

2 INTERNATIONAL RELATIONS

INDUS WATERS TREATY (IWT), 1960

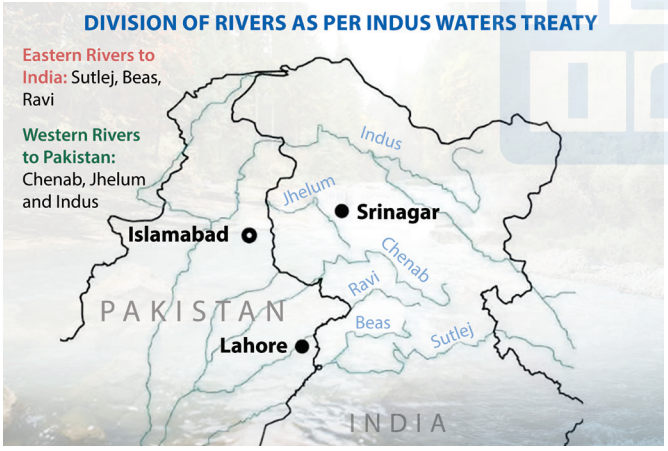
India has rejected the Court of Arbitration (CoA) ruling on the Indus Waters Treaty (IWT), stating that the tribunal was illegally constituted and lacks jurisdiction. The CoA, however, held that the Treaty continues to remain in force and imposed interim restrictions on the Ratle Hydroelectric Project.

About IWT, 1960

- **Signed:** Between **India and Pakistan** at **Karachi** in **1960**, with the **World Bank** as a signatory and facilitator of the Treaty.
- **River Allocation:**
  - **Eastern:** Ravi, Beas and Sutlej for India's unrestricted use.
  - **Western:** Indus, Jhelum and Chenab are largely allocated to Pakistan.
- **India's Permitted Uses: Domestic use, irrigation** and **run-of-the-river (RoR) hydroelectric projects** on western rivers, subject to treaty provisions.

Recent Dispute

- India placed the Treaty **in abeyance** after the **Pahalgam terror attack**.



- In **2016**, **Pakistan sought a CoA**, while **India requested a Neutral Expert** to examine technical issues.
- India argues that simultaneous proceedings violate the Treaty's **graded (sequential) dispute-resolution mechanism**.
- The **CoA** is an **ad-hoc tribunal** under **Annexure G** of the IWT, while the **Permanent Court of Arbitration (PCA), The Hague**, only provides **administrative/secretariat support**.
- The dispute centres on the **330 MW Kishenganga** and **850 MW Ratle** RoR projects, particularly their **design parameters and pondage capacity**.
- The CoA directed India to temporarily restrict specified works at the **Ratle Project** pending the **Neutral Expert's** final determination, which India has rejected.

Dispute Resolution Mechanism

- **Permanent Indus Commission (PIC):** Resolves routine questions.
- **Neutral Expert:** Decides technical differences.
- **Court of Arbitration (CoA):** Decides legal disputes under Annexure G.

BALTIC WAY MOVEMENT

The Baltic Way remains a powerful symbol of the peaceful struggle for freedom in the Baltic States and a notable example of the global influence of Mahatma Gandhi's philosophy of non-violence.

About

- **Date:** 23 August 1989.
- It was a **peaceful mass protest** organised during the **Singing Revolution (1986-1991)**.
- Around **2 million people** formed a **675-km human chain** linking **Tallinn (Estonia), Riga (Latvia)** and **Vilnius (Lithuania)**.
- It marked the **50th anniversary of the Molotov-Ribbentrop Pact (1939)**.
- The movement exposed the Pact's **secret protocol**, which enabled the **Soviet annexation** of the Baltic States.
- It became a major milestone in the restoration of **Lithuania, Latvia and Estonia's independence (1990-1991)**.
- The movement drew inspiration from **Mahatma Gandhi's** principles of **ahimsa, satyagraha, non-cooperation, civil disobedience and peaceful mass mobilisation**.



Baltic States

- The **Baltic States** comprise **Estonia, Latvia and Lithuania** in **northeastern Europe**.
- They border the **Baltic Sea** to the **west and north**, **Russia** to the **east**, **Belarus** to the **southeast**, and **Poland** and the **Russian exclave of Kaliningrad** to the **southwest**.
- During the disintegration of the **Soviet Union**, all three regained independence and joined the **European Union (EU)** and **NATO** in **2004**.

India-Baltic Relations

- **Hermann Kallenbach, Vydūnas** and **Antanas Poška** strengthened cultural links between **India** and the Baltic region through Gandhian thought.
- The **1982 film *Gandhi*** helped popularise the idea of peaceful **resistance** in Lithuania.
- During **2025-26**, India's bilateral trade reached about **US$490.61 million** with **Lithuania**, **US$475.66 million** with **Latvia**, and **US$219.69 million** with **Estonia**.

UN 'CORRECT THE MAP' RESOLUTION

The UN General Assembly adopted the 'Correct the Map' resolution. This resolution encourages the use of map projections that accurately depict the true relative size of continents, especially Africa, which is more precise than the traditional Mercator projection.

Key Highlights

- The resolution was **sponsored by Togo** with support from the **African Union (AU)**.
- It received **164 votes in favour**. The **United States** voted against, while **six countries abstained**.
- It is a **non-binding resolution** and encourages, but does not mandate, the adoption of more suitable map projections for education and public information.

Why was a New Map Proposed?

- The **Mercator projection**, developed by **Gerardus Mercator** in **1569**, was designed primarily for **marine navigation**.
- It is a **conformal projection**, preserving **local angles and directions**, but significantly **distorts the relative size (area)** of landmasses near the poles.
- Thus, **Greenland (~2.16 million km^2)** appears almost as large as **Africa (~30.3 million km^2)**, although **Africa is about 14 times larger**.
- The distortion has influenced global perceptions of **Africa's geographical size and significance**.

Equal Earth Projection

- Developed in **2018** by an international team of cartographers.
- It is an **equal-area projection**, preserving the **relative size of continents** more accurately, though **shape and distance** are moderately distorted.
- The **African Union** endorsed this projection before supporting the proposal at the UN.
- It is better suited for **education, atlases and public awareness** than navigation.

Additional Information

- **No flat map** can preserve **area, shape, distance and direction** simultaneously; every map projection involves trade-offs.
- **Mercator Projection:** Preserves shape and direction; distorts area.
- **Equal Earth Projection:** Preserves relative area; slightly distorts shape and distance.

INDIA–VIETNAM DEFENCE AND STRATEGIC COOPERATION

India and Vietnam recently agreed to deepen defence and strategic cooperation, with emphasis on co-production of defence equipment, maritime security and a rules-based Indo-Pacific under their Enhanced Comprehensive Strategic Partnership.

Key Areas of Cooperation

- **Strategic Partnership:**
  - Vietnam is a key pillar of India's **Act East Policy**, **Vision MAHASAGAR** and engagement with **ASEAN**.
  - In **2026**, bilateral ties were elevated to an **Enhanced Comprehensive Strategic Partnership**.
- **Defence Cooperation:** Covers Defence Policy Dialogues, military-to-military exchanges, capacity building, training, UN Peacekeeping, ship visits, bilateral exercises and maritime security.
- **Defence Industrial Collaboration:**
  - Focus on **co-production of Indian defence equipment**, **technology sharing**, resilient supply chains and cooperation through **ADMM-Plus** mechanisms.
  - India has also signed a deal to **supply BrahMos missiles** to Vietnam.
- **Defence Assistance:** India delivered 12 High-Speed Guard Boats (2022) under a US$ 100 million Defence Line of Credit, and gifted the in-service missile corvette INS Kirpan (2023) to Vietnam. It also extended **US$100 million**, **US$120 million** and **US$180 million** Lines of Credit for defence cooperation.
- **Strategic Significance:** The partnership strengthens a **free, open, inclusive and rules-based Indo-Pacific**, while addressing security challenges arising from **China's assertiveness in the South China Sea**.

INDIA-MERCOSUR COOPERATION

India and MERCOSUR recently signed the First Additional Protocol to the India-MERCOSUR Preferential Trade Agreement (PTA), enabling the acceptance of electronic Certificates of Origin.

About MERCOSUR

- MERCOSUR (Southern Common Market) is a South American regional economic bloc, established in 1991 through the Treaty of Asunción.
- It aims to ensure the free movement of goods, services, capital and people and became a customs union in 1995.
- **Members:** Argentina, Brazil, Paraguay, Uruguay and Bolivia. Venezuela has remained suspended since 2016.
- **Associate Members:** Chile, Colombia, Ecuador, Guyana, Peru, Panama and Suriname.
- **Headquarters:** Montevideo, Uruguay.
- **Official Languages:** Spanish and Portuguese.
- The **Common Market Council (CMC)** is the highest decision-making body. It functions by consensus, and its presidency rotates every six months among full members.

India-MERCOSUR Relations

- The **India-MERCOSUR PTA** was signed in **2004** and entered into force in **2009**.
- It provides **preferential tariff concessions** on **450 tariff lines** from India and 452 tariff lines from **MERCOSUR**, with concessions ranging from **10% to 100%**.
- India seeks to expand the agreement to boost trade and address **high tariffs, regulatory barriers and logistical constraints** faced by Indian exporters.

UNITED NATIONS CONVENTION ON THE LAW OF THE SEA (UNCLOS), 1982

Ramon Magsaysay Award 2026 recipient Tommy Koh, who chaired the negotiations leading to UNCLOS (1982), reaffirmed that the Convention remains the "Constitution of the Oceans."

About UNCLOS

- **Adopted:** 1982 at the Third United Nations Conference on the Law of the Sea (UNCLOS III).
- **Came into force:** 1994.
- **UNCLOS** forms the principal legal basis for resolving **maritime boundary** and **ocean governance** disputes, including those in the **South China Sea**.
- Provides a comprehensive legal framework for the use, conservation and management of the world's oceans and marine resources.
- Regulates maritime boundaries, navigation, marine resources, environmental protection and dispute settlement.
- Defines the Territorial Sea (12 nautical miles), Contiguous Zone (24 nautical miles), Exclusive Economic Zone (EEZ) (200 nautical miles) and High Seas.
- Recognises freedom of navigation and transit passage through international straits.
- Declares the deep seabed beyond national jurisdiction as the Common Heritage of Mankind.

International Seabed Authority (ISA)

- **Established under:** UNCLOS (1982) and the 1994 Agreement relating to Part XI of the Convention.
- Regulates **exploration and mining** of mineral resources in the **Area** (seabed beyond national jurisdiction).
- **Membership:** All States Parties to UNCLOS are members.
- **Members:** 170, including India.
- **Headquarters:** Kingston, Jamaica.

INDIA REJECTED PAKISTAN-CHINA BOUNDARY JOINT COMMISSION

India rejected the Pakistan-China Boundary Joint Commission, stating that it has no legal basis and reiterated that there is no legally recognised Pakistan-China boundary in the territory concerned.

About the Boundary Joint Commission

- The Commission was **operationalised in September 2026**, and its inaugural meeting was held in **Islamabad**.
- It originates from the **2013 Pakistan-China Agreement on the Boundary Management System**. **Article 45** provides for a **Joint Commission** to oversee border-management arrangements.
- Pakistan states that it aims to promote **border management**, **joint surveys**, **trade flows** and **people-to-people connectivity**.

India's Position

- India has **never recognised** the **1963 China-Pakistan Boundary Agreement**, under which Pakistan transferred about **5,180 sq km of the Shaksgam Valley (Trans-Karakoram Tract)** to China, subject to the **final settlement of the Kashmir dispute**.
- India maintains that Pakistan had **no legal authority** to alter the status of Indian territory and rejects any attempt to **legitimise the 1963 agreement** or alter the status of occupied territories.
- India also opposes the **China-Pakistan Economic Corridor (CPEC)**, as it passes through **Pakistan-occupied Jammu & Kashmir**, which India considers a violation of its **sovereignty and territorial integrity**.

Key Geographical Facts

- **Shaksgam Valley** lies **north of the Karakoram Range**, between **Gilgit-Baltistan** and **China's Xinjiang**, forming part of the **India-China-Pakistan strategic triangle**.
- **CPEC** connects **Kashgar (Xinjiang)** to **Gwadar (Balochistan)** via **Gilgit-Baltistan** and the **Khunjerab Pass**.
- **India claims Aksai Chin** as part of **Ladakh**, while **China** administers it as part of **Hotan County, Xinjiang**. It is traversed by the strategic **Xinjiang-Tibet Highway**.

Significance

- The Commission institutionalises **cooperation on China-Pakistan boundary management** in the disputed territory.
- It strengthens **China-Pakistan strategic connectivity**, raising concerns for **India's sovereignty, border security and strategic interests.**

WEAPONISATION OF SPACE

The United States recently became the first country to publicly acknowledge deploying active weapons in space, without disclosing their nature or deployment timeline.

Weaponisation vs Militarisation of Space

- Weaponisation of space refers to the deployment or use of weapons in outer space to destroy or disable space-based or Earth-based targets.
- Militarisation of space refers to the use of space assets to support land, sea and air military operations. It began after the launch of Sputnik (1957).

Key Features

- Counter-space capabilities include Anti-Satellite (ASAT) weapons, space-to-space weapons, space-to-Earth weapons, electronic jamming, cyberattacks and disruption of space-to-ground communication systems.
- **Kinetic ASAT capability** has been demonstrated by the **United States, Russia, China and India**.
- Space is increasingly viewed as a **warfighting domain**, intensifying strategic competition among major powers.

Legal Framework

- The Outer Space Treaty (1967) promotes the peaceful exploration and use of outer space.
- It prohibits placing **nuclear weapons** and other **Weapons of Mass Destruction (WMDs)** in orbit or on celestial bodies.
- It does not prohibit conventional space weapons, Earth-to-space weapons or most counter-space technologies.
- Efforts to establish a **legally binding regime** regulating space weapons have not succeeded due to the lack of consensus among major space powers.
- The **Artemis Accords** are a **voluntary framework** for peaceful space exploration with **70+ signatories**, including **India**, but they do not prohibit deployment of space weapons.

Challenges

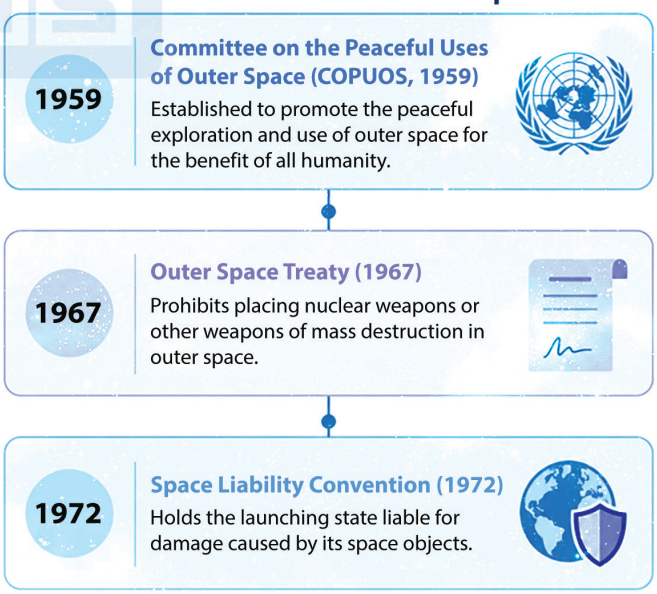
- **Arms Race:** Accelerates military competition and reinforces space as a **new warfighting domain**.
- **Space Debris:** Weapon use can create persistent debris, threatening satellites and future missions.
- **Infrastructure Risks:** Attacks can disrupt communication, navigation, surveillance and defence systems.
- **Dual-use Technologies:** Many space technologies have both **civilian** and **military** applications, complicating regulation.

STAR WARS

Use of weapons in space can take different forms. They can be used to either • destroy, or to ♦ jam, equipment.

EARTH-TO-SPACE	SPACE-TO-SPACE	SPACE-TO-EARTH
Anti-satellite tests	Co-orbital satellites	Weapons deployed in space
• Involves launching missiles from earth to destroy space-based assets	One satellite can be programmed to crash into an enemy satellite	Satellite-based weapons can deorbit, enter atmosphere, and strike Earth-based targets
• Four countries demonstrated this	Soviet Union reported to have tested this during the Cold War	Not demonstrated
♦ Earth-based systems can jam or 'blind signals of enemy satellites	Using space-based assets to jam or block the signals or comms of enemy satellites	Use of space-based systems to interfere or disrupt functioning of radars, missiles or aircraft
♦ Many have this capability	No known capability	Not known

Global Initiatives for Peace in Space

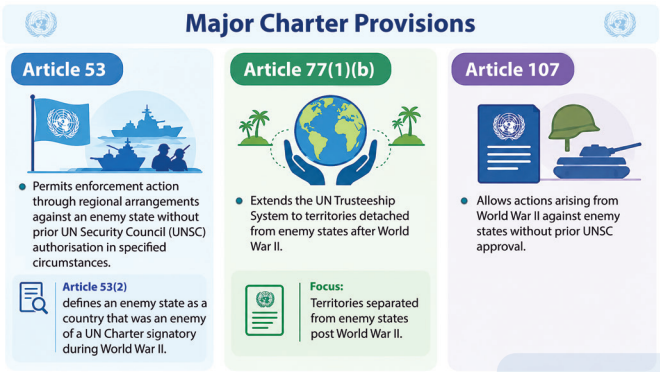


UN CHARTER "ENEMY STATE" CLAUSES

Japan has urged the United Nations to remove the obsolete "Enemy State" clauses from the UN Charter, after China and Russia cited them while criticising Japan's expanding defence policy.

About the Enemy State Clauses

- The provisions were incorporated into the **UN Charter (1945)** after **World War II** to prevent the revival of **militarism and fascism** in former **Axis Powers**.
- The term **"enemy state"** appears in **Articles 53, 77 and 107** of the Charter.
- These provisions primarily concern Germany, Italy, and Japan, which were the principal defeated Axis Powers.



Current Status

- The **UN General Assembly (UNGA)** declared these clauses **obsolete** in **1995** and, in **2005**, supported their deletion from the Charter.
- However, the provisions **remain in the Charter** because amendment requires approval by **two-thirds of UN members**, including **ratification by all five permanent UNSC members (P5).**

Significance

- The clauses are **legally obsolete but formally valid**, making them largely symbolic today.
- Their continued presence reflects the **post-World War II international order** and the complexity of **UN Charter amendment procedures**.

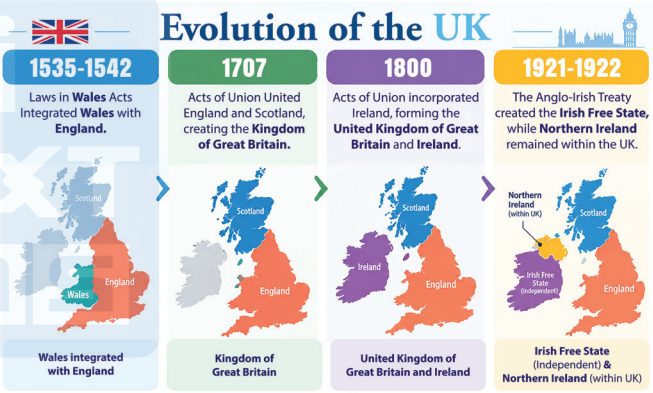
CONSTITUTIONAL STRUCTURE OF THE UNITED KINGDOM

The Cardiff Memorandum of Understanding (MoU), signed by pro-independence leaders from Scotland, Wales and Northern Ireland, has renewed debate over the United Kingdom's constitutional structure, devolution and the right to self-determination.

Constitutional Structure of the UK

- The **United Kingdom (UK)** is a **unitary sovereign state** with an **asymmetrical devolution** system comprising **England, Scotland, Wales and Northern Ireland**.
- **Great Britain** consists of **England, Scotland and Wales**, while the island of **Ireland** comprises the **Republic of Ireland** and **Northern Ireland**.
- The **British Isles** are an archipelago of over **6,000 islands** in northwestern Europe.





Devolution Framework

- **Scotland Act, 1998:** Established the **Scottish Parliament**.
- **Government of Wales Act, 1998:** Established the **Welsh Senedd**.
- **Good Friday (Belfast) Agreement, 1998:** Created the **Northern Ireland Assembly** and permits the **UK Secretary of State** to order a **border poll** if a majority for Irish reunification appears likely.

Cardiff MoU

- Seeks **self-determination**, stronger **constitutional powers**, and closer cooperation on the economy, energy, and engagement with the **European Union**.
- The **UK government** rejected fresh independence referendums.
- The **UK Supreme Court (2022)** held that **devolved legislatures cannot unilaterally legislate for an independence referendum** without **Westminster's consent**, reaffirming **parliamentary sovereignty**.

INDIA-EU FTA: INTELLECTUAL PROPERTY AND COPYRIGHT ISSUES

The European Commission has sought approval from EU member states for signing the India-EU Free Trade Agreement (FTA), bringing its Intellectual Property (IP) Chapter into focus.

About the IP Chapter

- The draft IP Chapter covers copyright, enforcement, Technological Protection Measures (TPMs) and Rights Management Information (RMI).
- Concerns have arisen over whether India's existing copyright exceptions, fair dealing provisions and digital-policy flexibilities would remain protected.

Key Concerns

- **Structural Asymmetry:** The draft reportedly excludes the **WIPO Copyright Treaty (WCT)** from the **National Treatment** clause while retaining binding obligations on **TPMs**, **RMI** and reproduction rights. This could weaken **Section 52** of the **Copyright Act, 1957**, which protects **fair dealing** for education, research and other lawful uses.
- **Technological Protection Measures (TPMs):** A stricter anti-circumvention regime may dilute **Section 65A**, affecting **students**, **researchers**, **libraries** and **archives** engaged in lawful interoperability, security research and digital preservation.
- **Temporary Digital Copies:** Broad protection for **temporary and permanent reproductions** could expose **Internet Service Providers (ISPs)** and digital intermediaries to liability by limiting protection for **RAM copies**, **server caching** and **network routing**.
- **Restrictive Three-Step Test:** Narrower copyright exceptions may reduce flexibility for **education**, **research**, **software interoperability**, **digital preservation** and other public-interest uses.

India's Copyright Framework

- India has a **TRIPS-compliant Intellectual Property regime** administered by the **Department for Promotion of Industry and Internal Trade (DPIIT)**.
- The **Copyright Act, 1957** provides **fair dealing** under **Section 52**, while **Section 65A** permits circumvention of digital locks for specified lawful purposes.
- India acceded to the **WIPO Copyright Treaty (WCT)** and the **WIPO Performances and Phonograms Treaty (WPPT)** in 2018.

CANADA TO BE ASSOCIATE MEMBER OF THE EU

European Commission President Ursula von der Leyen has proposed opening the door for Canada to become the European Union's first "associate member" under an 'Alliance for the Future'

About the Proposed Associate Membership

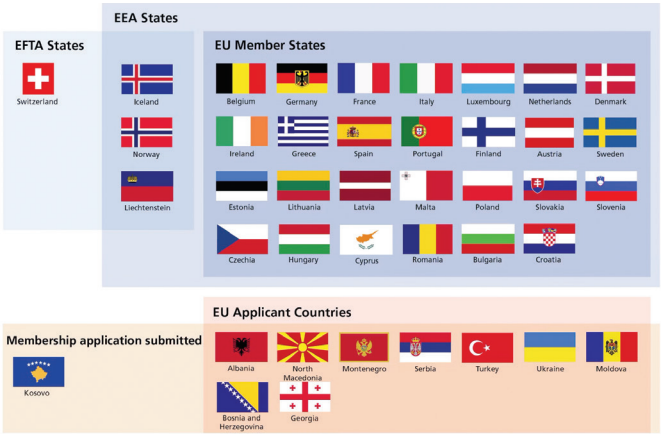
- It is a proposed framework enabling a **non-EU country** to achieve **closer integration** with the EU **without becoming a full member**.
- Cooperation may cover trade, defence procurement, technology, energy, critical minerals, critical supply chains, Artificial Intelligence (AI) and the Arctic.
- It would not confer full political membership, voting rights or automatic access to the EU Single Market.
- The status of "associate member" currently has no legal basis under the EU Treaties.

Legal Framework

- Creating a formal associate membership would require amending the EU Treaties, with unanimous ratification by all 27 EU member states and their national parliaments.
- Alternatively, the EU may conclude a sui generis Association Agreement under Article 217 of the Treaty on the Functioning of the European Union (TFEU), requiring unanimous approval by the Council of the European Union and consent of the European Parliament.

About the European Union

- The European Union (EU) is a political and economic union of 27 European countries.
- It originated with the European Coal and Steel Community (1951), followed by the European Economic Community (Treaty of Rome, 1957), and became the European Union under the Maastricht Treaty (1993).
- **21 of the 27** member states use the **euro** as their official currency.



PARTNERS FOR MULTILATERALISM (P4M)

The External Affairs Minister of India co-chaired the inaugural Partners for Multilateralism, International Law, Peace & Prosperity (P4M) Summit and attended the first V4+India Foreign Ministers' Meeting on the sidelines of the 81st United Nations General Assembly (UNGA) in New York.

About P4M

- **P4M** is an **open, flexible and non-exclusive platform** that promotes **international law**, **multilateral cooperation**, **peace** and **inclusive prosperity**.
- It was first proposed by the **European Union, Brazil, Kenya and Canada**. The inaugural summit (2026) was co-sponsored by **Australia, Barbados, Brazil, Canada, the European Union, India and Kenya**.
- It is **neither a treaty-based alliance** nor a new international organisation. Instead, it serves as a platform for dialogue, coalition-building and practical cooperation among countries from diverse political traditions.

Reason for P4M Creation

- To address **geopolitical fragmentation**, **protectionism**, **conflicts** and the weakening of the **post-1945 multilateral order**.
- To reform global institutions that no longer adequately reflect contemporary **economic**, **demographic** and **political** realities.
- To strengthen collective responses to transnational challenges such as **climate change**, **pandemics**, **Artificial Intelligence (AI)**, **cyber risks**, **economic insecurity** and **supply-chain disruptions**.

Objectives

- Promote reform of multilateral institutions, including support for UN80 and a more representative UN system.
- Uphold international law, sovereign equality, territorial integrity and the peaceful settlement of disputes.
- Strengthen resilient supply chains, multilateral trade, the international financial architecture and cooperation on AI, digital technologies, space security, climate action and the **Sustainable Development Goals (SDGs).**

India's Stand

- India highlighted the **4F Crisis** (**Fuel, Food, Fertiliser and Finance**) affecting the **Global South**.
- It advocated **de-risking** and **diversification** of supply chains, **comprehensive UNSC reforms**, and global **frameworks** for **AI**, **digital technologies** and **space security**.
- P4M complements India's engagement with the **G20**, **BRICS**, **G4** and the **Non-Aligned Movement**, while supporting **strategic autonomy** and a stronger voice for the **Global South**.

Visegrad Group (V4)

- **V4** comprises **Czech Republic, Hungary, Poland and Slovakia**. It was established in **1991** to strengthen Central European cooperation. All four members belong to the **European Union (EU)** and **NATO**.
- The V4 unanimously supported **India's permanent UNSC membership**, agreed to launch an **Annual Business Forum**, and institutionalised the **V4+India Foreign Ministers' Meeting** as an annual dialogue.
- For India, the V4 serves as a **gateway to Central and Eastern Europe**, supports the **India–EU BTIA**, strengthens **China Plus One** supply chains and advances **Make in India** and **Atmanirbhar Bharat** through technology and industrial cooperation.

Challenges

- **Divergent national interests** among participating countries.
- **Limited enforcement capacity**, as P4M is not a treaty-based organisation.
- Risk of **forum proliferation** due to multiple overlapping global institutions and initiatives.

COMMUNITY OF LATIN AMERICAN AND CARIBBEAN STATES (CELAC)

The External Affairs Minister called for greater Global South solidarity at the India-CELAC Foreign Ministers' Meeting, reaffirming India's commitment to deepen cooperation with Latin American and Caribbean countries.

About CELAC

- The Community of Latin American and Caribbean States (**CELAC**) is a regional grouping of 33 Latin American and Caribbean countries.
- It was conceived at the **2010 Unity Summit**, which brought together the **21st Rio Group Summit** and the 2nd Latin American and Caribbean Summit on Integration and Development (CALC).
- It was formally established on 3 December 2011 through the **Declaration of Caracas.**
- It is the successor to the **Rio Group and CALC**.
- **Aim:** To advance regional integration, unity, and political, economic, social, and cultural cooperation while respecting the region's diversity.
- It is not a treaty-based organisation and does not have a permanent headquarters or secretariat.
- It functions through a rotating one-year **Pro Tempore Presidency** held by a member state.
- Decisions are adopted by consensus and are issued as political declarations, rather than legally binding instruments.

India-CELAC Relations

- India-CELAC bilateral trade reached US$50 billion in 2025–26.
- The recent ministerial meeting reflected India's expanding engagement with the **Latin America and Caribbean** region and the shared commitment to further strengthen the partnership.

US–DENMARK–GREENLAND SECURITY AGREEMENT

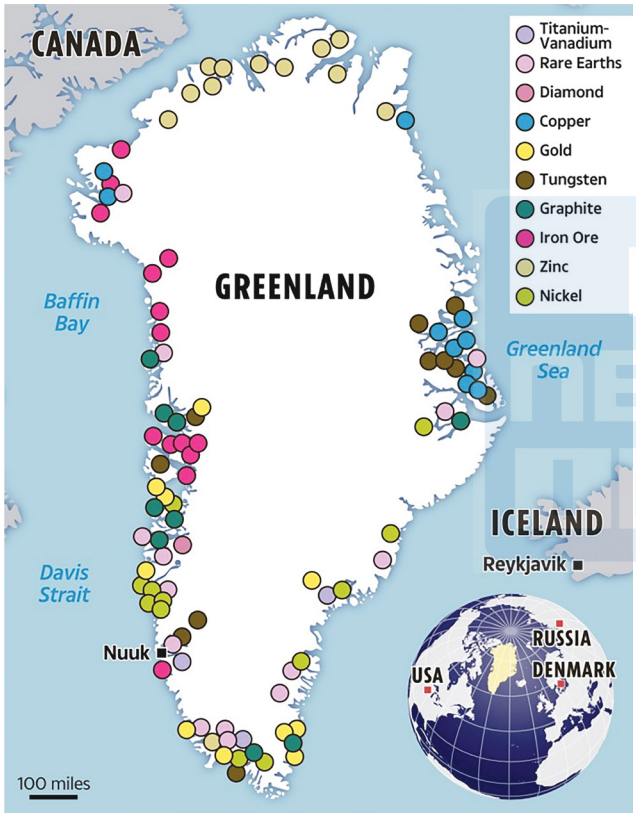
The United States, Denmark and Greenland signed a security agreement to strengthen Arctic and North Atlantic security through an expanded U.S. military presence in Greenland.

About Greenland

- **Greenland** is a **self-governing territory** within the **Kingdom of Denmark** under the **2009 Self-Government Act**.
- **Defence and foreign affairs** remain with Denmark.
- **Location:** Between the **Arctic** and **North Atlantic Oceans**, northeast of Canada.
- It is the world's largest non-continental island, with nearly **80%** covered by an ice sheet.

Strategic Importance

- **Military:** The **Pituffik Space Base** supports **missile warning**, **missile defence**, **space surveillance** and Arctic monitoring for the **U.S.** and **NATO**.



- **Geopolitics:** Greenland lies between **North America**, **Europe** and the **Arctic**, making it central to strategic competition involving the **U.S., Russia, China and NATO**.
- **Shipping Routes:** Melting Arctic ice is opening **new sea routes**, enhancing the region's commercial and strategic importance.
- **Critical Minerals:** Greenland possesses significant **rare earth elements** and other **critical minerals** essential for clean energy, electronics and defence industries.

Key Features of the Agreement

- Builds upon the **1951 U.S.–Denmark Defence Agreement**.
- Provides the U.S. with **permanent security access**, including **basing** and **overflight rights**, even if Greenland's constitutional status changes in the future.
- The agreement will enter into force after completion of the required **parliamentary procedures**.

India's Interest

- India has been an **Observer** at the **Arctic Council** since **2013**, operates the **Himadri** research station, and released its **Arctic Policy (2022)**.
- Arctic stability is important for **scientific research**, **critical-mineral supply chains** and **emerging Arctic shipping routes**.

ORGANISATION OF ISLAMIC COOPERATION

India categorically rejected references to Jammu & Kashmir in the Joint Communiqué issued by the OIC Contact Group on Jammu & Kashmir, reiterating that Jammu & Kashmir and Ladakh are integral and inalienable parts of India and that the OIC has no locus standi in India's internal affairs.

About OIC

- The **Organisation of Islamic Cooperation (OIC)** is the second-largest intergovernmental organisation after the United Nations, with 57 member states.
- It was established in **1969 at Rabat, Morocco**, following the arson attack on **Al-Aqsa Mosque** in **Jerusalem.**
- **Headquarters:** Jeddah, Saudi Arabia.
- **Membership**: Open to UN member states with a Muslim majority. Admission and observer status require consensus in the Council of Foreign Ministers (CFM).
- **Objective**: To promote solidarity, cooperation and present itself as the collective voice of the Muslim world, while encouraging cooperation in trade, science, technology, education and culture.
- **Key Organs:**
  - **Islamic Summit:** Highest authority; meets every three years.
  - **Council of Foreign Ministers (CFM):** Principal policy-making body; meets annually.
- **Governance**: Decisions are generally adopted by consensus or, where required, by a two-thirds majority of members present and voting.

India-OIC Relations

- India is neither a member nor an observer of the OIC.
- The **OIC Contact Group** on Jammu & Kashmir continues to raise the Kashmir issue, while India consistently rejects any third-party role.
- Despite these differences, India maintains strong bilateral relations with many OIC members, particularly in the Gulf and West Asia, covering **energy security, trade, investment, diaspora welfare, maritime security, counter-terrorism cooperation** and Global South engagement.

- In 2019, India participated as the **Guest of Honour** at the 46th OIC Council of Foreign Ministers in Abu Dhabi, marking its first high-level participation in an OIC meeting despite not being a member.

QUAD-AT-SEA SHIP OBSERVER MISSION

Indian Coast Guard (ICG) ship Shaunak sailed from Chennai to Perth (Australia) under the QUAD-at-Sea Ship Observer Mission, which aims to strengthen maritime cooperation among QUAD partners.

About

- It is the **inaugural ship observer mission** launched by the QUAD to enhance maritime interoperability, professional exchanges and operational coordination.
- It involves **India, Australia, Japan and the United States**.
- Six "**Sea Riders**" from the four countries are embarked onboard ICG Ship Shaunak for training and operational learning.
- The mission aligns with the QUAD Foreign Ministers' Joint Statement supporting a free, open, inclusive and rules-based Indo-Pacific maritime order.
- It also reflects India's **MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions) vision of cooperative maritime security.

Importance

- Enhances **maritime domain awareness** and interoperability among QUAD partners.
- Strengthens **information sharing**, operational coordination and mutual confidence.
- Supports a **secure, resilient and rules-based Indo-Pacific**.
- Expands cooperation among partner maritime forces without creating a formal military alliance.

QUAD

- **Members**: India, Australia, Japan and the United States.
- **Origin**: Emerged after the 2004 Indian Ocean tsunami, proposed in 2007, became inactive in 2008, and was revived in 2017.
- **Nature**: An informal strategic grouping, not a military alliance.
- **Focus Areas:** Maritime security, regional stability, resilient supply chains, infrastructure, emerging technologies and disaster response.
- **Spirit of the Quad (2021):** Supports a free, open, inclusive and rules-based Indo-Pacific based on rule of law, freedom of navigation and democratic values.
- **Major Initiatives:** Malabar Naval Exercise, QUAD-at-Sea Ship Observer Mission (under the 2024 Wilmington Declaration) and Quad Plus engagements with countries such as South Korea, New Zealand and Vietnam.

INDIA-SRI LANKA DEFENCE COOPERATION

During the Defence Minister's visit to Sri Lanka, India and Sri Lanka signed three Memoranda of Understanding (MoUs) on defence equipment and military training, marking a significant step in strengthening their strategic partnership.

Key Highlights of the Visit

- It was the first visit by an Indian Defence Minister to Sri Lanka in nearly four decades.
- **The three MoUs cover:** Upgradation of L70 air-defence guns of the **Sri Lankan Air Force**. Cooperation between the **National Cadet Corps (NCC)** of both countries.
  - Cooperation between the **National Defence Colleges** for **professional military education** and capacity building.

India–Sri Lanka Relations

- **Diplomatic Relations:** Established in **1948** after Sri Lanka's independence.
- **Trade & Investment: India–Sri Lanka Free Trade Agreement (ISFTA)** came into force in **2000**. **Merchandise trade: USD 7.18 billion** in **FY 2025–26**. India exported **USD 5.52 billion**, while Sri Lanka exported **USD 1.66 billion**.
  - India is among **Sri Lanka's largest trading partners** and **major FDI sources**. Sri Lanka is among India's leading **SAARC trading partners**. Negotiations on the **Economic and Technology Cooperation Agreement** resumed in **2023**.
- **Cultural & Tourism: Cultural Cooperation Agreement (1977)** provides the framework for cultural exchanges. India was Sri Lanka's **largest source of tourists** in **2025**, contributing about **5.31 lakh arrivals (22.5%)**.
- **Defence & Maritime Cooperation:** Both cooperate under the **Colombo Security Conclave** to strengthen **maritime security** in the **Indian Ocean Region**. Major exercises include **Mitra Shakti (Army)**, **SLINEX (Navy)** and **Dosti (Coast Guard trilateral exercise)**.
- **Connectivity:** A shared vision promotes **maritime, energy and people-to-people connectivity**. Key projects include the **Nagapattinam–Kankesanthurai ferry service** and a **USD 65 million Indian grant** for **Kankesanthurai Port**.
  - A **proposed land bridge** seeks to improve connectivity with **Trincomalee** and **Colombo**.
- **Multilateral Cooperation:** Both countries cooperate through **SAARC**, **BIMSTEC**, **South Asia Co-operative Environment Programme (SACEP)** and the **South Asian Economic Union (SAEU)**.

Key Challenges

- **Fishermen dispute** in the **Palk Strait**, addressed through the **Joint Working Group on Fisheries (2016)**.
- **China's growing strategic footprint** and **dual-use port infrastructure** in the **Indian Ocean Region**.
- **Maritime threats** such as piracy, illegal fishing and smuggling.
- **Political and economic instability** affects the continuity of bilateral projects.

3 ECONOMY

INDIA'S GDP GROWTH AMID GLOBAL UNCERTAINTIES

India recorded 7.8% real GDP growth in Q1 (April–June) of 2026-27, exceeding the RBI's 7% estimate, highlighting the economy's resilience despite global uncertainties.

Basis of the Revised Estimates

- The annual revised estimates reflect the use of new price and production indices with base year 2022-23.
- This includes the Output Producer Price Index (PPI) and Banking Services Price Index (BkSPI).
  - Updated administrative data from different sources were also incorporated.

India's First-Quarter Performance at a Glance

Indicator	Q1 2025-26	Q1 2026-27
Real GDP	6.9%	7.8%
Real GVA	7.0%	8.2%
Nominal GDP	8.1%	10.3%
Nominal GVA	8.1%	11.5%

GDP (Gross Domestic Product); GVA (Gross Value Added)

Factors Driving Economic Growth

- **Manufacturing and Services Growth:** Manufacturing grew by **9.2%**, compared with 8.3% in the corresponding quarter of the previous year. Services expanded by 10%, up from 8% a year earlier.
  - Agriculture remained relatively subdued at **3.6%,** compared with 4.4% a year ago. However, the strong performance of manufacturing and services compensated for the moderation in agriculture.
  - Financial, real estate, IT and professional services recorded 12.1% growth.
- **Strong Domestic Demand:**
  - Rural and urban consumption remained buoyant, as reflected in strong **GST collections, higher automobile sales across two-, three- and four-wheelers, and growth in core exports** (excluding oil, gems and jewellery).
  - Rural demand was supported by measures such as **PM-KISAN, higher MSPs and affordable fertilisers.**
  - **Continued consumption growth** provided a strong demand-side foundation for GDP expansion.
- **Sharp Rise in Investment:** Gross Fixed Capital Formation (GFCF) grew by **11.9%,** more than double the 5.8% growth recorded a year earlier.
  - At current prices, GFCF grew by 20.4%, raising its share in GDP to **34.3%,** compared with 31.4% a year earlier.
- **Strong Export Performance**: India's combined merchandise and services exports reached an estimated US$ 80.14 billion in July 2026, increasing by 13.31% over July 2025.
  - During April-July 2026-27, cumulative exports were estimated at US$ 316.42 billion. This is 13.16% higher than the US$279.63 billion recorded during April-July 2025-26.

Key Economic Concepts

Gross Domestic Product (GDP):

- GDP is the **total monetary value of all final goods and services** produced within a **country's domestic territory** during a specific period (usually a quarter or a year).
- **Current base year:** 2022-23
- **Released By:** National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI).

Nominal Vs Real GDP:

- **Nominal GDP** measures a country's economic output at current market prices, thereby **incorporating the effects of inflation** and making it useful for assessing the economy's size in present-value terms.
- **Real GDP** adjusts for inflation by **valuing output at constant base-year prices,** providing a more accurate measure of actual growth in production over time.

Base Year:

- A base year is a **benchmark year** used for comparison in **economic and statistical calculations.**
- India's current base year for calculating **GDP estimates is 2022–23.**
- It provides a **reference point** against which current values of indicators like GDP, CPI, and IIP are measured to track real changes over time.
- **Significance:**
  - It allows us to remove **the effect of inflation** and see real growth.
  - Ensures that the data reflects the **current structure of the economy,** consumption patterns, and prices.

NEW GDP SERIES

MoSPI released the 8th revised National Accounts Series with 2022-23 as the base year, replacing 2011-12. Its key change is double deflation in manufacturing GVA.

National Accounts

- **National Accounts Statistics (NAS)** show production, income and expenditure. They measure GDP, GVA, consumption, investment, saving and external trade, following the **UN System of National Accounts (SNA)**.
- The base year is revised periodically to capture structural change, improve data sources and reflect the current economy.

Ways to Calculate GDP

- **Production approach:** GVA of industries plus taxes less subsidies on products.
- **Expenditure approach:** Final consumption plus gross capital formation plus exports minus imports.
- **Income approach:** Compensation of employees, plus operating surplus or mixed income, plus taxes less subsidies.

Double Deflation in Manufacturing

- Earlier, one **aggregate deflator** converted nominal manufacturing GVA into real GVA.
- The new series deflates **output value** and **input costs** separately.
- MoSPI uses **ASI** data and item-level output **Producer Price Indices (PPI)**, based on ex-factory prices from DPIIT's Office of the Economic Adviser.
- The PPI covers final and intermediate goods, such as wheat, milk, bauxite, cement and semi-finished steel. One industry's output price can be another's input price.
- Items covering **80%** of output and input value are chosen and weighted using ASI data.
- **Two of 30** manufacturing categories are excluded: **processed food and oils**, and **pharmaceuticals**. Their imported-input share is high, so PPI mapping is difficult.
- Service inputs use consumer prices and **implicit deflators**.

Other Change

- **Defined-benefit pensions** are valued by the present value of entitlements accruing to serving government employees.
- Earlier, pension payments to retirees were the proxy.

Significance

- Real manufacturing GVA becomes more accurate. Item-level detail improves consistency between production and price statistics.

Concerns

- India's PPI is still **experimental**, so input-price measurement may lack robustness and continuity.
- Mapping imported inputs and services to domestic PPIs is difficult.
- Compare real manufacturing GVA with indicators like the **Index of Industrial Production**.

Way Forward

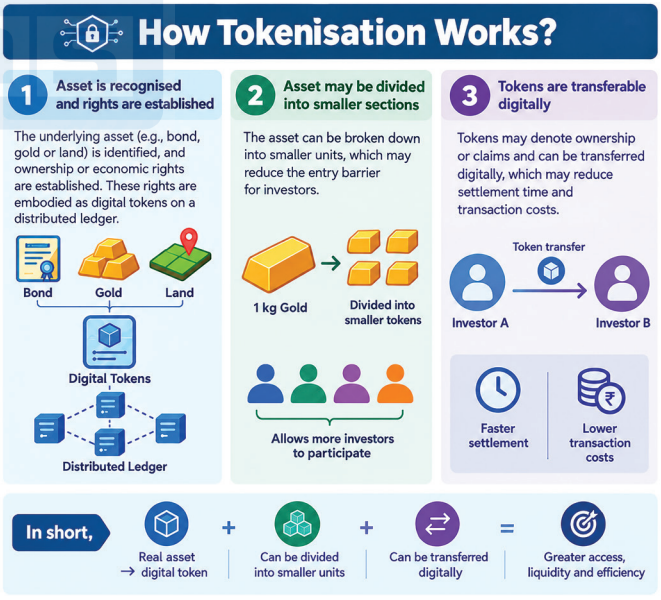
- Institutionalise a comprehensive **PPI**. Improve item-level price collection, ASI and administrative data, and coverage of imported inputs and services.
- Ensure transparent documentation and periodic validation of deflators.

TOKENISATION OF ASSETS

Maharashtra has enacted the Maharashtra Digitisation and Exchange of Land Token Asset (DELTA) Act to build a blockchain-based system for the tokenisation of land and other immovable assets.

About

- Asset tokenisation is the **process of transforming ownership or economic rights** in a real-world or financial asset into digital tokens that are recorded on a **blockchain or distributed ledger system.**
- Tokenisation can allow a **high-value asset to be divided into smaller units,** enabling investors to obtain fractional exposure to assets that would otherwise require substantial capital.
- For instance, a **₹10 lakh bond** can theoretically be broken up into smaller digital units, so that the investor can buy exposure to a smaller part of the asset.



India's Emerging Tokenisation Framework

- The RBI launched the Unified Markets Interface (UMI) as a digital infrastructure project to democratise ownership and transactions in financial assets.
- SEBI is also working on a pilot project for the tokenisation of corporate bonds.

INDIA'S MEDTECH BOOM

A Rubix Industry Insights report projects India's medical devices market to grow from $15.2 billion in 2025 to $50.1 billion by 2030.

About the Sector

- It covers **diagnostic imaging**, consumables, implants, surgical instruments, in-vitro diagnostics, patient monitoring, orthopaedic and cardiovascular devices, and home healthcare products.
- MedTech is a **sunrise sector** i.e., a newly emerging, fast-growing industry driven by innovation, high investment, and technological progress. Examples include semiconductors, electric vehicles, renewable energy, artificial intelligence, green hydrogen, and biotechnology.
- India is the **fourth largest market in Asia** after Japan, China and South Korea, and among the **global top 20**.
- **Exports** have crossed **$4 billion**.

Growth Drivers

- **Infrastructure:** Hospitals, diagnostic centres and wearables are expanding.
- **Demand:** Rising incomes, health awareness and personal health spending widen the market.
- **Demography:** Urbanisation, ageing and **NCDs** like diabetes and heart disease raise demand.
- **Cost advantage:** Low costs and skilled workers enabled rapid COVID-19 manufacturing.
- **Portable innovations:** Handheld ultrasound, point-of-care kits and portable ECG help rural clinics and primary health centres.
- **Startups:** Over **250** MedTech startups build affordable local solutions.
- **Digital connectivity:** Mobile and internet penetration speeds digital health adoption.
- **Medical tourism: 2.36 million** patients from **210 countries** visited between 2019 and 2024.
- **Policy support:** PLI schemes, venture capital and exports aid growth.

Issues and Concerns

High Import Dependence	Costs and Capital Constraints
MRI, CT and advanced cancer devices are still imported.	Deep-tech devices need heavy investment and long clinical validation. This burdens startups and MSMEs.
Complex Regulatory Environment	**Skilled Talent Shortage**
Risk-based classification, quality norms and duplicate Centre-state approvals delay market entry.	Biomedical engineers, clinical trial managers and regulatory professionals are scarce.

Government Schemes

- **PLI Scheme: ₹3,420 crore** for FY2022-23 to FY2026-27. It targets radiation, imaging, anaesthesia, critical care and implants.
- **Medical Devices Parks Scheme: ₹400 crore** outlay. It provides common infrastructure to cut costs.
- **Strengthening of Medical Device Industry Scheme (2024): ₹500 crore**. It supports components, skilling, clinical studies, common infrastructure and industry promotion.

COAL STOCKS AT THERMAL PLANTS

In September 2026, coal stocks at India's thermal power plants fell below half the recommended level. About 50 plants had "critically low" inventories.

Coal in India

- India has the **fifth-largest coal reserves** and is the **second-largest consumer**.
- April-July FY27 production was about **302 MT**. Dispatches rose about **6%** to **354.7 MT**.
- Stocks were **34.55 MT** at plants and around **113 MT** at pitheads or in transit. The total was around **148 MT**.
- Coal and lignite plants have about **230.8 GW** of capacity.

Present Status

- **Critically low** means stock is below **25%** of the normative requirement.
- Plant stock was **28.2 MT** against a norm of **58.7 MT**, only **48%**.
- This equals about **nine days** of consumption at **85% PLF**. The normal need is about **19 days**.

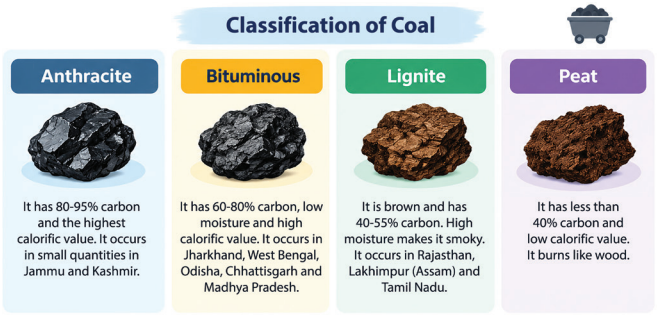
Reasons for the Decline

- Rainfall was about **12% below normal**, which raised air-conditioning demand.
- Night-time cooling demand increased reliance on thermal power, as solar is unavailable.
- The monsoon also disrupts mining, transport and rail movement.

Government Initiatives

- **CEA norms:** Plant-specific stocking norms took effect in **December 2021** to strengthen fuel security.
- **Revised SHAKTI policy (2025):** It has two windows for coal linkages.
  - **Window I** serves central generating companies and state utilities at notified prices.
  - **Window II** lets other eligible producers, including imported-coal plants, buy through auctions at a premium.
- **Coordination:** The Ministries of Coal, Power and Railways monitor supplies regularly.
- **Commercial coal mining:** It opened the sector to private players.

- **Coal Mitra Portal:** It enables flexible coal allocation.



INDIA'S SOVEREIGN CREDIT RATING UPGRADED TO 'A-'

Japan Credit Rating Agency (JCR) upgraded India's sovereign rating by a notch to A- from BBB+, citing sustained economic growth of around 7%, policy measures such as the Goods and Services Tax (GST) and digital public infrastructure, and stronger bank balance sheets.

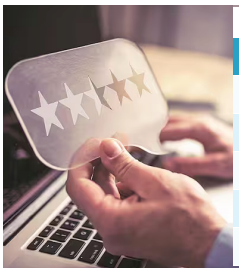
About JCR

- The JCR, established in 1985, is a Japanese credit rating agency that assesses the creditworthiness of governments, financial institutions and companies.
- In the case of sovereigns, its rating primarily reflects the government's ability and willingness to meet its debt obligations.

JCR Rating Definitions	
AAA	The highest level of certainty of an obligor to honor its financial obligations
AA	A very high level of certainty to honor the financial obligations
A	A high level of certainty to honor the financial obligations
BBB	An adequate level of certainty to honor the financial obligations. However, this certainty is more likely to diminish in the future than with the higher rating categories.
BB	Although the level of certainty to honor the financial obligations is not currently considered problematic, this certainty may not persist in the future.
B	A low level of certainty to honor the financial obligations, giving cause for concern
CCC	There are factors of uncertainty that the financial obligations will be honored, and there is a possibility of default.
CC	A high default risk
C	A very high default risk
LD	JCR judges that while an obligor does not honor part of the agreed to financial obligations, but it honors all its other agreed to financial obligations.
D	JCR judges that all the financial obligations are, in effect, in default.

*A plus (+) or minus (–) sign may be affixed to the rating symbols from AA to B to indicate relative standing within each of those rating scales

- **Significance:** The upgrade signals stronger confidence in India's economic fundamentals, fiscal management and financial stability, and can support investor confidence.



Status Check | India's sovereign credit rating

by global agencies	Rating	Outlook
Japan Credit Rating Agency	A-	Stable
Fitch	BBB-	Stable
Moody's	Baa3	Stable
S&P Global Ratings	BBB	Stable
Morningstar DBRS	BBB	Stable

GLOBAL BOND SELL-OFF

Investors selling government bonds worldwide could raise government borrowing costs, complicate future borrowing plans, and increase private-sector borrowing costs, potentially reducing private investment and slowing economic growth.

Bond

- A bond is a financial contract in which an issuer borrows money from an investor and agrees to repay the principal plus interest over a predetermined period of time.
- They can be traded in the market, so their prices change with demand and supply.
- When bonds are sold off, supply goes higher, and demand goes down, pushing bond prices down.
- Since interest payments are usually fixed, the lower the price you pay, the larger the return you earn relative to what you put in. So bond prices and bond yields fluctuate in opposite directions.

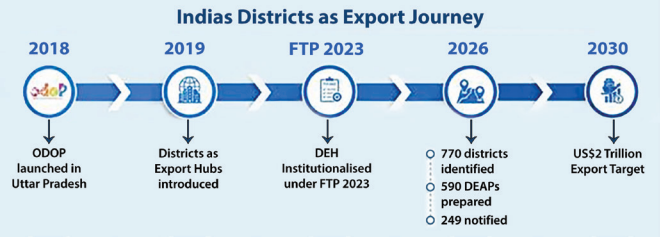
DISTRICTS AS EXPORT HUBS

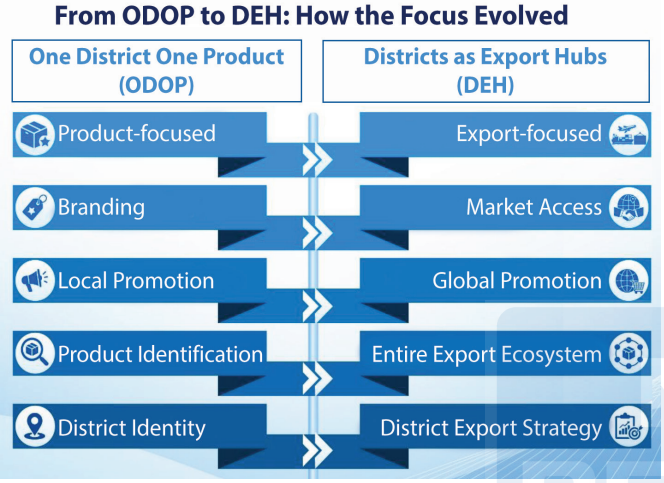
The Government is strengthening its district-led export strategy with the Districts as Export Hubs (DEH) Initiative.

Districts as Export Hubs (DEH) Program

- It builds on the One District One Product (ODOP) program.
- It is established to leverage the strengths and resources of each district and unlock the export potential of each district.
  - Each district is handled as a unit for export planning and not as a unit of output alone.
- It is also helping local firms access global markets, boost competitiveness and drive economic growth at the district level.

- It also aligns with India's larger vision of Aatmanirbhar Bharat and Vocal for Local.





Features of the DEH Programme

- DEH has a multi-tier coordination architecture between the Center, States and Districts.
  - The general policy direction is decided by the Department of Commerce, while the implementation is overseen by the DGFT, who also fosters stakeholder interaction and analyses progress.
- It identifies export-worthy products and services across districts. These include GI-tagged products, agricultural clusters, toy clusters, engineering goods, etc.

A DECADE OF FLEXIBLE INFLATION TARGETING IN INDIA

India has completed ten years of the Flexible Inflation Targeting Framework (FITF). Its target of 4% (±2%) now applies from April 2026 to March 2031.

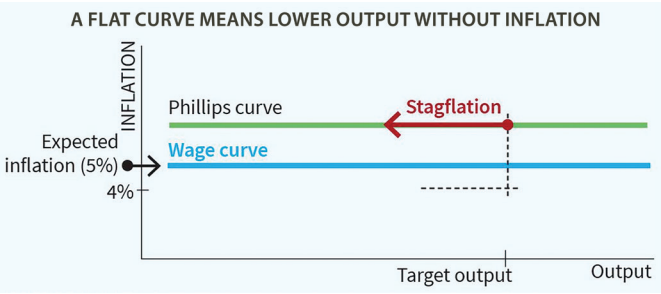
The Framework

- It was adopted in **2016** on the recommendation of the **Urjit Patel Committee**.
- **Section 45ZA** of the **RBI Act, 1934** requires the Centre to set the target every **five years**, in consultation with the RBI.
- The benchmark is the **Consumer Price Index (CPI)**, which measures retail inflation.
- The **Monetary Policy Committee (MPC)** must keep inflation at the government-set target.
- Average inflation was **4.9%** since 2016, against **6.8%** earlier.

How it Works

- **Demand channel:** The RBI raises the **repo rate** to make borrowing costlier. This lowers consumption and investment demand.
- **Expectations channel:** The RBI anchors household and firm expectations to the target. This stops expected inflation from raising wages and prices.
- Both rely on the **New Keynesian Phillips Curve (NKPC)**.

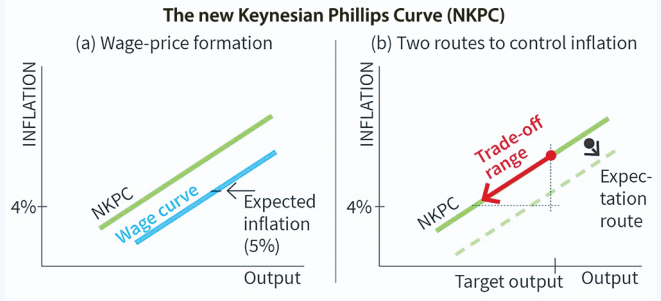
Concerns



- **Flat Phillips Curve:** Analysis of April 2012 to March 2026 shows a largely flat curve. Output and employment may therefore have limited effect on inflation.
- **Weak wage bargaining:** Most workers are informal and have little bargaining power. Higher output may not raise wages, so the wage-output-inflation link weakens.
- **Unanchored expectations:** Household expectations have exceeded RBI estimates by roughly **four percentage points** on average.
- **Supply-side inflation:** Food shocks, weather disasters, supply disruptions and crude oil prices drive prices. Interest rates cannot directly fix these.
- **Growth risk:** Higher rates can dampen investment and household borrowing. If inflation does not respond, tightening costs output and employment.

New Keynesian Phillips Curve

- It links inflation, economic activity and inflation expectations.
- Current inflation depends on **expected future inflation** and output.
- Higher demand and output raise employment and production costs.
- Firms pass higher costs, especially wages, on to consumers.



PROPOSED NEW SEED ACT

The Union Agriculture Minister is consulting with farmer organisations on a proposed new Seed Act. It aims to curb fake seeds and improve traceability and accountability.

About

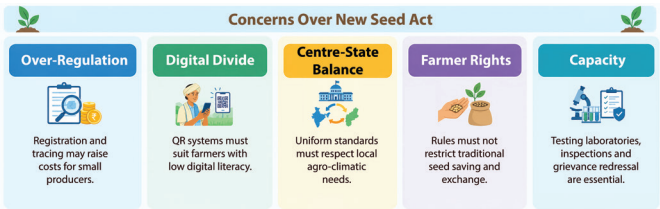
- It will replace the **Seeds Act, 1966**, which is nearly six decades old.
- The **Seeds Control Order** came into force in **1983**.
- It seeks a uniform, technology-enabled framework for seeds and planting material.
- The draft drew around **18,000 suggestions** in late 2025.
- Around **20 farmer organisations**, from almost all States, have given suggestions.

Need of a New Act

- **Outdated framework:** Private seed markets and new varieties have emerged since 1966.
- **Regulatory gap:** Nearly **70%** of seeds fall outside the existing Act, according to the Minister.
- **Fake seeds:** Counterfeit seeds cause crop failure, income loss and indebtedness.
- **Weak penalties:** The 1966 Act's penalty was only **₹500**, and accountability mechanisms were inadequate.
- **Lack of uniformity:** Seed procedures differ across States.

Key Features

- **National registration and QR traceability:** All seeds and planting material need registration in a national register. Unregistered seeds cannot be sold.
- **Farmers' rights:** Farmers can still use, exchange and sell traditional and farmers' varieties. Registering them is voluntary.
- **Stricter penalties:**
  - **Minor violations:** Warning for the first offence and up to **₹50,000** for the second.
  - **Deliberate violations:** These include missing QR codes, wrong branding or non-disclosure. Penalty is **₹1 lakh** for the first offence and **₹2 lakh** for the second.
  - **Serious offences:** These include fake seeds, operating unregistered and fraud. Penalty is up to **₹30 lakh** and imprisonment of up to **three years**.
- **Role of States:** States can release new varieties on State committee recommendations, within national standards.
- **Seed Security Fund:** Each State will set one up. Penalties and recoveries go into it for farmer compensation.



DEMAT 2.0 PILOT FOR CORPORATE BOND TOKENISATION

The Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) have launched 'Demat 2.0'

About Demat 2.0

- It is a **pilot programme** to **test the tokenisation of corporate bonds** and quicker settlement using the **central bank digital currency** and blockchain technology.
- It explores whether distributed ledger technology can integrate the securities and settlement layers to enable faster settlement and automate parts of asset servicing.
- **Demat 1.0** was introduced in **1996** and replaced physical share certificates with electronically recorded securities.

Working of the System

- When a corporate bond is issued, it is produced as a digital token on the distributed ledger maintained by the securities depositories.
- When an investor purchases the bond, **ownership of the token is transferred on the ledger**, while the corresponding payment is made using the **RBI's wholesale Central Bank Digital Currency (CBDC).**
- The securities and payment legs are linked through the RBI's **Unified Market Interface (UMI).**
- This permits atomic settlement, i.e., the bond and the money are exchanged instantaneously rather than via two separate settlement processes.

COPPER HITS A RECORD $14,708 A TONNE

Copper prices have risen to a record $14,708 a tonne. Trade tensions and the West Asia conflict cloud global growth.

About Copper

- **Copper (Cu)** has **atomic number 29**. It is a reddish metal with very high **ductility**.
- It is an excellent conductor of **heat and electricity**.
- It occurs naturally in **metallic form**. It is also found in minerals like **chalcocite, chalcopyrite and bornite**.
- It is produced by **smelting** or **leaching**, often followed by **electrodeposition**.
- It was among the first metals humans extracted. It has served society since the dawn of civilisation.

Uses

- It is valued for **conductivity, corrosion resistance and malleability**.
- It is alloyed with zinc, tin and nickel to make **brasses, bronzes and nickel silvers**.
- Early uses included tools, weapons, cooking vessels, utensils, mirrors and ornaments. It is also a **coinage metal**.
- It suits **water pipes**.

US Import Data

- The US imported **$16.2 billion** of copper products in 2025.
- **China** supplied 20%, followed by **Mexico** (17%), the **European Union** (14%), **Canada** (10%) and **Vietnam** (8%).

INDIA'S MANUFACTURING GAP

India's trade with Russia and China shows a pattern. Weak domestic manufacturing competitiveness can cancel out the gains of economic diplomacy.

Challenges in Manufacturing

- **High cost of doing business:** Complex rules, compliance, logistics costs and approval delays hurt competitiveness.
- **Shallow supply chains:** Many sectors depend on imported components, machinery, raw materials and intermediate goods. This limits value capture.
- **Limited scale:** Chinese manufacturing has large volumes, wide supplier networks and integrated clusters. Smaller Indian firms struggle on cost and delivery.
- **Technology and skill gaps:** Advanced manufacturing needs sophisticated machinery, R&D, digital technologies and skilled workers. India needs stronger industry-academia links and more private R&D investment.



Trade Dependence

- **Russia:** India's exports to Russia remain below **$5 billion**, while imports are **$63.8 billion** in 2024-25.
  - This reflects limited manufacturing capacity and dependence on Russian commodities.
- **China:** The trade deficit reached about **$112 billion** in 2025-26. It is driven by competitively priced industrial and intermediate goods.

Government Measures

- **National Mission on Manufacturing (NMM):** Announced in Budget 2025-26, it targets a **25%** manufacturing share in GDP by **2035**. It also targets **$1.2 trillion** in merchandise exports through deeper global value chain integration.
- **Production Linked Incentive (PLI) scheme:** It gives incentives on incremental sales. It began with **three sectors** and now covers **14**, from electronics to food processing.
- **Startup India:** It builds an ecosystem for innovation and startups.
- **National Logistics Policy (NLP):** It aims to cut logistics costs from the current **13-14%** to developed-country levels.
- **PM Gati Shakti (2021):** It integrates infrastructure schemes of Ministries and States, such as Bharatmala, Sagarmala, inland waterways, land ports and UDAN.
- **Innovation financing:** The **Research, Development and Innovation (RDI) Fund** has a **₹1 lakh crore** outlay over six years. It includes ₹20,000 crore for FY26.
  - It boosts private high-tech R&D and operationalises a **Deep-Tech Fund of Funds**.

Way Forward

- **Competitiveness over incentives:** Firms must compete without perpetual fiscal support.
- **Complete supply chains:** Build capabilities in components, machinery, raw materials, logistics and specialised services.
- **Export orientation:** Build durable comparative advantage in select sectors within global value chains.

KISHAU MULTIPURPOSE PROJECT

Recently, six Yamuna-basin States signed an agreement on the long-pending Kishau Multipurpose Project, bringing the stalled project closer to implementation.

About

- The **Kishau Multipurpose Project** is a proposed dam on the **Tons River**, along the **Uttarakhand–Himachal Pradesh border**.
- The project had remained stalled for over eight years and involved Himachal Pradesh, Uttarakhand, Uttar Pradesh, Haryana, Rajasthan and Delhi.
- The project has been declared a **National Project**. Around **90% of the financial burden for the water component** will be borne by the Union Government, while the remaining **10%** will be shared by participating States according to the **Yamuna Water Agreement (1994)**.

Yamuna River Basin

- The **Yamuna Basin** is one of the major river basins of the **Ganga river system** and is important for irrigation, drinking water, hydropower, ecology and inter-State water sharing.
- **Origin: Yamunotri Glacier**, Bandarpoonch range, Uttarakhand.
- **Major States/UTs in basin:** Uttarakhand, Himachal Pradesh, Haryana, Uttar Pradesh, Rajasthan and Delhi.
- **Confluence:** Joins the Ganga at Prayagraj, Uttar Pradesh
- **Major tributaries**: Tons, Giri, Hindon, Chambal, Sindh, Betwa and Ken.
- **Important upper-basin projects:** Lakhwar, Renukaji and **Kishau** among others.

INDIA'S OVERSEAS LITHIUM HUNT

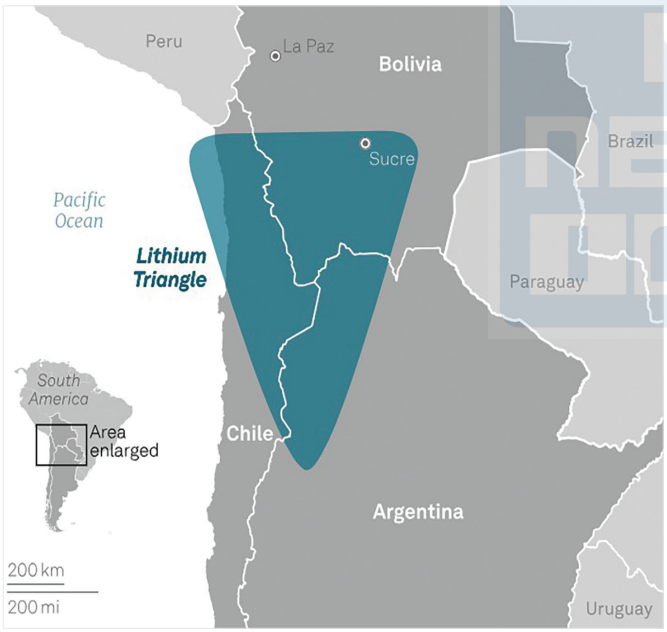
The Ministry of Mines is in talks with Australia and Chile to acquire lithium blocks. It is also seeking five more blocks in Argentina.

About Lithium

- **Lithium (Li)** has **atomic number 3**. It is a soft, silvery-white **alkali metal**.
- **Properties:** It is highly reactive and flammable. It must be stored in vacuum, an inert atmosphere or an inert liquid like purified kerosene or mineral oil.
- **Significance:** It is a key component of **lithium-ion batteries**. These power electric vehicles, energy-storage systems and portable electronics.

Global Reserves

- **Chile, Australia, Argentina, Bolivia and China** hold most discovered reserves.
- Argentina, Bolivia and Chile form the **Lithium Triangle**. It holds over **50%** of global lithium resources.
- In Argentina, lithium lies in **salt pans** in the arid northwest.



Lithium in India

- India has potential to recover lithium from **brines** in **Sambhar** and **Pachpadra** (Rajasthan) and the **Rann of Kutch** (Gujarat).
- In 2023, the **Geological Survey of India (GSI)** identified **5.9 million tonnes** of inferred lithium resources in **Jammu and Kashmir**.

INDIA BECOMES THE WORLD'S FOURTH-LARGEST FOREX HOLDER

India's forex reserves hit a record $785.7 billion in the week ended 4 September 2026. India overtook Russia and now ranks behind only China, Japan and Switzerland.

Forex Reserves

- They are foreign-currency assets held by a country's **central bank**.
- **Components:**
  - **Foreign currency assets:** These include US dollars, euros and yen.
  - **Special Drawing Rights (SDRs):** These are international reserve assets allocated by the **IMF**.
  - **Reserve position in the IMF:** This is the amount a country can draw without conditions.
  - Gold reserves.
- The **Reserve Bank of India** is the custodian of India's reserves.

Significance

- They help finance **imports** and stabilise the **rupee**.
- They maintain **investor confidence**.
- They help meet **external payment obligations** during economic stress.

GUCCHI MUSHROOMS

Gucchi Marmik, a traditional dish featuring rare Himalayan morel mushrooms, was served at the BRICS Summit 2026 dinner.

Gucchi Mushrooms (Morchella esculenta)

- It is also known as a **morel mushroom** and is found in parts of Jammu and Kashmir, Himachal Pradesh, and Uttarakhand.
- It typically grows in **mountainous coniferous forests**, where a combination of soil conditions, moisture, temperature fluctuations, and seasonal snowmelt creates a suitable environment.
- It is a **rare, wild mushroom found in Himalayan forests**, dependent on specific soil, humidity, temperature, and seasonal snowmelt conditions.
- Its short harvesting season and labour-intensive collection across rugged terrain make it difficult to cultivate commercially.
- It provides protein, fibre, and antioxidants, with vitamin D content varying by conditions and processing.

IBBI PROPOSES TOUGHER CREDITOR SAFEGUARDS FOR PERSONAL GUARANTORS

The Insolvency and Bankruptcy Board of India (IBBI) has proposed four amendments to strengthen creditor safeguards. They cover insolvency proceedings against personal guarantors to corporate debtors.

Background

- Under the **Insolvency and Bankruptcy Code (IBC), 2016**, a personal guarantor can face insolvency proceedings when the company defaults.
- The framework balances **creditor recovery**, debt resolution and the guarantor's legitimate interests.
- However, creditor safeguards here are weaker than under the **Corporate Insolvency Resolution Process (CIRP)**.

Proposed Amendments

- **Related parties barred from voting:** Creditors who are related parties of the guarantor would get **nil voting share** on the repayment plan. Currently, only an **associate** is barred, and that definition is narrower.
- **Scrutiny of avoidance transactions:** Resolution professionals must examine **preferential, undervalued, fraudulent or extortionate credit** transactions. Findings go to creditors before they vote. With creditor approval, legal proceedings can follow.
- **Independent valuation:** A **registered valuer** would determine the fair value and realisable value of the guarantor's assets. The report would accompany the repayment plan.
- **Recorded reasons:** Resolution professionals must record creditors' **deliberations and reasons**, not just voting results.

IBC, 2016

- It was introduced to tackle rising **Non-Performing Assets** and weak debt recovery.
- **Its objectives are:**
  - **Business revival:** Save businesses through restructuring, ownership changes or mergers.
  - **Asset value maximisation:** Preserve and maximise the debtor's asset value.
  - **Entrepreneurship and credit:** Encourage entrepreneurship, improve credit availability and balance stakeholder interests.
- A company in insolvency resolution gets a maximum of **330 days**. Otherwise, it goes into **liquidation**.

INDIA ELECTRIC MOBILITY INDEX 2025

NITI Aayog has released the India Electric Mobility Index (IEMI) 2025. Delhi topped the rankings with a score of 84.

About the IEMI

- It is a **first-of-its-kind** index of road transport electrification across States and Union Territories.
- It tracks the **e-mobility ecosystem** and **electric vehicle (EV)** adoption on Indian roads.
- Scores across **36 States and UTs** range from **10 to 84**. The median score is **40**.
- **It has three themes: transport electrification** (50% weight), **charging infrastructure readiness** (30%) and **EV research and innovation** (20%).

Latest Rankings

- **Top performers:** Delhi (84), Maharashtra (78), Karnataka (73), Chandigarh (71) and Goa (65).
- **Madhya Pradesh** jumped from **23rd to 7th** rank.
- **Transport electrification:** Delhi, Chandigarh and Maharashtra led.
- **Charging infrastructure:** Karnataka led.
- **Research and innovation:** Delhi led.

EV Adoption Trends

- EVs rose from **0.5%** of registered vehicles in 2018 to **8.25%** in 2025-26. Over **8.7 million** EVs are on Indian roads.
- **Two-wheelers** still dominate registrations. Electric commercial vehicles and buses are also growing, helping cut road transport emissions.

Challenges

- Charging infrastructure is limited.
- Population is dispersed.

PRADHAN MANTRI KHANIJ KSHETRA KALYAN YOJANA

Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) is promoting education, healthcare, drinking water, and livelihood opportunities in the mining-affected areas.

About PMKKKY

- It was established in September 2015 to ensure that communities affected by mining benefit from mineral extraction and receive suitable social and physical infrastructure.
- It is administered through District Mineral Foundations (DMFs), which are non-profit trusts constituted under the 2015 modification to the MMDR Act, 1957, and the DMFs work under the control of the State Government.

Features

- It aims to conduct development and welfare projects, reduce the environmental, health, and socio-economic repercussions of mining, and promote sustainable livelihoods.
- Special safeguards have been provided to the Scheduled and Tribal Areas by Constitutional provisions, PESA, 1996, and the Forest Rights Act, 2006.
- DMFs are funded by mining royalty-related contributions, which amount to 10% for leases awarded from 12 January 2015 and 30% for leases given before this date.
  - Atleast 70% of funding has to be spent on high-priority sectors such as drinking water, healthcare, education, environment, sanitation, housing, skill development and livelihoods.
  - 30% can be utilised for infrastructure, irrigation, energy and watershed development.

AGENTIC COMMERCE

The payments industry is integrating agentic AI into its services.



About

- It is a digital trade model under which **AI agents streamline the buying process** by discovering, negotiating, and executing on behalf of customers.
  - This **does not mean bypassing** the need for authorisation.
  - It only **cuts down steps involved in a customer's e-commerce journey**, including the payments phase.

Importance

- Agentic AI can r**evolutionise B2B payments by forecasting cash-flow shortfalls**, identifying checkout errors, reconciling bills, matching purchase orders, scheduling payments and enhancing working-capital management.
- EY predicts that agentic AI may automate up to **80% of regular treasury coordination** and boost cash-flow forecasting accuracy to around 90% with good data and governance.

RISING SULPHUR PRICES

India has avoided a fertiliser crisis, thanks to ample urea and LNG. However, rising sulphur costs now affect the availability of DAP, SSP and other phosphatic fertilisers.

About Sulphur

- It is an important **non-metal** element and a precious commodity.
- **Uses:** It is used in fertilisers, chemicals, medicines, insecticides, rubber, water treatment and metal processing.
- **Sources:** It occurs naturally in the earth's crust. It is mined and increasingly recovered as a **by-product** of oil and gas processing and metal smelting.
- **Fertiliser link:** It is the preferred raw material for **sulphuric acid**, vital for phosphate and other fertilisers.
- **Nutrient role:** It nourishes crops, animals and humans. It aids plant growth, improves **nitrogen and phosphorus** efficiency and helps amend particular soils.

Consumption and Imports

- India consumes about **3.8-3.9 million tonnes** a year. Most of the fertiliser sector's needs are **imported**.
- Imported sulphur prices have nearly doubled to **$1,050-1,100 a tonne**.

Reasons for the Squeeze

- The **Russia-Ukraine** and **West Asia** conflicts disrupt supply.
- **Nickel processing** for EV batteries, especially in **Indonesia**, raises sulphuric acid demand.
- **Russia and China** have blocked some exports.
- The fertiliser sector thus faces a **two-fold** supply and price problem.

EUCALYPTUS MONOCULTURE

A Global Forest Coalition (GFC) report highlights the environmental, social and economic impacts of Aperam BioEnergia's eucalyptus plantations in Brazil's Jequitinhonha Valley.

Report Findings

- The **water table** fell by **4.5 metres** between 1974 and 2019.
- About **89%** of the springs investigated dried up.
- River flows also dropped sharply.
- Native **Cerrado** vegetation on one plateau fell from **86.1% to 24.6%** between 1973 and 2018.

About Eucalyptus

- It is a genus of over **660 species** of shrubs and tall trees in the myrtle family (**Myrtaceae**).
- It is native to **Australia**, including Tasmania, and nearby islands.
- In Australia, they are called **gum trees** or **stringybark trees**.
- Many species are grown in temperate regions as shade trees or in plantations.
- Economically, it is among the most valuable groups in the order **Myrtales**.

Monoculture

- It means producing a **single crop** on a piece of land. Industrial agriculture is dominated by continuous monoculture, growing the same crop yearly.
- **Advantages:** It eases management, cuts costs and promotes mechanisation, allowing more farming with less labour.
- **Drawbacks:** It can degrade soil, raise demand for **synthetic fertilisers** and add to soil and water pollution.

PLURILATERAL AGREEMENTS IN WTO FRAMEWORK

After opposing plurilateral pacts at the WTO's 14th Ministerial Conference (March 2026), India proposed reforms that could help place them within the WTO framework.

Background

- India blocked the China-backed **Investment Facilitation for Development (IFD)** pact from entering the WTO rulebook.
- India's position changed after the **BRICS summit** and bilateral talks with **China**.
- The BRICS summit declaration recognised the importance of identifying **pathways for plurilateral initiatives**.

Plurilateral Agreements

- They are trade deals among some WTO members. If 50 members agree on rules, the rest are not bound.
- They become part of the WTO rulebook only if **all members** agree.
- **Multilateral agreements:** All members negotiate rules together.
- **Plurilateral agreements:** Only a group negotiates. Joiners follow the rules, and others are generally not bound.

Reasons for India to Opposes Some Deals

- Powerful or interested countries could make rules without everyone, which would hurt **developing countries**.
- India wants **common rules and safeguards** for all plurilateral agreements to be decided first. It does not want one added first and broader rules to be decided later.

India's Terms

Right to opt out	Developing country protection	Avoiding overburden	Core functions
Members can stay out without losing existing WTO rights.	Special and Differential Treatment (S&DT) must remain central.	Too many agreements could strain the WTO's limited budget and administrative resources.	Resources should not be diverted from technical assistance and capacity building for developing countries.

World Trade Organization (WTO)

- WTO succeeded the **General Agreement on Tariffs and Trade (GATT)** and was established in **1995**.
- It is the world's largest intergovernmental trading body and the only global organisation dealing with trade rules.
- It has over **160 members**, representing **98%** of world trade.
- Its goal is to open trade for the benefit of all.
- **Ministerial conferences** usually occur every two years.

SIANG UPPER MULTIPURPOSE PROJECT

The Arunachal Pradesh Cabinet has approved an Empowered High-Level Committee to guide and coordinate the pre-feasibility survey for the proposed Siang Upper Multipurpose Project (SUMP).

About the Project

- **Location**: The project has **three designated sites**, of which **two are in Siang district** and one is in **Upper Siang district.**
- **Capacity of SUMP:** 11,000 megawatts (MW).
- The Union government declared the project a National Project in **2008,** reflecting its strategic importance.

Siang River

- The Siang originates in Tibet, where the river is known as the **Yarlung Tsangpo.**
- It flows eastward for more than **1,000 km** before making a major bend around **Namcha Barwa** and entering Arunachal Pradesh as the **Siang.**
- In Assam, the Siang joins the **Dibang and Lohit rivers** and forms the Brahmaputra.

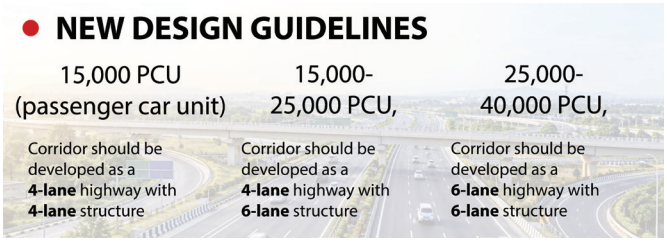
NHAI'S NEW GUIDELINES

The National Highways Authority of India (NHAI) has issued comprehensive guidelines for planning and designing access-controlled high-speed National Highways, other than Expressways.

About the Guidelines

- They aim to bring uniform **Detailed Project Reports (DPRs)** and consistent technical standards. They also seek better **road safety** and operational efficiency.

- They apply to all upcoming **four- and six-lane Greenfield and Brownfield** corridors.
- They support the vision of a world-class National Highway network under **Viksit Bharat 2047**. This includes a plan for **50,000 km** of high-speed corridors.



Key Provisions

- **Interchanges with ramps:** These are required at crossings with Expressways, National Highways, State Highways and important arterial roads.
- **Destination links:** Interchanges will also connect **ports, airports, Multi-Modal Logistics Parks (MMLPs)**, industrial areas and major tourist destinations.
- **Boundary wall:** A **one-metre-high** wall along the outer edge will strengthen access control. It will prevent encroachments, unauthorised entry and **stray cattle**.
- **Traffic-based design:** Corridors carrying **25,000 to 40,000 vehicles** get six lanes within a **70-metre** right of way.

Importance

- They are a significant step towards **standardising** the planning and design of fully access-controlled National Highways.
- They provide uniform technical and **safety** provisions for such corridors.

SUSTAINABILITY CERTIFICATION FOR COFFEE

The Coffee Board of India has developed sustainability standards and is in the process of implementing a certification process for Indian coffee.

About

- India, the **world's seventh-largest coffee** producer and fifth-largest exporter, exported coffee worth more than $2 billion in 2025-26, with nearly 39% comprising value-added products.
- Indian coffee's **distinctive advantage** lies in its **traditional shade-grown cultivation**, which the Board aims to leverage through the new sustainability standards.
- The certification will be done at **three levels** - first will be done by the Board based on self certification by the growers. The second level will involve independent third-party verification, while the third level will benchmark Indian standards against internationally recognised sustainability frameworks.

Coffee Production

- **Brazil** is the world's largest coffee producer, contributing about **40% of global production**, followed by **Vietnam**. India primarily produces two main varieties of coffee: **Arabica and Robusta**.
- **Karnataka** leads coffee production in India, followed by **Keralam and Tamil Nadu**.

Climatic Conditions

- Coffee plants require a **hot and humid climate**, with temperatures ranging between **15°C and 28°C** and annual rainfall of **150–250 cm**.

Coffee Board of India

- It is a statutory organization constituted under Section (4) of the Coffee Act, 1942 and functions under the administrative control of the Ministry of Commerce and Industry.
- The Board comprises 33 members, including the Chairman and the Secretary & Chief Executive Officer.

FOOD LOSS AND WASTE DAY

The International Day of Awareness of Food Loss and Waste is observed every year on 29 September to promote awareness and collective action.

Food Loss and Food Waste

- **Food loss:** Fall in food quantity or quality during production, post-harvest handling, storage, processing and transport, **before retail**.
- **Food waste:** Food discarded at **retail, food-service and household** levels, even if edible.

Status

- India wasted **55 kg** per capita in 2022 (**UNEP Food Waste Index 2024**), below the global average of **79 kg**.
- Globally, **1.05 billion tonnes** of food is wasted yearly. Households account for **60%**, food services **28%** and retail **12%**.
- **Concern:** India ranked **102 of 123** in the **Global Hunger Index 2025**. Around **12%** of Indians, about **170-175 million**, are undernourished.

Impact

- **Nutritional security:** Less food available worsens food insecurity.
- **Economic losses:** Farmers' incomes fall and supply-chain costs rise.
- **Environmental degradation:** Land, water, energy and fertiliser are wasted.
- **Climate change:** Landfill waste releases **methane**, a potent greenhouse gas.

Challenges

- Inadequate **cold chains**, storage, transport and processing.
- **Data gaps** on retail, food-service and household waste.
- Limited finance for loss-reduction technologies.

- Fragmented, uncoordinated interventions.
- Poor waste segregation limits composting and biogas.

Government Initiatives

- **Public Distribution System (PDS)** and **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** Distribute subsidised grains and widen access in crises.
- **Agriculture Infrastructure Fund (AIF):** Funds warehouses, silos and cold storage.
- **Pradhan Mantri Kisan Sampada Yojana:** Builds food processing and preservation infrastructure.
- **e-NAM:** Improves price discovery.
- **Post-harvest loss assessments:** The Ministry of Food Processing Industries covered **45, 45 and 54** commodities in 2005-07, 2012-14 and 2020-22.
- **FAO and SIDBI** link loss hotspots with climate-resilient technologies and MSME finance.

Global Best Practices

Japan: 31% Reduction

- Mandatory reporting of food waste from large businesses
- Industry reduction targets
- Effective animal feed diversion
- Public awareness **(No-foodloss)**

Per capita, 2008-2020, household, food service and retail.

Netherlands (Reductions of 23% at consumer & 17% retail level)

- A national consumer activation campaign with 150 partners (public and private). **"Food waste free week"** organized annually.
- Food Waste Free United Foundation - voluntary agreement initiated by the Dutch government, government, Wageningen University & Research (WUR), the Dutch Nutrition Centre and 25 private sector organisations in 2017.

United Kingdom (18% Reduction)

- Voluntary reporting and engagement through Courtauld Commitment Public-Private Partnership - retail 26% reduction
- Manufacturers 34%
- Product- and sector-specific best practice guidance
- Redistribution working group
- Public awareness **(Love Food, Hate Waste)**

Per capita, 2007-2021, household, food service, retail, manufacture

GI-TAGGED GULBARGA TUR DAL

The Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated the flag-off of a one MT consignment of GI-tagged Gulbarga Tur Dal from Karnataka to the Maldives.

Gulbarga Tur Dal

- Gulbarga Tur Dal, also known as Kalaburagi Togari Bele, is a variety of pigeon pea, commonly known as Arhar Dal or Toor Dal, cultivated in the Kalaburagi region of Karnataka.
- Karnataka is the **largest tur dal-producing state** in India, contributing over **40 percent** of national output, with Kalaburagi district alone producing the majority of the state's yield.
- Gulbarga Tur Dal received **Geographical Indication (GI) registration in 2019** and is recognised for its distinctive taste and quality.

PM-MKSSY

The Government is promoting aquaculture insurance under the Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY), with up to 40% premium incentive for one crop cycle.

About PM-MKSSY

- Approved in **2024**, it covers aquaculture insurance under **Component 1-B**.

Key Features

- **Ponds:** The cap is **₹25,000 per hectare** of water-spread area, up to **₹1 lakh** for four hectares. Farms below one hectare get a **pro-rata** incentive.
- **Advanced systems:** Cage culture, Recirculatory Aquaculture Systems, biofloc and raceways get 40% of the premium, capped at ₹1 lakh for units up to 1,800 cubic metres.
- **Inclusion:** SC, ST and women get an extra 10% of the incentive payable to general-category beneficiaries.
- **Delivery:** The National Fisheries Digital Platform (NFDP) facilitates implementation, with Direct Benefit Transfer (DBT).

NATIONAL ROZGAR MELA

The 20th National Rozgar Mela on 19 September 2026 distributed over 51,000 appointment letters. These went to newly inducted youth in government departments and organisations at 45 locations.

About the National Rozgar Mela

- It is a government initiative to speed up **recruitment** and fill vacancies across Ministries, Departments and organisations.
- It promotes **youth empowerment**, timely recruitment and employment. It strengthens government human resources.
- It was launched in **2022**. About **12.75 lakh** appointments have been made so far.

How is the NSDC Rozgar Mela Different?

- It is an employment event where employers and job seekers interact, apply and recruit directly.
- The **National Skill Development Corporation (NSDC)** runs it with **Sector Skill Councils (SSCs)** and **Pradhan Mantri Kaushal Kendras (PMKKs)**.

- **Private employers** are mobilised to offer jobs.
- It targets youth aged **18 to 35 years**, including:
  - 8th, 10th and 12th pass candidates.
  - **ITI and Diploma** holders.
  - Graduates.
  - Trained and certified candidates aligned with the **National Skills Qualifications Framework (NSQF)**.
- It also offers **career counselling, Kaushal Melas, Mudra loan facilitation** and skill exhibitions.

CURRENT ACCOUNT DEFICIT

India's CAD rose to $4.2 billion (0.5% of GDP) in Q1 FY27, from $3.4 billion (0.4%) a year earlier. A wider merchandise trade deficit drove this.

About CAD

- CAD is part of the **Balance of Payments (BoP)**, which records a country's transactions with the world.
- It arises when imports of goods, services and transfers exceed exports and incoming transfers.
- It covers trade, investment income and transfers such as **remittances** and aid.

Q1 FY27 Data

- The **merchandise trade deficit** rose to **$86.1 bn** from $68.9 bn.
- **Net services receipts** ($51.6 billion) and **remittances** ($42.9 billion) both increased.
- **FDI** inflow was $6.1 billion, but **FPI** saw a **$9.6 billion outflow**.
- **Forex reserves** fell by $8.1 billion on a BoP basis.

Causes of Current Account Deficit

Trade Imbalance	Flows of investment	Exchange Rate Fluctuations
A country has a deficit in the balance of trade when it imports more products and services from other countries than it exports to them.	Capital flows (FDI and portfolio investment) can cause CAD by increasing demand for imports or by funding domestic consumption and investment.	Changes in the value of the currency, depreciation or appreciation, will affect the cost of imports and exports and the current account balance.

Implications

- **Economic:** A sustained CAD weakens the external position and raises vulnerability to shocks.
- **Policy:** It prompts fiscal, monetary, trade & structural responses.
- **Business:** It affects firms via exchange rates, interest rates, inflation and trade policy.

VARIABLE RATE REVERSE REPO (VRRR) AUCTIONS

The Reserve Bank of India (RBI) absorbed almost ₹2.9 lakh crore from the banking system through overnight Variable Rate Reverse Repo (VRRR) auctions as part of its efforts to absorb excess liquidity.

Variable Rate Reverse Repo (VRRR)

- The RBI uses VRRR as a monetary-policy tool to absorb surplus liquidity from the banking system.
- Banks park their excess funds with the central bank for a specified period in exchange for interest.

Difference between Fixed-Rate and Variable-Rate Repo

Feature	Fixed-Rate Repo	Variable-Rate Repo (VRR) / Reverse Repo (VRRR)
Interest Rate	Pre-set by RBI, linked to the policy repo rate	Set through competitive bidding in an RBI auction, at the cut-off rate
Rate Predictability	High, because banks know the rate in advance	Lower, because the rate depends on bids and liquidity conditions
Risk Factor	No rate uncertainty; banks choose only the amount	Bid risk: a bid may fall outside the cut-off and go unallotted, or be allotted at a less favourable rate
Cost of Funds	Fixed at the announced rate	Market-determined: VRR usually at or above the repo rate, VRRR at or below it, within the SDF–MSF corridor
Liquidity Role	Repo injects liquidity; reverse repo absorbs it	VRR injects liquidity; VRRR absorbs it
Tenor	Usually overnight	Mainly 7-day, or overnight to 14 days at RBI's discretion; long-term VRR/VRRR for durable liquidity

Do You Know?

Transient liquidity refers to temporary cash flow fluctuations in a financial or banking system, while a Variable Rate Repo (VRR) auction is a monetary tool used by the RBI to inject short-term liquidity into the banking system.

4 ENVIRONMENT

MANAGING THE TEMPORARY BREACH OF THE 1.5°C GLOBAL WARMING LIMIT

The United Nations Environment Programme (UNEP) has released the Limiting Overshoot report, proposing an "Overshoot, Peak and Decline" pathway to manage the increasingly likely temporary breach of the 1.5°C global warming limit under the Paris Agreement.

Overshoot, Peak and Decline Pathway

- **Overshoot:** Global average temperature temporarily rises above **1.5°C** above pre-industrial levels.
- **Peak:** The rise in temperature and the period above **1.5°C** should be kept as low and as short as possible.
- **Decline: Rapid emission reductions**, together with **Carbon Dioxide Removal (CDR)**, should gradually bring global temperatures back below **1.5°C** later this century.
- UNEP describes this as **the best remaining option**, though not the preferred pathway.

Why is Overshoot Becoming Likely?

- Global warming may exceed **1.5°C** within the next few years.
- Even with full implementation of **Nationally Determined Contributions (NDCs)** and **net-zero** pledges, peak warming could reach about **1.8°C**.
- Current policies may result in around **2.6°C** warming by **2100** (range **1.9–3.6°C**).
- The **remaining global carbon budget** is shrinking rapidly.

International Recognition

- **COP30 (Belém, 2025)**, through the **Global Mutirão** decision, became the **first COP** to acknowledge that a temporary **1.5°C overshoot** is increasingly likely
- It also called for limiting its magnitude and duration.

Importance of Duration

- Longer overshoot accelerates **sea-level rise**, **coral reef collapse, and loss of over one-fourth of global glacier mass by 2100 and** may reduce **global food production by up to 14% by 2050**.
- Every additional **five years** of high emissions may raise peak warming by about **0.1°C**.
- It increases the risk of irreversible tipping points in the **Greenland and West Antarctic ice sheets**, **Amazon rainforest**, and **Atlantic Meridional Overturning Circulation (AMOC)**.

Role of Carbon Dioxide Removal (CDR)

- **CDR cannot substitute for deep emission reductions.** It is required **in addition** to emission cuts.
- Key approaches include **afforestation**, **reforestation**, **ecosystem and soil restoration**, and **engineered carbon-removal technologies**.
- **Methane mitigation** is equally critical because methane contributes about **0.5°C** of current warming. More than **155 countries** have joined the **Global Methane Pledge** to reduce anthropogenic methane emissions by **at least 30% below 2020 levels by 2030**.

Nationally Determined Contributions (NDCs)

- **NDCs** are country-specific climate action plans under the **Paris Agreement** for **mitigation** and **adaptation**.
- India's NDC follows the principle of **Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC)**.
- **India's NDC 3.0 (2031–2035)** targets include:
  - **47% reduction** in emissions intensity from **2005** levels by **2035**.
  - **60%** installed electricity capacity from **non-fossil fuel** sources by **2035**.
  - Creation of an additional **3.5–4 billion tonnes CO_2-equivalent carbon sink** through forests and tree cover by **2035**.

MAJULI AND TAWANG MODELS OF RURAL WASTE MANAGEMENT

The Majuli (Assam) and Tawang (Arunachal Pradesh) waste management models demonstrate how community participation, decentralised systems and locally adapted financing can significantly improve rural solid waste management.

Majuli and Tawang Models

- **Majuli Model:**
  - Established **Central Material Collection Facilities (CMCFs)** and **village-level collection centres** to aggregate waste before recycling and disposal.
  - Promotes **decentralised segregation**, where **non-biodegradable waste** is sorted and sent to **scrap dealers and authorised recyclers**.
  - Follows a **Government–NGO partnership**, with government providing infrastructure and transport, while organisations such as **Saahas** support staffing and capacity building.
- **Tawang Model:**
  - Conducts monthly **Swachchata Divas**, where residents collectively bring waste for segregation, reducing the cost of door-to-door collection in mountainous terrain.

- Segregates waste into **22 categories**, followed by **around 35 categories** at **Material Recovery Facilities (MRFs)**.
- Uses a **community financing mechanism**, with households contributing **₹50/month** and commercial establishments **₹100/month** for sustainable operations.

Solid Waste Scenario in India

- India generated about **170,000 tonnes of municipal solid waste per day** in **2021–22**.
- About **156,000 tonnes (around 92%)** were collected.
- Around **54%** was treated, **24%** was landfilled and **22%** remained unaccounted.
- India is projected to generate **435 million tonnes of solid waste annually by 2050**.
- The country has about **645 operational landfills** and **2,452 dumpsites**.



Government Initiatives

- **Solid Waste Management Rules, 2016:** Mandate **source segregation** and promote **composting, biomethanation and waste-to-energy**.
- **Swachh Bharat Mission: SBM-Urban** promotes door-to-door collection and segregation, while **SBM-Gramin** supports composting and biogas plants.
- **Extended Producer Responsibility (EPR):** Makes producers responsible for post-consumer management of **plastic, e-waste and other notified wastes**.
- **Waste-to-Energy Projects:** Promote the use of **non-recyclable waste** for electricity generation.

RISING FREQUENCY OF CORAL BLEACHING

The seventh Status of Coral Reefs of the World report by the Global Coral Reef Monitoring Network (GCRMN) highlights that coral bleaching events are becoming more frequent.

Major Highlights

- Major bleaching disturbances are now occurring **every 4–6 years** in many regions, compared with about **once every decade** before 2010.
- **Global hard coral cover** has declined by about **9.5%** compared with the **1980–2009** reference period.
- More than **40% of coral reefs** experienced heat stress severe enough to cause **bleaching and mortality** in **2024**.
- **Marine heatwaves**, driven by climate change and intensified by local pressures, are pushing reefs towards long-term decline.
- Without major **greenhouse gas emission reductions**, global warming could exceed **2°C**, causing more frequent and intense marine heatwaves.

About Corals

- **Corals** are **marine invertebrates** belonging to the phylum **Cnidaria**.
- They are made up of tiny **polyps** that secrete a **calcium carbonate** exoskeleton, forming **coral reefs**.
- Their colours come from **zooxanthellae**, the **photosynthetic symbiotic algae** living within coral tissues.
- **Types of coral reefs: Fringing reefs, Barrier reefs** and **Atolls**.
- **Major coral reefs in India: Gulf of Kutch, Gulf of Mannar, Lakshadweep, Andaman & Nicobar Islands** and **Malvan**.
- Coral reefs provide **habitat, breeding and nursery grounds** for nearly **25% of all marine species** and support the livelihoods of **over one billion people** worldwide.

Coral Bleaching

- **Coral bleaching** occurs when environmental stress, especially **elevated sea temperatures**, causes corals to expel **zooxanthellae**, exposing their white **calcium carbonate skeleton**.
- Bleached corals become vulnerable to **starvation, disease and mortality**.
- Bleaching does **not immediately kill corals**, and recovery is possible if conditions improve.

Major Causes

- Marine heatwaves and climate change
- Ocean acidification
- Pollution and nutrient runoff
- Coastal development, sedimentation and destructive fishing
- Overfishing, which disrupts reef ecosystem balance

Recovery

- Corals can recover if **sea temperatures return to normal** and **environmental stress is reduced**.
- This allows **zooxanthellae** to recolonise coral tissues and restore reef health.

PICHAVARAM MANGROVES

A recent study estimated the Total Economic Value (TEV) of Tamil Nadu's Pichavaram Mangrove Forest at ₹2,485.38 crore.

Mangroves

- **Mangroves** are **salt-tolerant plant communities** found in **tropical and subtropical intertidal coastal regions**.

- They thrive in **waterlogged, saline environments** and are adapted to withstand tidal inundation.
- **India's mangrove cover** is **4,991.68 sq. km (ISFR 2023)**, accounting for **0.15%** of the country's geographical area.
- **West Bengal** has the largest mangrove cover, followed by **Gujarat** and the **Andaman & Nicobar Islands**.

Pichavaram Mangrove Forest

- Located in **Cuddalore district, Tamil Nadu**, between the **Vellar** and **Coleroon (Kollidam)** estuaries along the **Bay of Bengal**, forming part of the **Killai backwater** complex.
- Spread over **1,478.64 hectares**, it is one of India's largest and best-preserved mangrove ecosystems.
- It is an **intertidal forested wetland** with nearly **4,400 interconnected canals**. Mangroves remain rooted in **shallow brackish water** throughout the year.
- Vegetation includes **mangroves, salt marshes and Tropical Dry Evergreen Forests**.
- Dominant flora are **Rhizophora apiculata** (stilt roots) and **Avicennia marina** (pneumatophores).
- It supports rich biodiversity, including **tiger prawns, mud crabs** and several migratory birds.
- It was designated a **Ramsar Site (2022)** and is recognised as an **Important Bird and Biodiversity Area (IBA)**.

Key Findings of the Study

- **TEV** of the ecosystem is **₹2,485.38 crore**, or about **₹1.83 crore per hectare**, capturing both **market and non-market ecosystem services**.
- **Soil organic carbon** contributes nearly **half** of the total value.
- Mangrove sediments store **251.14 tonnes carbon/ha**, compared with **79.45 tonnes carbon/ha** in above-ground vegetation.
- The ecosystem acts as a major **blue carbon sink**, **natural bio-shield** against cyclones and erosion, supports **fisheries**, **eco-tourism**, **oxygen regulation** and **livelihoods**.
- The findings support **Natural Capital Accounting**, **Green GDP**, **Payment for Ecosystem Services (PES)** and **blue carbon financing** for sustainable conservation.
- The study gains importance as the **IUCN Red List of Ecosystems (2024)** warns that **around 50% of global mangrove ecosystems are at risk of collapse**.

ACCESS AND BENEFIT SHARING (ABS)

The National Biodiversity Authority (NBA) has crossed the ₹200-crore milestone in cumulative Access and Benefit Sharing (ABS) disbursements.

About ABS

- **ABS** is a mechanism that ensures the **fair and equitable sharing of benefits** arising from the utilisation of **biological resources**.
- **It promotes:**
  - Biodiversity conservation.
  - **Sustainable use** of biological resources.
  - **Livelihood and welfare** of local communities associated with these resources.

Key Highlights

- ABS proceeds were realised from the **research and commercial utilisation** of **bitter gourd, okra, chilli and onion**.
- The biological resources were accessed through **open markets**. Therefore, **individual farmers or source communities could not be identified**.
- Accordingly, the proceeds are distributed among States and UTs based on the **area under cultivation** of the respective crops, using data published by the **Ministry of Agriculture and Farmers Welfare**.
- **Madhya Pradesh** and **Maharashtra** are the largest cumulative beneficiaries.
- The ABS framework helps fulfil India's commitments under the **Convention on Biological Diversity (CBD)**, the **Nagoya Protocol** and **Target 13** of the **Kunming–Montreal Global Biodiversity Framework**.
- It has sanctioned an additional **₹8.23 crore** to **27 State Biodiversity Boards (SBBs)** and **5 Union Territory Biodiversity Councils (UTBCs)** from ABS proceeds realised through the utilisation of biological resources.

Utilisation of ABS Funds

Under **Section 32(2)** of the **Biological Diversity Act, 2002**, ABS funds support:

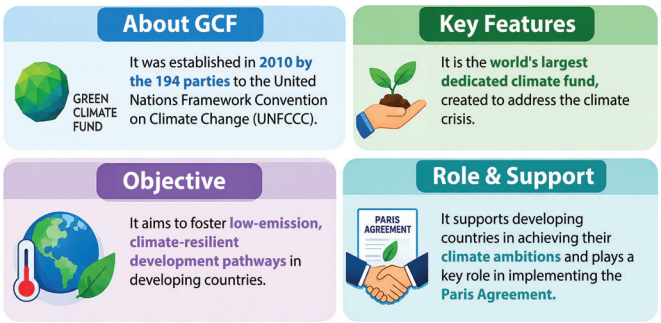
- People's Biodiversity Registers (PBRs).
- **In-situ** and **ex-situ** conservation.
- Restoration of degraded ecosystems.
- **Biodiversity Heritage Sites**.
- Capacity building of Biodiversity Management Committees (BMCs).
- **Livelihood improvement** of local communities.

Biological Diversity Act, 2002

- Enacted to implement the objectives of the **Convention on Biological Diversity (CBD)** and provide a framework for **access to biological resources** and **equitable benefit sharing**.
- It establishes a **three-tier institutional framework**:
  - **National Biodiversity Authority (NBA):** A **statutory body** established in **2003** to implement the Act and advise the Central Government on biodiversity conservation, sustainable use and equitable benefit sharing.
  - **State Biodiversity Boards (SBBs):** Advise State Governments and regulate access to biological resources at the State level.
  - **Biodiversity Management Committees (BMCs):** Constituted by local bodies to conserve, document and promote the sustainable use of biodiversity.

GREEN CLIMATE FUND (GCF)

The Green Climate Fund (GCF) has faced criticism over the seven-year delay in approving Nepal's $49.9 million project to reduce risks from Glacial Lake Outburst Floods (GLOFs).



INTERNATIONAL DAY OF CLEAN AIR FOR BLUE SKIES

The International Day of Clean Air for Blue Skies is observed annually on 7 September to raise awareness and strengthen global action against air pollution. It was designated by the United Nations General Assembly (UNGA) in 2019.

Air Pollution

- **Air pollution** is the presence of harmful substances in the atmosphere at concentrations that adversely affect **human health** and the **environment**.
- Pollutants may occur as **gases, liquid droplets or solid particles** and arise from both **natural** and **human-induced** sources.
- **Major air pollutants:** PM2.5, PM10, NO_2, SO_2, O_3, CO, Volatile Organic Compounds (VOCs) and Lead.
- **Particulate Matter (PM):**
  - **PM10** has a diameter of **10 µm or less**, while **PM2.5** has a diameter of **2.5 µm or less**.
  - **PM2.5** can penetrate deep into the lungs and may enter the bloodstream, posing greater health risks.

Air Pollution in India (World Air Quality Report 2025)

- India ranked **6th** among the world's most polluted countries, with an annual average **PM2.5 concentration of 48.9 µg/m³**, nearly **10 times** the **WHO annual guideline of 5 µg/m³**.
- India, Pakistan, and China contained the world's 25 most polluted cities.
- **Loni (Ghaziabad)** was the world's most polluted city, followed by **Byrnihat (Meghalaya)** and **Delhi** among the leading global hotspots.

Major Government Initiatives

- **National Air Quality Monitoring Programme (NAMP):** Implemented by the **Central Pollution Control Board (CPCB)** to monitor and assess ambient air quality.
- **National Clean Air Programme (NCAP):** Launched in **2019** to improve air quality through **city-specific action plans** in identified cities.
- **Bharat Stage-VI (BS-VI) Emission Standards:** Implemented nationwide in **2020** to reduce vehicular emissions.
- **PM Ujjwala Yojana (PMUY):** Promotes **LPG** as a clean cooking fuel to reduce household air pollution.
- **FAME Scheme:** Encourages adoption of **electric and hybrid vehicles**.
- **Swachh Vayu Survekshan:** Annual assessment of **130 NCAP cities** on clean air performance.
- **Commission for Air Quality Management (CAQM): Statutory body** for coordinated air quality management in **NCR and adjoining areas**.
- **Swachh Bharat Mission** and **GRIHA** promote scientific waste management, cleaner urban habitats and energy-efficient buildings, while **afforestation programmes** such as the **Green India Mission** help improve air quality by increasing green cover.

SWACHH VAYU SARVEKSHAN 2026

The 5th Swachh Vayu Sarvekshan Awards were presented during Swachh Vayu Diwas 2026 (7 September). It was organised by the Ministry of Environment, Forest and Climate Change (MoEFCC). India observes the International Day of Clean Air for Blue Skies as Swachh Vayu Diwas.

About SVS

- Swachh Vayu Sarvekshan (SVS) is an annual assessment of 130 NCAP cities, launched in 2022–23 by MoEFCC.
- It evaluates measures to control road dust, vehicular and industrial emissions, solid waste, construction & demolition (C&D) waste, commercial emission sources (e.g. DG sets) and public awareness.
- Cities are grouped into three categories: above 10 lakh, 3–10 lakh, and below 3 lakh population.

Key Highlights (2026)

- **Million-plus cities:** Lucknow ranked first, followed by Indore and Jabalpur. Delhi ranked 21st.
- **3–10 lakh category:** Rourkela secured the first position.
- **Below 3 lakh category:** Kalinganagar topped the rankings.
- **Ward-level awards** were introduced for the first time to recognise excellence in **local-level air-quality management**.
- **NCAP progress (2025–26 vs. 2017–18):**
  - **108** cities reduced **PM10** levels.
  - **72** cities achieved **over 20%** reduction.
  - **26** cities achieved **over 40%** reduction.
  - **14** cities met the National Ambient Air Quality Standards (NAAQS).

National Clean Air Programme (NCAP)

- **NCAP** was launched by **MoEFCC** in **2019** as a **non-statutory**, national strategy to improve air quality in **130 Non-Attainment Cities** that failed to meet **NAAQS** for **five consecutive years**.
- The programme initially targeted a **20–30% reduction** in particulate matter by **2024**, which was later revised to **up to 40% reduction in PM10 levels or attainment of NAAQS (60 µg/m^3) by 2025–26**.
- Implementation is supported through **performance-linked funding**, the **PRANA Portal**, **source apportionment studies**, a **three-tier monitoring framework**, and convergence with initiatives such as **Swachh Bharat Mission, Smart Cities Mission, FAME** and **PM Ujjwala Yojana**.

PERMAFROST MELTING

A recent study estimates that Arctic permafrost thaw could cause infrastructure damage worth about US$261 billion by the mid-21st century.

About

- **Permafrost** is any **ground material**, including **soil, sediment and rock**, that remains **continuously frozen at 0°C (32°F) or below for at least two consecutive years**.
- It is found mainly in **high-latitude and high-altitude regions**, covering about **24% of the Northern Hemisphere** exposed terrestrial land surface, including **Alaska, Canada** and **Siberia**.
- It contains **ice and large stores of organic carbon**, much of which has remained frozen for **thousands of years**.

Impacts of Permafrost Thaw

- **Infrastructure Damage:** Ground instability threatens **roads, buildings, pipelines and other infrastructure**, with projected losses of **US$261 billion** by the mid-21st century.
- **Climate Feedback:** Thawing activates microorganisms that decompose frozen organic matter, releasing **CO_2** and **methane (CH_4)**, which further accelerate global warming.
- **Disaster Risk:** Increases the likelihood of **Glacial Lake Outburst Floods (GLOFs)**. In the Indian Himalaya, **332 proglacial lakes** have been identified in **Jammu & Kashmir**, of which **65 are high-risk**.
- **Water Resources:** Alters **groundwater reserves and river flows**, particularly in mountain regions.
- **Public Health:** May release **ancient bacteria and viruses** preserved in frozen ground.
- **Strategic Concerns:** Threatens **military infrastructure and strategic roads** in **Ladakh**.

DRIVERS OF DEGRADATION	
POINT-1	Climate change and rising temperatures.
POINT-2	Earthquakes disrupting frozen layers.
POINT-3	Deforestation, land-use change, infrastructure development and tourism that expose frozen ground to additional heat.

Mitigation Measures

- Integrate permafrost assessment into infrastructure planning and Environmental Impact Assessments (EIAs).
- Deploy in-situ temperature monitoring systems for continuous monitoring.
- Reduce greenhouse gas emissions to slow long-term thawing.

Key Facts

- **Indian occurrence:** Found in the Indian Himalayan Region, especially Ladakh and Lahaul-Spiti.
- **Importance:** Acts as a major **carbon reservoir**, regulates climate, influences water resources, and supports fragile mountain ecosystems.

WINTER WASTE BURNING: A GROWING THREAT TO URBAN AIR QUALITY

The World Resources Institute (WRI) India found that the pollution from winter waste burning in cities is three times higher than summer.

Pollution and Climatic Differences

- **Winter:** Weaker winds, a more stable atmosphere and **temperature inversions** restrict the vertical and horizontal dispersion of pollutants, causing them to **accumulate near the ground**.
- **Summer:** Stronger atmospheric mixing and greater vertical dispersion generally help dilute pollutants, although dust, heat and other emission sources can still worsen air quality.
- **Implication:** Increased waste burning during winter, combined with **unfavourable meteorological conditions**, can intensify pollution episodes.

Causes of Open Waste Burning

- **Irregular Waste Collection:** Inadequate door-to-door collection and unreliable municipal services encourage residents and businesses to burn accumulated waste.
- **Limited Processing Capacity:** Insufficient recycling, composting and scientific waste-processing facilities result in waste accumulation.
- **Cost and Convenience:** Open burning is often perceived as a quick, inexpensive alternative to proper waste disposal.
- **Winter Heating:** Some economically vulnerable households and workers burn waste for warmth when safer heating options are unavailable.
- **Weak Enforcement:** Inadequate surveillance, deterrence and penalties allow repeated burning at dumping sites and public spaces.

Impacts of Open Waste Burning

- **Environmental Impacts:**
  - **Air Pollution:** Releases **particulate matter ($PM_{2.5}$ and PM_{10})**, carbon monoxide and other harmful pollutants.

- **Soil and Water Contamination:** Ash and combustion residues can introduce toxic substances into soil and groundwater through deposition and runoff.
- **Food-Chain Contamination:** Persistent pollutants and certain heavy metals can accumulate in plants and animals, potentially entering the human food chain.
- **Ecosystem Damage:** Plastic residues and toxic ash can harm terrestrial and aquatic organisms.
- **Climate Change:** Releases greenhouse gases and **black carbon**, contributing to global warming.

- **Health Impacts:**
  - **Respiratory Disorders:** Exposure can cause coughing, irritation, breathing difficulties and aggravate asthma and other respiratory diseases.
  - **Cardiovascular Effects:** Fine particulate matter increases the risk of cardiovascular disease and related complications.
  - **Toxic Exposure:** Depending on the waste burnt, emissions may contain **dioxins, polycyclic aromatic hydrocarbons (PAHs)** and other hazardous substances.
  - **Cancer Risk:** Certain combustion products, including some PAHs and dioxins, are carcinogenic or potentially carcinogenic.
- **Socioeconomic Impacts:**
  - **Disproportionate Exposure:** Waste workers, informal waste pickers, children and residents of economically vulnerable neighbourhoods may face greater exposure.
  - **Public Expenditure:** Pollution-related illnesses increase healthcare costs and reduce productivity.
  - **Urban Liveability:** Smoke, foul odours and contaminated surroundings reduce the quality of life in affected communities.

Related Government Initiatives and Efforts

- **Commission for Air Quality Management (CAQM):** It has identified recurring waste-dumping and burning locations as ***waste-sensitive* sites** and adopted a **zero-tolerance approach** under **Operation Clean Air** to strengthen monitoring and enforcement.
- **Ministry of New and Renewable Energy (MNRE):** It provides Central Financial Assistance under applicable schemes for eligible **waste-to-energy projects** that convert urban, industrial, agricultural and municipal waste into **biogas, Bio-CNG, electricity and syngas**.
- **Pradhan Mantri JI-VAN Yojana:** It was launched by the **Ministry of Petroleum and Natural Gas** to support eligible **integrated bioethanol projects** using *lignocellulosic biomass* and other eligible feedstocks.
  - It can help promote the **productive use of eligible agricultural residues**.
- **Waste Management Rules:** India has separate regulatory frameworks for ***solid waste, plastic waste, hazardous waste, e-waste, battery waste and biomedical waste*** to improve collection, processing and environmentally sound disposal.
- **Extended Producer Responsibility (EPR):** Applicable rules require producers, importers and brand owners, as relevant, to fulfil prescribed responsibilities for post-consumer waste.
  - EPR frameworks cover **plastic packaging, e-waste, batteries, waste tyres and used oil.**
  - Effective EPR can strengthen recycling, reduce pressure on landfills and discourage unsafe informal waste handling.
- **Single-Use Plastic Restrictions:** India prohibited identified **12 categories of single-use plastic items** with low utility and high littering potential.

Way Forward

- **Strengthen Collection Systems:** Ensure universal, reliable door-to-door collection and prevent waste accumulation in residential areas, markets and public spaces.
- **Promote Source Segregation:** Separate wet, dry, hazardous and domestic sanitary waste to improve recycling, composting and safe disposal.
- **Expand Decentralised Processing:** Develop suitable local composting, material recovery and recycling facilities to reduce the volume of waste requiring transportation and final disposal.
- **Integrate Winter Action Plans:** Incorporate waste-burning prevention into city air-pollution action plans, with particular attention to vulnerable neighbourhoods and recurring burning locations.
- **Improve Monitoring and Accountability:** Use regular inspections, citizen reporting, hotspot mapping and proportionate penalties to deter open burning.
- **Provide Safe Heating Alternatives:** Improve access to affordable, cleaner heating options for economically vulnerable households and waste-management workers who may burn waste for warmth.
- **Strengthen Producer Responsibility:** Improve compliance with EPR requirements, expand recycling infrastructure and discourage the unsafe handling of plastic and other waste.
- **Promote Behavioural Change:** Conduct public awareness campaigns and engage resident welfare associations, market associations, sanitation workers and informal waste pickers in community-level waste management.

SOFT CORAL SLUMPING OFF JEJU ISLAND

UNESCO-designated soft coral habitats around the uninhabited islets south of Jeju Island, South Korea are suffering from a severe 'slumping' phenomenon.

About Slumping

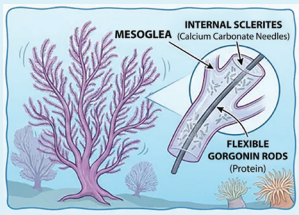
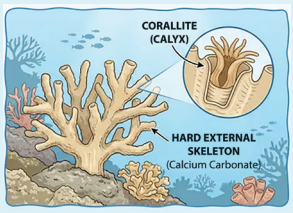
- It refers to the **loss of structural rigidity** in soft corals, causing them to **droop, deflate or disintegrate**.

- **Soft corals** depend partly on a **hydrostatic skeleton**, in which internal fluid pressure helps maintain their shape.

Environmental Factors

- Slumping is driven by **rising sea temperatures, climate change** and prolonged **exposure to low-salinity water.**
- **Changjiang Diluted Water**, originating from China's Yangtze (Changjiang) River, reaches the **waters around Jeju** through wind and current-driven transport, lowering surface-water salinity.
- **Thermal stress**, low salinity and potentially associated changes in water quality or microbial communities contributed to slumping.

Types of Corals

Soft Corals	Hard Corals
Soft and flexible bodies, often resembling trees, bushes or fans.	Rigid, stony structure due to their hard external skeleton.
Generally colonial and non-reef-building.	Usually colonial and commonly known as reef-building corals.
Lack a rigid, continuous calcium carbonate skeleton, but may possess tiny skeletal structures called **sclerites**.	Secrete rigid calcium carbonate **($CaCO_3$)** skeletons.
Their dependence on symbiotic algae varies among species.	Most reef-building hard corals host microscopic algae called zooxanthellae within their tissues.
Slumping can occur when environmental stress disrupts their structural integrity.	Environmental stress can cause coral bleaching, particularly when symbiotic algae are lost.
	

LAKES RESHAPE GLOBAL CARBON CYCLE

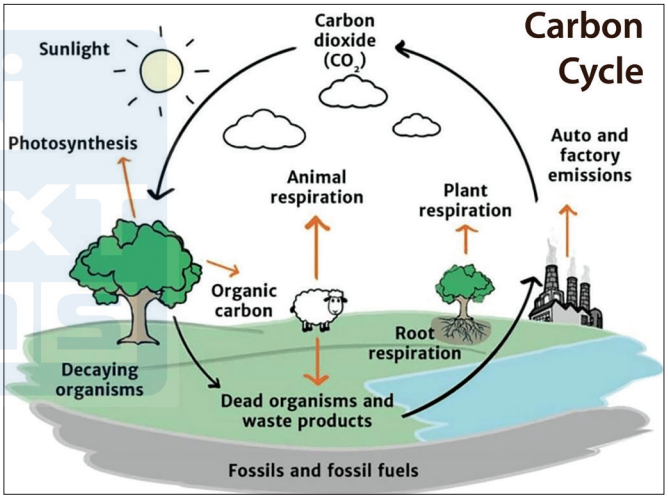
A 2026 Swedish study found that lake-rich Arctic stream networks can release more carbon into the atmosphere than they transport downstream, highlighting the role of lakes in regulating the global carbon cycle.

Understanding the Carbon Cycle

- The **carbon cycle** is the continuous exchange of carbon among the atmosphere, oceans, rocks, sediments and living organisms.
- **Major Carbon Reservoirs:**
  - **Rocks and Sediments** store the largest share of Earth's carbon.
  - **Oceans** contain substantial amounts of dissolved carbon.
  - **Terrestrial Ecosystems** store carbon in vegetation and soils.
  - The **atmosphere** contains carbon primarily as carbon dioxide (CO_2), which helps regulate Earth's temperature.

How Does Carbon Move Through the Environment?

- **Biological Processes:** Photosynthesis absorbs atmospheric CO_2, while respiration and decomposition release it.
- **Natural Processes:** Volcanic eruptions and wildfires release carbon into the atmosphere.
- **Human Activities:** Fossil fuel combustion, deforestation and other land-use changes increase atmospheric CO_2 concentrations.
- **Ocean Exchange:** Oceans absorb and release CO_2, while some carbon is stored for extended periods.



How Do Lakes Influence the Carbon Cycle?

- Lakes and streams transport carbon through **aquatic networks.** Some carbon is released into the atmosphere as CO2, while some is carried downstream or stored in sediments.
- The Swedish study highlights that **lake-rich stream networks can favour atmospheric carbon emissions over downstream carbon transport**.
- Consequently, the distribution of lakes within a drainage network can influence how carbon moves between terrestrial ecosystems, inland waters and the atmosphere.

Significance

- The findings highlight the importance of including lakes and streams in **global carbon-cycle assessments**.
- Human-driven increases in atmospheric CO_2 are already disrupting the natural carbon balance, making a better understanding of inland-water carbon emissions essential for climate research.

INDIA STRENGTHENS PREPAREDNESS FOR THE EU'S CARBON TAX

India has accelerated preparations for the European Union's Carbon Border Adjustment Mechanism (CBAM) by establishing a Committee on Export Readiness for EU CBAM.

About CBAM

- It is an EU mechanism that **imposes a carbon cost** on certain carbon-intensive imports to address **carbon leakage**. It aligns carbon costs borne by EU producers under the **EU Emissions Trading System (EU ETS).**
- **Carbon leakage** occurs when industries shift production to countries with less stringent climate policies, potentially increasing global emissions rather than reducing them.

Objectives of CBAM

- Prevent carbon leakage and promote cleaner production.
- Ensure a more level playing field between EU producers and foreign exporters.
- Complement the **EU ETS**, which puts a price on greenhouse gas emissions within the EU.

Implementation and Coverage

- **Transitional Phase** (October 2023 to December 2025): Primarily involving emissions reporting.
- **Definitive Phase (**Began on **1 January 2026):** Introduced full CBAM framework, including authorised importer requirements, emissions accounting and CBAM certificate obligations under the applicable rules.
- **Covered Sectors:** Cement, iron and steel, aluminium, fertilisers, electricity and hydrogen.
- **Key Principle:** The carbon cost under CBAM is linked to the emissions embedded in covered imports, with adjustments for eligible carbon prices already paid in the country of origin.

Concerns of Developing Countries

- **Trade Competitiveness: India** and other emerging economies, including China, have raised concerns that CBAM could increase export costs and weaken their competitiveness in the EU market.
- **Climate Equity:** Developing countries argue that the mechanism may impose **disproportionate burdens** on economies with fewer financial and technological resources for decarbonisation.
- **CBDR-RC Principle:** They emphasise **Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)** under the UN climate framework, recognising that countries have different historical responsibilities and capacities to address climate change.
- **Trade Concerns:** CBAM's compatibility with World Trade Organization (WTO) rules, particularly the principles of non-discrimination and equitable treatment.

HYENAS

A new study has found that in spotted hyenas (Crocuta crocuta), females dominate males as they have larger networks of social alliances.

About

- Hyenas belong to the family **Hyaenidae** and are mammals belonging to the **order Carnivora**.
- They are found in **Africa and parts of Asia** and are known for their scavenging behaviour.
- Hyenas have well-developed **hearing, night vision and olfactory senses**, which help them locate food and navigate their surroundings.

Species of Hyenas

Species	Regions	Characteristics	IUCN Red List status
Spotted (Crocuta crocuta)	Sub-Saharan Africa	Female-dominated social hierarchy	Least Concern
Striped (Hyaena hyaena)	Arid and semi-arid landscapes, including India.	Scavenging; Nutrient recycling; Disease regulation	Near Threatened
Brown (Parahyaena brunnea) (aka Strandwolf)	Native to arid regions and coastal deserts of Southern Africa	Rarest species of hyena;	Near Threatened
Aardwolf (Proteles cristatus)	Eastern and southern Africa	Feeds mainly on termites	Least Concern

Conservation Challenges

- Habitat loss and fragmentation, declining food availability, road mortality and human-wildlife conflict can threaten striped hyena populations.
- Misconceptions about the species may hinder conservation efforts.

TILCAYO: NEW CAT SPECIES IN BOLIVIA

Researchers have identified Leopardus tilcayo, a new species of wild cat from Bolivia's Yungas forests, part of the tropical and subtropical montane forests of the Andes.

About Tilcayo

- **Scientific name:** *Leopardus tilcayo*.

- **Common name:** Tilcayo, retaining the name used by local communities.
- **Family:** Felidae, the biological family of cats.
- **Genus:** *Leopardus*, a group of small wild cats native to the Americas.
- **Appearance:** Light brown fur with distinctive **rosette-shaped markings** across its body.
- **Size:** Diminutive wild cat; approximately **46 cm in length** and **1.4 kg in weight**, making it smaller than an average domestic cat.

HIMALAYAN GLACIERS NEAR A TIPPING POINT: THREAT OF PEAK WATER

A recent study warns that accelerating Himalayan glacier loss could push the region towards peak water by mid-century, threatening water security and increasing disaster risks.

Key Findings

- **Disaster Vulnerability:** The Himalayan region accounts for approximately **18% of India's geographical area** but experiences around **35% of the country's natural disasters**.
- **Glacier Loss:** Himalayan glaciers are reportedly losing mass **65% faster than a decade ago** (2001-10 to 2011-20).
- **Monitoring Gaps:** Only **21 glaciers** are reportedly monitored on the ground out of an estimated **40,000 glaciers** across the Hindu Kush Himalayan (HKH) region.
- **Economy:** Himalayan ecosystems and river systems underpin more than **20% of India's GDP**, highlighting their importance for water, food and economic security.

Peak Water

- **Peak water** is the point at which glacier meltwater contribution to rivers reaches its maximum before declining as glaciers lose their ice reserves.
- Initially, accelerated melting increases river flows.

Tipping Point

- It is a **critical threshold** beyond which a small additional change can trigger a large, rapid and potentially irreversible change in a system.
- **Other tipping points** are Greenland Ice Sheet; West Antarctic Ice Sheet; Atlantic Meridional Overturning Circulation (AMOC); Amazon Rainforest; Coral Reef Ecosystems; Permafrost; Boreal Forests; Monsoon Systems; and Arctic Sea Ice.

Implications for India

- **Water Security:** Declining glacier meltwater could affect the seasonal flows of Himalayan rivers, particularly during dry periods.
- **Agriculture and Energy:** Changes in river flows could threaten irrigation, hydropower generation and livelihoods.
- **Disaster Management:** Glacier retreat, glacial lake outburst floods (GLOFs), landslides and flash floods pose growing risks to Himalayan communities and infrastructure.
- **Economic Security:** Climate-related disruptions to Himalayan river systems could have cascading effects on downstream economies.

FIRST SOIL-CARBON PAYMENTS TO FARMERS IN INDIA: PROMOTING REGENERATIVE AGRICULTURE

India has initiated its first reported soil-carbon payments to over 2,500 farmers in Punjab and Haryana, incentivising regenerative farming through carbon-credit revenues.

Regenerative Agriculture

- It is an agricultural approach that prioritises soil health, biodiversity and natural ecosystem processes while maintaining agricultural productivity.
- It helps in carbon sequestration, supports biodiversity and ecosystem services, and improves water management.

Carbon Credits Linked to Regenerative Farming

- **Aadi Farmer Carbon Programme** currently covers **more than two million acres** and **over 100,000 farmers across seven states** and has issued agricultural carbon credits under the **Verra VM0042** methodology.
  - This programme was launched by **Grow Indigo in 2019**, with technical guidance from ICAR.
  - The first reported soil-carbon payments covered more than 2,500 farmers in **Punjab and Haryana**.
- **Adopted Practices (2019–2022):**
  - **Direct Seeded Rice (DSR):** Rice is sown directly into the field instead of being transplanted from a nursery, potentially reducing water use and methane emissions.
  - **Reduced Tillage:** Minimising soil disturbance to help preserve soil structure and organic carbon.
  - **Crop Residue Management:** Managing crop residues to reduce open-field burning and associated air pollution and greenhouse gas emissions.

About Soil-Carbon Payments

- Financial payments to farmers for adopting agricultural practices that increase soil carbon sequestration or reduce greenhouse gas emissions.
- A **carbon credit** generally represents **one metric tonne of carbon dioxide equivalent (tCO_2e)** reduced or removed, subject to the applicable carbon-crediting programme's rules.

- Agricultural climate benefits need to be **quantified, documented** and independently **verified** in accordance with the relevant methodology before credits can be issued.

Significance of Soil-Carbon Payments

- **Economic:** Additional farm income; incentivising sustainable farming; and diversification of rural livelihoods.
- **Environmental**: Climate-change mitigation; reduced stubble burning; water conservation; and soil restoration.
- **Agricultural:** Long-term soil health; climate resilience; and sustainable intensification.

HIMALAYAN MONAL

It has been found that the Himalayan monal changes its sounds according to the surrounding noise level.

About

- It is a striking landfowl found across the Himalayan mountains, including in Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim.
- It is the **state bird of Uttarakhand**.
- IUCN Red List Status: **Least Concern**

PROJECT CHEETAH: REINTRODUCTION AND EMERGING SOCIAL BEHAVIOUR

Wildlife officials at Kuno National Park highlight the emergence of natural social behaviour of two unrelated male cheetahs after four years of Project Cheetah.

What is Project Cheetah (2022)?

- It was launched under the Ministry of Environment, Forest and Climate Change (MoEFCC), with the **National Tiger Conservation Authority (NTCA)** playing a key implementation role.
- It aims to **reintroduce cheetahs** into India, restore their ecological role in grassland and open-forest ecosystems, and establish a viable, free-ranging population.
  - In **1952,** cheetah was officially declared **extinct**.

Phased Translocation

- **2022:** Eight cheetahs were brought from Namibia to Kuno National Park.
- **2023:** A further 12 cheetahs arrived from South Africa.
- **Expansion of Programme:** In 2025, two male cheetahs were translocated from Kuno National Park to **Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh**, establishing a **second cheetah conservation site** under the programme.
- Kuno National Park was selected because of its suitable habitat, prey availability, relatively low human disturbance, and conservation potential.

Current Population of Cheetahs

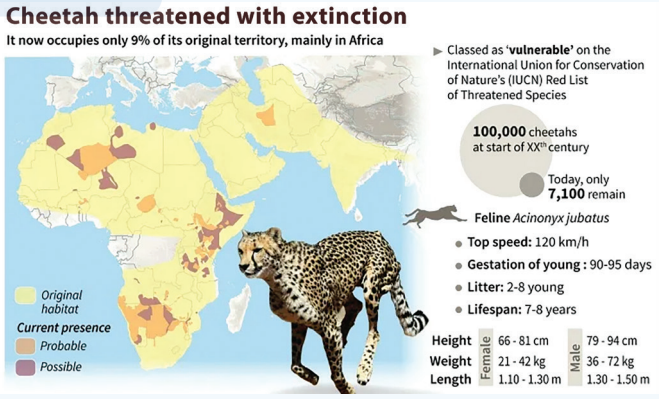
- Currently, the population is **52 cheetahs**, comprising **49 in Kuno National Park** and **3 in Gandhi Sagar Wildlife Sanctuary**.
- Of these, **32** were born in India, while **17 of the 49 cheetahs** at Kuno are currently living in the wild, and the rest remain in soft-release enclosures.

Kuno National Park

- Situated in the **Vindhyan region** of Madhya Pradesh, in central India.
- It was established as a wildlife sanctuary in **1981** and subsequently notified as a national park in **2018**.
- The **Kuno River** flows through the park.

Cheetah *(Acinonyx jubatus)*: Key Facts

- It is primarily associated with open habitats, including grasslands, savannas and open woodlands.
- It helps regulate prey populations and contributes to ecosystem functioning.
- **Distribution:**
  - **Historical Range:** Extensive areas of Africa and parts of Asia, including the Indian subcontinent.
  - **Present Distribution:** Eastern and southern Africa.
  - **Range Contraction:** Only a small fraction of their historical range (approximately 9%).
  - **Regional Extinctions:** From several countries across Africa and Asia, including Jordan, Iraq, Israel, Morocco, Syria, Oman, Tunisia, Saudi Arabia, Djibouti, Ghana, Nigeria, Kazakhstan, Pakistan and Afghanistan.



Conservation Status

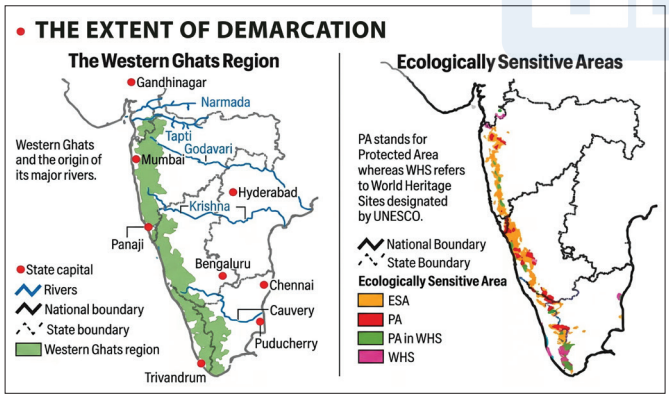
- **IUCN Red List: Vulnerable** at the global species level.
- **Asiatic Cheetah:** The Asiatic population is **critically endangered** and survives in Iran.
- **India:**
  - The cheetah is a reintroduced species, not a naturally surviving wild population.
  - The Indian population is being established through conservation translocation.

KASTURIRANGAN COMMITTEE REPORT ON CONSERVATION OF THE WESTERN GHATS

Karnataka Assembly passes resolution rejecting Kasturirangan Committee report on Western Ghats conservation in present form. Keralam has also proposed reducing the Western Ghats ESA, seeking to exclude populated areas, agricultural land and plantations.

Kasturirangan Committee Report

- The **High-Level Working Group (HLWG)** chaired by **Dr K Kasturirangan** was constituted in **2012** to examine the recommendations of the **Gadgil Committee** on the conservation of the Western Ghats.
- It differentiated between **Cultural Landscape (60%) and Natural Landscape (40%)**.
- It recommended designating **37%** of the Western Ghats, covering approximately **59,940 sq. km**, as an **Ecologically Sensitive Area (ESA).**
- It focused more on development balance and economic activities.
  - It emphasised regulating development in identified sensitive areas while allowing more flexibility in other regions.
  - It recognised the importance of sustainable livelihoods, but with less emphasis on forest rights.
- It argued for **strengthening the existing framework** of environmental clearances and setting up of a **state-of-the-art monitoring agency.**



Concerns and Issues

- **Around 20,668 sq. km** of Karnataka's Western Ghats region has been identified for ESA-related restrictions.
- Karnataka argues that the proposed boundaries could bring **agricultural and privately occupied areas within the regulatory framework,** creating uncertainty for farmers and residents.
- Farmers have demanded the **rejection of the Kasturirangan recommendations**, constitution of a new committee and adoption of an alternative approach **similar to the Kerala model**.

Madhav Gadgil Committee Report

- **Ecologically Sensitive Zones (ESZ):** The report recommended classifying **64%** of the Western Ghats into ESZ called ESZ-1, ESZ-2 and ESZ-3.
- It recommended designating the entire region as an Ecologically Sensitive Area (ESA).
- Almost all developmental activities like mining, construction of thermal power plants, and dams were to stop along with the decommissioning of similar projects that have completed their shelf life in ESZ-1.
- **Western Ghats Ecology Authority**: Under the **Environment (Protection) Act, 1986,** a professional body to manage the ecology of the region and to ensure its sustainable development was recommended by the committee.
- **Ban on Growing Single Commercial Crops:** Crops like tea, coffee, cardamom, rubber, banana and pineapple, which have led to 'fragmentation of forest, soil erosion, degradation of river ecosystems and toxic contamination of the environment' should be curtailed.
- **Community Participation:** The panel had urged the MoEF to take critical steps to involve citizens, including proactive and sympathetic implementation of the provisions of the **Community Forest Resources** of the **Forest Rights Act.**

Western Ghat

- The **Western Ghats** stretch **almost 1,600 km** along India's western coast **across six states** i.e. Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
  - About 60% of the mountain range is in Karnataka.
- It holds vital importance for the **regulation of Indian Monsoon**, climatic regulation, soil conservation and providing water security to millions of people.
- Western Ghats were accorded the **World Heritage Status by UNESCO** in **2012.**

Other Designated ESAs in India

- Kumbhalgarh Wildlife Sanctuary in Rajasthan (Aravalli Range)
- Kaziranga-Karbi Anglong landscape, Assam
- Gir National Park, Gujarat
- Ranthambore Tiger Reserve, Rajasthan
- Sundarbans, West Bengal
- Great Indian Bustard habitats in Rajasthan and Gujarat
- Bhagirathi Eco-Sensitive Zone, Uttarakhand
- Chilika Lake, Odisha, and Deepor Beel, Assam

KHAIR TREE

The khair tree has become a part of an alleged Rs 120 crore interstate smuggling network in the forests of Western Odisha.

About Khair Tree (Acacia catechu)

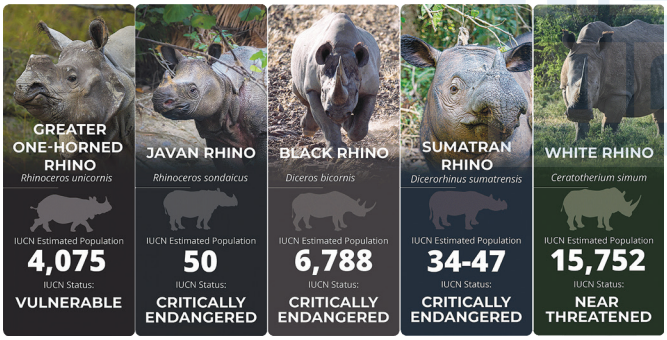
- It belongs to the *Fabaceae family,* which includes several **nitrogen-fixing species** known for improving soil fertility.
- It is a **native tree species** found across the **Indian subcontinent.**
- Khair has long been valued for its **durability, medicinal properties,** and its role in traditional industries.
- **Katha, the catechu extract** made from the **heartwood of the Khair tree,** is commonly used in paan and is a staple of paan shops across India.

WORLD RHINO DAY

The World Rhino Day is celebrated globally on September 22 every year to raise awareness on the conservation of rhinoceros species.

About

- The day was first proposed by **WWF-South Africa in 2010** and observed internationally since 2011, and now coordinated largely by the **International Rhino Foundation (IRF).**
- **Theme (2026): 'Keep the Five Alive'.**
- The global rhino population across **all five species stands** at roughly 26,700, and four of the five species remain **threatened with extinction (IRF's 2026 Report).**
- The **four globally** threatened species include Greater One-Horned (Vulnerable), Black, Javan and Sumatran (Critically Endangered).



Greater One-Horned Rhinoceros (Rhinoceros unicornis)

- Indian Rhino is a **single-horned rhino** (unlike African rhinos, which have two), with thick, folded skin that gives it an almost armour-plated look.
- It's the **largest of the Asian rhino species**, and unlike its Javan and Sumatran.
- It nearly went extinct in the early 1900s due to habitat loss, hunting, and human-rhino conflicts.
- **Assam (Kaziranga, Manas, Pobitora, Orang) is home** to 3,260 one-horned rhinoceroses, which account for around **80% of its global population.**
- **Protection Measures:**
  - **IUCN Status:** Vulnerable
  - Wildlife Protection Act (WPA), 1972: Schedule I
  - Kaziranga became a **National Park in 1974,** later **Tiger Reserve (2006)** and a **UNESCO World Heritage Site (1985)**.
- **Indian Rhino Vision 2020 (IRV 2020):**
  - It was launched in 2005 to increase Assam's rhino population to 3,000 and spread them across at least seven protected areas.
  - **IRV 2.0, 2021** was launched as a **follow-up initiative** to conserve 4,500–5,000 rhinos across protected areas **by 2030.**

NET ZERO PORTAL AND NAPCC DASHBOARD

On the occasion of World Ozone Day 2026, two digital initiatives i.e. India's Net Zero Portal and the National Action Plan on Climate Change (NAPCC) Dashboard were launched.

Net Zero Portal

- It is a **centralised digital platform** for **voluntary registration** and disclosure of Net Zero commitments by Indian entities.
- Participating entities can disclose their **greenhouse gas (GHG) emissions**, declare Net Zero targets and provide annual progress updates.
- Entities are encouraged to report Scope 1 and Scope 2 emissions, while reporting of Scope 3 emissions remains voluntary.
- **Scope 1, 2, and 3 emissions** are GHGs that are released across an organization's entire value chain.
  - Scope 3 emissions are the most complex, as they are released before and after a product is delivered or consumed.

NAPCC Dashboard

- The NAPCC, launched in 2008, is India's comprehensive framework for addressing climate change and comprises eight core missions.
- It provides a consolidated digital view of implementation and progress across the National Missions under the NAPCC.
- It aims to strengthen inter-ministerial coordination, support evidence-based assessment of national climate actions, help assess sectoral progress, identify implementation gaps and consolidate relevant inputs.

Do You Know?

- **India's NDC for 2031-2035:** It enhances the country's ambition under the UNFCCC and its Paris Agreement.
  - It helps in achieving the goal of net-zero by 2070.
- India's original climate commitments, i.e., the NDC submitted in 2015, laid a strong foundation, with targets by 2030 of **33–35% reduction in the emissions intensity of GDP** and a **40% share of non-fossil-based** electric power installed capacity.
- Emissions intensity has since been reduced by **36% during 2005 to 2020, and the target has now been enhanced to 47%** to be achieved by 2035.

GREEN HIGHWAYS

As road infrastructure expands in India, the focus is shifting towards building corridors that are efficient, resilient and environmentally sustainable.

About

- India's green highway approach is transforming road infrastructure through plantation, climate-resilient design and resource-efficient construction.
- More than **3.61 crore saplings** have been planted across approximately **1.32 lakh km of National Highways** over the last five years.
- Green practices are shaping highway development from **Miyawaki forests** to **recycled construction materials** and indigenous **bio-bitumen technology.**
- **Satellite-based monitoring** through the **National Highways Green Cover Index** is strengthening scientific assessment of green cover.
  - The **National Highways Green Cover Index 2025–26** report prepared in collaboration with the **National Remote Sensing Centre (NRSC) of ISRO.**
  - It provides **India's first** scientific and quantitative assessment of green cover within the **Right of Way (RoW)** along National Highways.
- Community initiatives and **pollinator corridors** are adding a wider ecological dimension.
- Plantation activities are undertaken by Self Help Groups, private agencies, State Forest Departments, Forest Corporations and contractors, according to the scope of sanctioned works.

Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy, 2015

- It aims to promote greening of Highway corridors with participation of the community, farmers, private sector, NGOs, and government institutions.
- **1% of** highways projects for the highway plantation and maintenance of highways.
- Strong monitoring mechanism by **ISRO's Bhuvan and GAGAN satellite** systems.
- It helps in making India pollution free, curtailing the number of road accidents, and providing dignified employment to local people and communities.
- It helps in achieving the vision of **National Forest Policy (1988)** that envisages a minimum **one-third (33%)** of the geographical area *under forest and tree cover* which is currently at about 25.17 % *(India State of Forest Report 2023).*

e-METHANOL PRODUCTION FACILITY IN KANDLA, GUJARAT

India's first port-based e-methanol production facility is being built at the Deendayal Port Authority (DPA) in Kandla, Gujarat.

About e-Methanol

- It is the **same product as methanol** (wood alcohol), which is already used as a fuel in combustion engines and as a raw material in the chemical industry.
- It is a green alternative (**'green' or 'e-methanol'**) because it is **produced using renewable energy and biogenic CO_2** captured from biogas plants and waste incineration.
  - It is produced by combining green hydrogen with captured carbon dioxide.
  - It has a **closed carbon cycle**, as it only emits the carbon dioxide (CO_2) it captures during production.

Significance

- **Shipping Decarbonisation:**
  - According to IMO, global shipping currently accounts for around 3% of global CO2 emissions, and demands a 20% reduction in shipping emissions by 2030, escalating to 70-80% by 2040.
  - IMO has set a **goal of net-zero emissions** from international shipping by or around 2050.
- **Chemical Feedstock:** E-methanol serves as a **drop-in, sustainable chemical feedstock** that replaces fossil-derived methanol in the production of everyday materials and industrial goods.

For India

- e-Methanol Production Facility in Kandla positions it as an exporter of green fuel to global shipping.
- It supports the **Net Zero by 2070** commitment and the Atmanirbhar Bharat mission.
- It fits the National Green Hydrogen Mission, the Green Tug Transition Programme and the Maritime Amrit Kaal Vision 2047.

COOL LEADERS AWARD

Cool Leaders Award, a new initiative led by UNEP was launched during the Global Cooling Pledge Assembly held in Singapore.

About

- The **'Cool Leaders' award** is a global recognition initiative launched by the **UNEP Cool Coalition.**
- It aims to recognise leadership and encourage action towards reducing the environmental impact of cooling, particularly amid rising global temperatures.

Key Focus Areas

- **Sustainable Cooling:** Promote energy-efficient and climate-friendly cooling technologies.
- **Nature-Based Solutions:** Encourage urban greening, tree planting and other nature-based approaches to reduce heat.
- **Climate Action:** Support implementation of the *Global Cooling Pledge* and advance sustainable cooling strategies.
- **Environmental Benefits:** Reduce greenhouse-gas emissions, energy consumption and urban heat.

First Cool Leaders

- **Singapore:** For leadership in passive cooling and heat resilience.
- **United Arab Emirates:** For leadership in district cooling and advancing cooling in global climate and development policy.
- **Dong Mingzhu, Chairwoman of Gree Electric Appliances:** For spearheading the development of ultra-efficient, low-carbon cooling technologies.

Do You Know?

UNEP Cool Coalition

- It was launched as a flagship initiative in **2019.**
- It is a global platform driving system-level change on **sustainable cooling.**
- It aims to deliver efficient, climate-friendly cooling solutions aligned with the **Paris Agreement, the Kigali Amendment, and the 2030 Agenda.**

Global Cooling Pledge

- It was launched at **COP28 in 2023** and is the **world's first collective global commitment** to reduce the climate impact of cooling while expanding access to sustainable cooling.



Orangutan

A gentle giant of the forests

The Odisha Forest Department rescued five young orangutans after they were found abandoned in a casuarina plantation in the Udayapur-Talsari forest area of Balasore district.



About Orangutan

Characteristics

- Orangutans are the **largest arboreal mammal**, spending most of their time in trees.
- They are a close living relatives of humans and they share over 90% of Human genes and are highly intelligent creatures.

Species

There are three species of Orangutan – the Bornean, Sumatran and Tapanuli – which differ a little in appearance and behavior.

Eating Habits

Orangutans mainly eat fruits, such as mangoes, lychees and figs, but they also feed on young leaves, flowers, insects, and even small mammals.

Habitat Threats

- Sourced forest lost / fragementation
- Killing and illegal wildlife trade

Habitat and Distribution

- They can occur up to **1,500m** above sea level, most are found in lowland areas and prefer forests in river valleys or floodplains.
- These great apes are only found in the wild on the islands of **Borneo** and **Sumatra.**

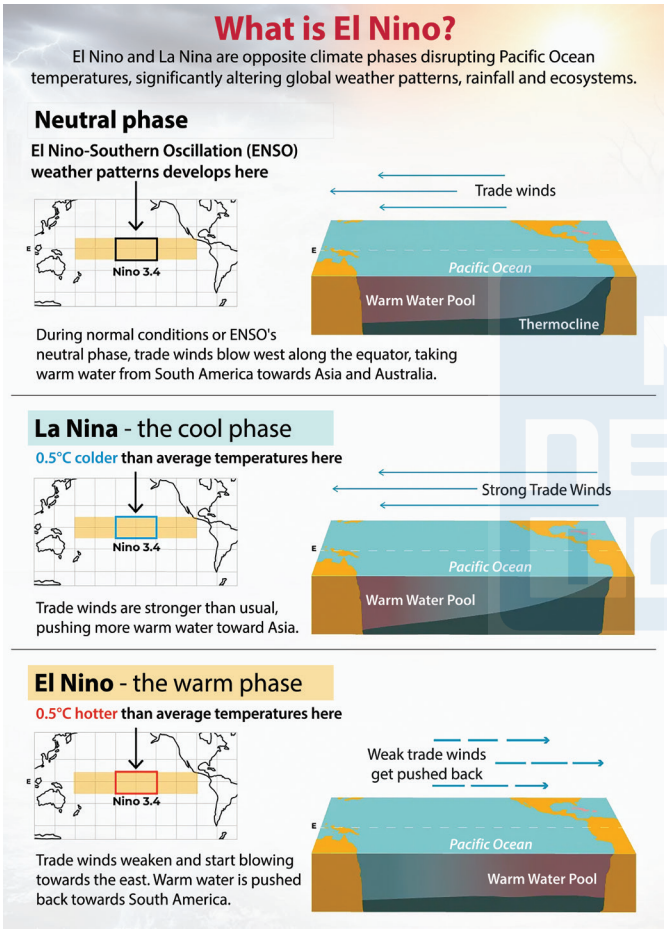
IUCN Status

All three orangutan species are **critically endangered.**

5 GEOGRAPHY

EL NIÑO

El Niño is set to intensify to exceptional levels in the coming months and persist into early 2027, the World Meteorological Organization (WMO) has warned, raising the risk of extreme heat, droughts and floods across the globe.



PORT OF ANTWERP-BRUGES (BELGIUM)

During the India-Belgium dialogue on the proposed India-EU Free Trade Agreement (FTA), the Belgian Prime Minister projected the Port of Antwerp-Bruges as India's gateway to the European market.

About the Port

- **Port of Antwerp-Bruges** is **Europe's second-largest seaport**, operating through the ports of **Antwerp** and **Zeebrugge**.
- The **Port of Antwerp** is located on the **tidal Scheldt River**, making it one of the world's largest inland seaports, while **Zeebrugge** serves as its major **deep-sea gateway** on the **North Sea**.
- It is a major global logistics hub and is expected to strengthen India–Europe trade in **diamonds, pharmaceuticals, food processing, maritime services, green hydrogen** and **infrastructure**.
- **India–Belgium bilateral merchandise trade** stood at about **USD 13.08 billion** in **FY 2025–26**.

Belgium

- Located in **Western Europe**, with a coastline along the **North Sea**.
- Belgium shares borders with France, Germany, Luxembourg, and **the Netherlands**.
- **Capital: Brussels**, headquarters of the **European Union (EU)** and **NATO**.
- **Currency: Euro (€)**.
- Member of the **Benelux Economic Union**, **EU** and **NATO**.



Significance for India

- Can serve as India's **logistics gateway** to the **European Single Market** under the proposed **India–EU FTA**.
- **Antwerp** is one of the world's leading **diamond trading centres**, complementing India's **diamond hubs in Mumbai and Surat**.
- Belgium's strategic location strengthens connectivity with major European economies and global shipping routes.

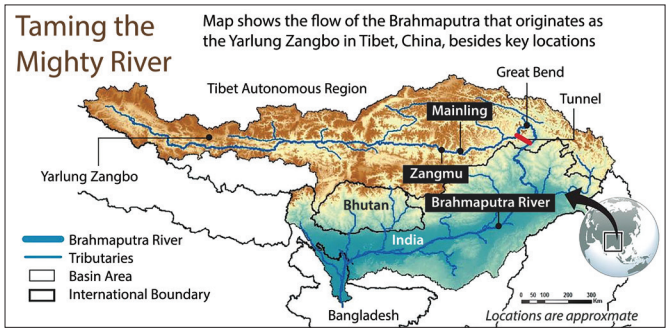
CHINA'S YARLUNG ZANGBO MEGA-DAM

A glacial collapse and flash floods near the Nepal-China border have renewed concerns over the downstream impacts of China's Yarlung Zangbo Mega-Dam, particularly for India and Bangladesh.

About

- The project is being developed by **China** in **Medog (Motuo) County** of the **Tibet Autonomous Region**, near the **Great Bend** of the **Yarlung Zangbo**, where the river turns sharply towards India.

- It is planned as a **run-of-the-river hydropower project**, but reportedly includes **cascade hydropower stations** and associated infrastructure that may influence downstream flows.
- **Installed Capacity:** 60 GW.
- **Annual Generation:** About 300 billion kWh.
- It is expected to generate **over three times** the electricity produced by the **Three Gorges Dam**.



Yarlung Zangbo (Brahmaputra) River

- Originates from the **Chemayungdung Glacier** in **Tibet**.
- It is known as the **Siang** in **Arunachal Pradesh** and the **Brahmaputra** after joining the **Dibang** and **Lohit** rivers in **Assam**.
- It enters **Bangladesh** as the **Jamuna** before draining into the **Bay of Bengal**.
- The basin covers about **5.8 lakh sq km**, shared by **China (50.5%)**, **India (33.3%)**, **Bangladesh (8.1%)** and **Bhutan (7.8%)**.

Key Concerns

- **Ecological Risks:**
  - Located in a **highly seismic Himalayan region**, increasing earthquake-related risks.
  - **Climate change**, **glacial retreat** and **GLOFs** can amplify cascading disasters.
  - The **Yarlung Tsangpo Grand Canyon**, one of the world's deepest gorges and a global biodiversity hotspot, may face ecological degradation.
  - Changes in **sediment transport** may affect downstream floodplains, agriculture and river morphology.
- **Strategic and Geopolitical Risks:**
  - As the **upper riparian**, China can influence the **timing, quantity and predictability** of downstream flows.
  - The project is located close to the **India-China border**, adding strategic significance.
  - The **Brahmaputra** is vital for **Arunachal Pradesh, Assam and Bangladesh**.
  - **India and China do not have a binding water-sharing treaty** on the Brahmaputra.

India-China Cooperation

- **Expert Level Mechanism (2006):** Dialogue on transboundary rivers and flood-season data.
- **Brahmaputra data-sharing arrangement:** Covers **June-October** data from **three Tibetan stations**. It expired in **2023** and renewal remains under discussion.
- **Sutlej data-sharing arrangement:** Covers **June-October** data. It expired in **2020**.
- **Umbrella MoU (2013):** Provides the broader framework for hydrological cooperation and expanded data sharing.

BAKHIRA LAKE

A recent study reconstructed Indian Summer Monsoon (ISM) variability over the last 25,000 years using sediments from Bakhira Lake, Uttar Pradesh.

About

- Located in the **Ghaghara-Rapti alluvial system** in **Uttar Pradesh**.
- A **perennial oxbow (floodplain) wetland** formed by the migration and subsequent cut-off of the **Rapti River**.
- One of the **largest wetlands** in Uttar Pradesh.
- It was designated as a **Ramsar Site** in **2022**.
- Its **floodplain-lacustrine** setting preserves sediments, making it highly sensitive to changes in **monsoon-driven runoff, weathering, erosion and sediment transport**.
- It is an important **wintering and breeding habitat** for migratory and resident **waterfowl**.

Latest Findings

- Analysed **magnetic minerals, grain size, geochemical and clay-mineral records** from lake sediments.
- Identified major climatic phases including the **Last Glacial Maximum, Heinrich Stadial 1, Bølling–Allerød, Younger Dryas, Holocene Climatic Optimum** and **late-Holocene droughts**.
- Findings will improve **climate models**, **water-resource planning** and **agricultural management** in the monsoon-dependent region.

Oxbow Lake

- Formed when a **meandering river cuts off a meander loop**, creating a **crescent-shaped** water body.
- Common in **floodplains**, generally **shallow**, **nutrient-rich**, and gradually **silt up** over time.

HANGING GLACIERS

A 2026 study identified 219 hanging glaciers in the Alaknanda Basin of the Garhwal Himalayas, highlighting the growing risk of glacier collapse due to rising temperatures and changing precipitation patterns.

About

- **Hanging glaciers** are **ice masses perched on steep mountain slopes**, often detached from the main glacier system.
- They become unstable due to **rapid warming, glacier retreat, climate variability, and geometric changes** in glacier structure.

- Unlike valley glaciers, they are highly prone to **sudden break-offs**, triggering **ice and rock avalanches**.
- While extensively studied in the **Alps**, **basin-scale assessments in the Himalayas** remain limited because of difficult terrain and inadequate monitoring.
- The recent study identified **219 hanging glaciers** in the **Alaknanda Basin**, indicating increasing glacier instability in the **Garhwal Himalayas**.

Major Hazards

- **Ice Avalanches:** Sudden glacier collapse can generate large **ice and rock avalanches**.
- **Glacial Lake Outburst Floods (GLOFs):** Glacier break-offs may trigger **secondary GLOFs**, causing destructive downstream flooding.
- **Cascading Hazards:** Collapses can mobilise **rocks, snow and sediments**, leading to **debris flows, river blockages and flash floods**.
- **Infrastructure Risk:** Hydropower projects, roads, bridges, settlements and pilgrimage routes in Himalayan valleys remain highly vulnerable.
- **High-Risk Areas:** Simulations indicate avalanche flows in the **Badrinath–Mana sector of Uttarakhand** could exceed **50 metres** in height.

Significance

- Monitoring **hanging glaciers** is essential for **early warning systems, disaster preparedness, climate adaptation and infrastructure planning** in the Himalayan region.

RAPID CONTRACTION OF MERCURY

A recent study published in Geophysical Research Letters suggests that Mercury has contracted by up to 23 km in diameter, about 30% more than earlier estimates, based on NASA's MESSENGER mission data.

About

- **Mercury has an unusually large iron-rich core**, accounting for about **85% of the planet's radius**.
- As the **core, mantle and crust gradually cool**, they contract, reducing the planet's overall size.
- This contraction creates **compressional landforms** such as **wrinkle ridges** and **thrust faults**.
- The study found that **impact debris buried many contraction features**, causing earlier estimates to underestimate the extent of shrinkage.

About Mercury

- **Closest planet to the Sun** and the **smallest planet** in the Solar System.
- **Radius:** About **2,440 km**, slightly larger than Earth's Moon.
- **Second-densest planet**, after Earth.
- **Fastest orbiting planet**, completing one revolution around the Sun in **88 Earth days**.
- **Rotation period:** 59 Earth days.
- **Surface temperature:** About **430°C** during the day and **–180°C** at night due to its extremely thin atmosphere.
- No natural satellites or ring system.

BepiColombo Mission

- **Joint mission** of the **European Space Agency (ESA)** and the **Japan Aerospace Exploration Agency (JAXA)**.
- **Launched in 2018** to study Mercury's **interior, surface, magnetic field and exosphere**.
- Comprises **Mercury Planetary Orbiter (MPO)** and **Mercury Magnetospheric Orbiter (Mio)**.
- Will help confirm Mercury's **actual contraction** using advanced scientific instruments, including laser-based measurements.
- **Mariner 10** and **MESSENGER** are the only previous spacecraft to have explored Mercury.

LIPULEKH PASS

The centuries-old trade route between India and Tibet through Lipulekh Pass has resumed after China cleared cross-border trade, with an Indian delegation entering Taklakot (Tibet Autonomous Region).

About

- A **high-altitude Himalayan pass** located in **Pithoragarh district**, **Uttarakhand**, in the **Kumaon region**.
- Situated at an altitude of about **5,334 m (17,500 ft)**.
- Located **near the India–Nepal–China tri-junction** and links **Uttarakhand** with the **Tibet Autonomous Region** of China.
- Became the **first trade post for India and China that was** reopened in **1992**. **Shipki La (1994)** and **Nathu La (2006)** were opened subsequently.
- It is one of the **official routes for the Kailash Mansarovar Yatra**.
- Supports the livelihoods of **Bhotiya** border communities through traditional cross-border trade.

MAYUN (PERIM) ISLAND

Iran-backed Houthi rebels recently captured Mayun (Perim) Island in the Bab el-Mandeb Strait.

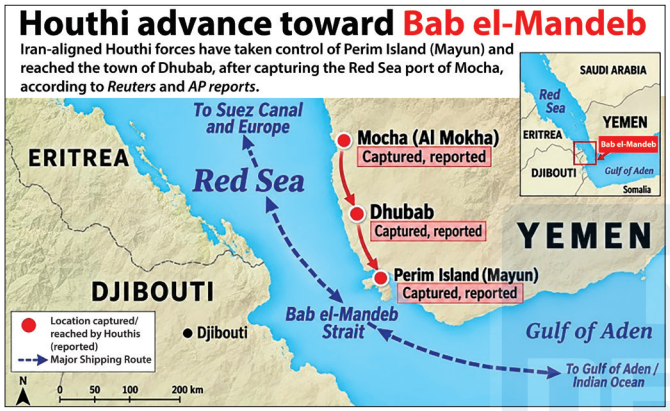
About

- A **small volcanic island** belonging to **Yemen**, located about **3.5 km off Yemen's western coast** at the **southern entrance of the Red Sea**.
- Situated in the **Bab el-Mandeb Strait**, between **Yemen** and the **Horn of Africa (Djibouti and Eritrea)**.
- Covers about **13 sq km** and rises to approximately **65 m** above sea level.
- **Divides the Bab el-Mandeb Strait into two navigation channels** and overlooks the **eastern channel**.
- It has a **deep natural harbour** on its southwestern side and a **military airfield** in the north.

- The British occupied it in 1857 and established a coaling station there. It became part of **independent South Yemen** in **1967**.

Strategic Importance

- Commands a key position on the **Bab el-Mandeb Strait**, linking the **Red Sea** with the **Gulf of Aden**.
- Lies on the **Suez Canal-Red Sea maritime corridor**, a major route connecting **Europe and Asia**. Its strategic value increased after the opening of the **Suez Canal**.
- Its importance has further grown amid **Red Sea shipping disruptions** and tensions around the **Strait of Hormuz**, making it critical for global trade and energy security.



SOHAR PORT (OMAN)

Amid disruptions around the Strait of Hormuz due to regional tensions, Oman has invited India to invest in Sohar Port as a secure gateway for trade, energy supplies and logistics to the Gulf region.

About

- **Sohar Port** is a **deep-sea commercial port and integrated industrial free zone** located at **Liwa (Al Batinah North Governorate), northern Oman**, on the **Gulf of Oman**, midway between **Muscat** and **Dubai**.
- It is managed by the **Sohar Industrial Port Company (SIPC)**, a **50:50 joint venture** between the **Government of Oman** and the **Port of Rotterdam**.
- Conceived in **1995**, the port was developed under **Royal Decree No. 80/2002** and expanded with a **4,500-hectare Free Zone** in **2010**.
- It is located **outside the Strait of Hormuz**, providing direct access to **international Sea Lines of Communication (SLOCs)** without entering the Persian Gulf.
- It handles **over 1 million tonnes of cargo weekly** and around **3,500 vessel calls annually**, with cumulative investments exceeding **US$27 billion**.
- It has **deep-draft berths** capable of handling **Valemax-class Very Large Ore Carriers (VLOCs)** and hosts major **logistics, petrochemical, metals and food-processing** industries.

Strategic Significance

- Provides **India** with a resilient alternative for **energy imports** and merchandise trade during disruptions in the **Strait of Hormuz**.
- Offers an advantage over **Duqm** due to its proximity to **UAE** and **eastern Saudi Arabian energy infrastructure**.
- Strengthens the **India-Middle East-Europe Economic Corridor (IMEC)** and India's logistics footprint in the Gulf region.



Gulf of Oman

- It is the **northwestern arm of the Arabian Sea**, lying between **Oman** and **Iran**.
- It forms the **maritime link between the Arabian Sea and the Persian Gulf** through the **Strait of Hormuz**.
- Important ports include **Sohar, Muscat and Sur (Oman)**, and **Jask** and **Bandar Beheshti (Iran)**.

REPUBLIC OF NAOERO (FORMERLY NAURU)

At the UN General Assembly, President David Adeang announced that Nauru will officially be known as the Republic of Naoero, restoring its ancestral name, language and cultural identity. The country's international code and demonym will also change.

About

- **Republic of Naoero** is an **island republic** in **southeastern Micronesia** in the **southwestern Pacific Ocean**, about **40 km south of the Equator**.
- It is a **raised coral island** covering **21 sq. km.**. It is the **world's smallest independent republic** and the **third-smallest country**, after **Vatican City** and **Monaco**.
- It lies about **1,300 km northeast of the Solomon Islands**. Its nearest neighbour is **Banaba, Kiribati**.
- It became **independent in 1968** after administration by **Germany, Australia, New Zealand** and the **United Kingdom**.
- It has **about 12,000 people**, **no rivers**, and **no official capital**. **Government offices** are located in **Yaren**.

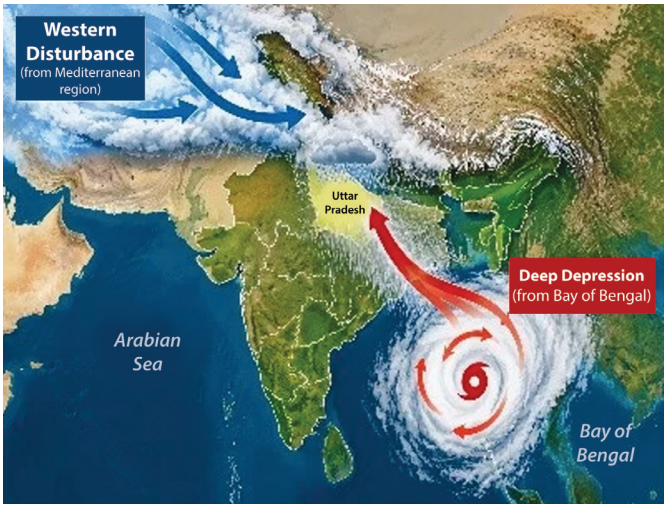
- **National language:** Naoero.
- **Currency:** Australian Dollar.
- **Recent Changes:** Country name **Nauru → Naoero**; international code **NRU → NRO**; demonym **Nauruan → dei-Naoero**.

INTERACTION OF TWO WEATHER SYSTEMS

The interaction between a deep depression from the Bay of Bengal and a Western Disturbance triggered exceptionally heavy rainfall across Uttar Pradesh, leading to floods, casualties and widespread damage during the southwest monsoon withdrawal phase.

About

- **Deep Depression:** It is an **intense low-pressure system** that forms over warm ocean waters.
  - The recent system originated over the **Bay of Bengal**, crossed the **North Andhra Pradesh-South Odisha coast**, and later weakened over central India.
  - **Warm, moist air** converges towards the low-pressure centre, rises, cools and condenses, producing **heavy rainfall**.
  - Rainfall intensity depends on **moisture availability, atmospheric instability, wind convergence** and **speed of movement**.
- **Western Disturbance (WD):** It is an **eastward-moving extra-tropical cyclone** originating beyond **Afghanistan and Iran**.
  - It derives moisture mainly from the **Mediterranean Sea**, and also from the **Black Sea, Caspian Sea and Arabian Sea**.
  - It is transported by the **Subtropical Westerly Jet Stream** and produces **rain and thunderstorms** over **north and northwest India** after interacting with the Himalayas.
- **Importance of the Interaction:** The convergence of a **tropical system (deep depression)** and an **extra-tropical system (WD)** greatly enhances **moisture supply, atmospheric instability and vertical uplift**.
  - Such interaction can produce **very heavy to extremely heavy rainfall**, especially during the **monsoon withdrawal period**.



Reasons for Terai Region to be Flood-Prone

- **Terai** is a **low-lying marshy belt** along the **Himalayan foothills** across **Uttar Pradesh, Bihar and adjoining regions**.
- **Flat terrain**, **high groundwater table** and **proximity to Himalayan rivers** make it highly vulnerable to **waterlogging and floods**.
- High river discharge often blocks local drainage, worsening flood conditions after intense rainfall.

KOSOVO

Former Kosovo President Hashim Thaçi has been sentenced to 25 years' imprisonment by the Kosovo Specialist Chambers (KSC), an EU-backed court seated at The Hague (Netherlands), after being convicted of war crimes.

About

- **Kosovo** is a **partially recognised, self-declared independent**, **landlocked** country in the **central Balkans** of **Europe**. It declared independence from **Serbia** on **17 February 2008**.
- It is bordered by **Serbia, North Macedonia, Albania** and **Montenegro**.
- **Capital and largest city: Pristina**.
- It has a **mostly continental climate** and **no direct sea access**. It reaches the **Adriatic Sea** through **Albania** or **Montenegro**.



- Major physical features include the **Sharr Mountains**, **Kopaonik Mountains**, **Albanian Alps**, **Kosovo Plain** and **Dukagjin Plain**.
- **Sitnica River** (a tributary of the **Ibar**) drains the **Kosovo Plain**, while the **White Drin** drains the **Dukagjin Plain**.
- **Highest point:** Mount Gjeravica.
- **Exam Note:** Serbia continues to claim Kosovo as part of its sovereign territory, and India does not recognise Kosovo as an independent country.

6 INTERNAL SECURITY

JHIRAM GHATI ATTACK

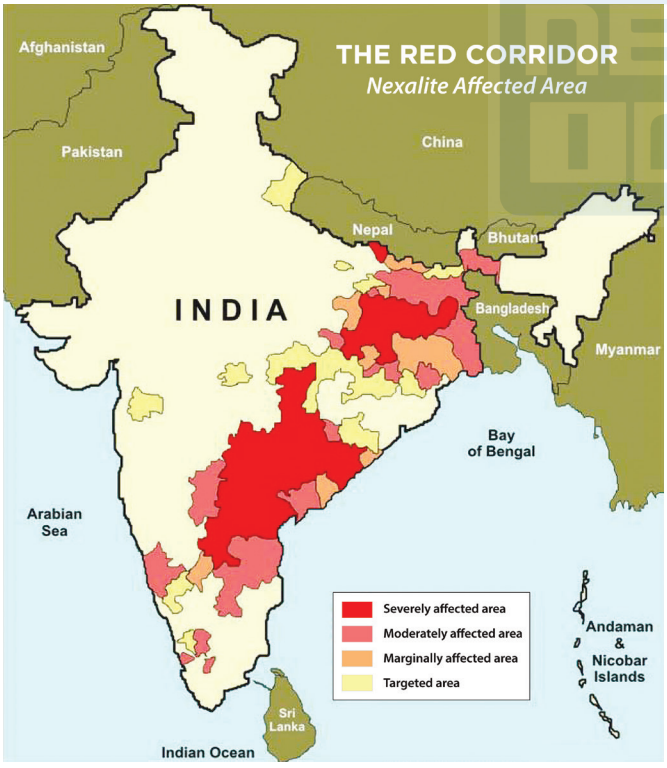
A special NIA court in Jagdalpur has convicted all ten accused in the 2013 Jhiram Ghati massacre, a turning point in India's counter-LWE strategy.

The Attack

- On 25 May 2013, **Maoists** ambushed Congress leaders returning from a **Parivartan Rally in Bastar,** directly targeting political leadership of a state.

Background

- Bastar became a core CPI (Maoist) area due to difficult terrain, weak connectivity and limited state presence.
- **Salwa Judum**, an anti-Maoist mobilisation, emerged in 2005 with **Mahendra Karma** as a prominent face.
- In 2011, the Supreme Court restrained arming tribal youth as Special Police Officers (SPOs).
- By 2013, forces adopted the "Clear, Hold and Develop" strategy, expanding camps into Maoist areas.



Left-Wing Extremism (LWE)

- LWE refers to Maoist-inspired armed movements seeking to overthrow the constitutional system through armed struggle.
- It is linked to the CPI (Maoist) and its **People's Liberation Guerrilla Army (PLGA)**.
- Groups operate in remote, forested, tribal regions, exploiting poverty, alienation and weak governance, form the Red Corridor.

Implications

- The attack strengthened resolve to secure Maoist strongholds and exposed gaps in roads, telecom and healthcare delivery.
- It boosted night helicopter evacuation, intelligence coordination and deeper security camps.

ORV SAGAR MANTHAN

GRSE launched the indigenous Ocean Research Vessel (ORV) Sagar Manthan, being built for the National Centre for Polar and Ocean Research (NCPOR) under the Ministry of Earth Sciences (MoES).

About

- It is an **indigenous Ocean Research Vessel (ORV)** being developed under **Vertical-4 (Deep Ocean Survey and Exploration)** of the **Deep Ocean Mission (DOM)**.
- It is an **all-weather, multidisciplinary** research vessel with an **expected service life of about 30 years**.
- It is expected to be **commissioned by 2028** after extensive sea trials. It has a maximum operational speed of **14 knots**.
- It can conduct **deep-sea mapping**, **multibeam bathymetry**, **seismic surveys**, and **sub-bottom profiling** up to **6 km** water depth.
- It can deploy **Remotely Operated Vehicles (ROVs)** and **Autonomous Underwater Vehicles (AUVs)** for deep-sea exploration. It will support exploration of **manganese nodules**, **polymetallic sulphides**, and other **marine mineral resources** in the **Indian Ocean**.
- It will strengthen India's capabilities in **oceanographic research**, **marine resource assessment**, and the **Blue Economy**, while replacing the ageing **ORV Sagar Kanya**.

Related Fact

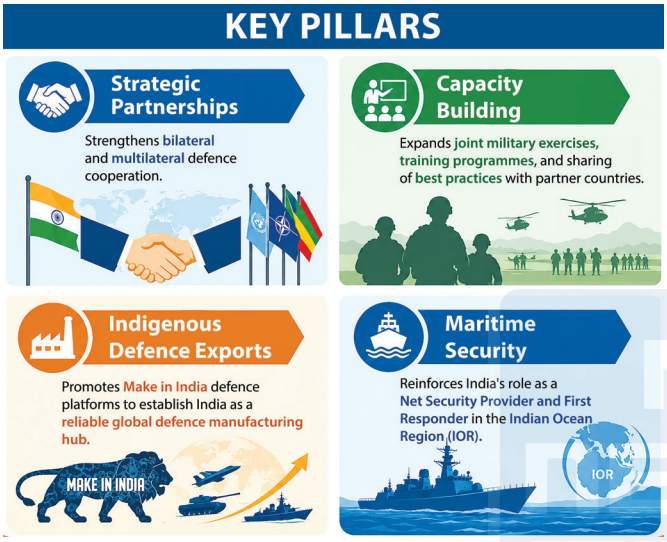
- The **Deep Ocean Mission**, launched in **2021**, aims to sustainably harness ocean resources and strengthen India's **Blue Economy**.
- **MATSYA 6000**, India's first **manned submersible**, is being developed under the **Samudrayaan Project** of the **Deep Ocean Mission**.

'RAKSHA' FRAMEWORK FOR DEFENCE DIPLOMACY

The Defence Minister released the 'RAKSHA' framework, outlining India's 10-year roadmap for defence diplomacy and global defence partnerships.

About

- It is a **comprehensive strategic framework** that guides India's **defence diplomacy** and **global defence partnerships** for the next decade.
- It seeks to align **national security objectives** with **proactive international cooperation** and strengthen engagement with **friendly countries**.
- It provides an actionable vision to promote **long-term stability**, deepen partnerships, and enhance India's role in the evolving global security landscape.



Additional Information

- **Defence diplomacy** refers to the **non-coercive use of military assets and institutions** to achieve **foreign policy** and **national security** objectives during peacetime.
- It includes **joint exercises**, **port visits**, **training**, **capacity building**, **humanitarian assistance**, and **intelligence sharing**.
- The framework complements **Vision MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions)** to strengthen cooperation in the **Indian Ocean Region**.

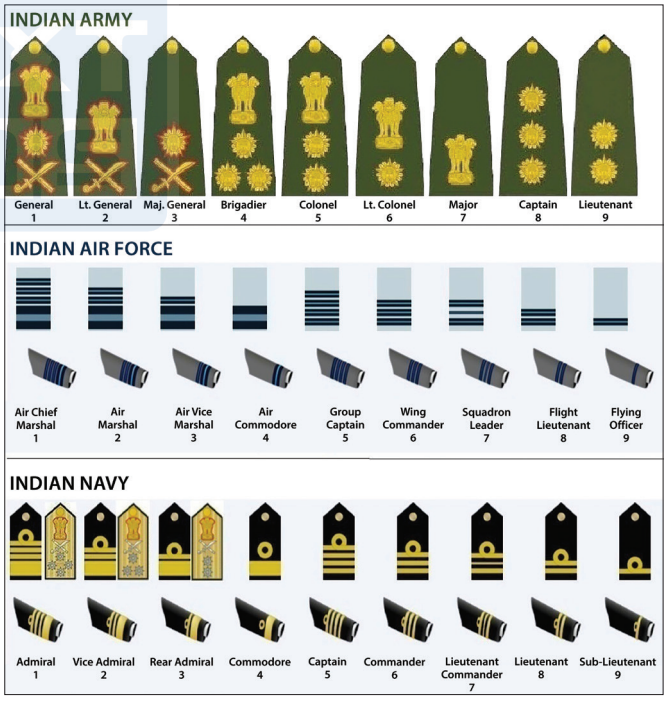
IAF'S HIGHEST-RANKING WOMAN OFFICER

Air Vice Marshal Shakti Sharma became the first woman officer from the non-medical branch of the Indian Armed Forces to attain the rank of Air Vice Marshal (AVM) or equivalent.

About Air Vice Marshal Shakti Sharma

- **Air Vice Marshal (AVM)** is a **two-star rank** in the **Indian Air Force (IAF)**, equivalent to **Major General** in the **Indian Army** and **Rear Admiral** in the **Indian Navy**.
- She was commissioned into the **Education Branch of the IAF** on **18 June 1994** and has completed **over three decades of service**.
- She has served in **training establishments**, **Command Headquarters**, and **Air Headquarters**, contributing to the professional development of the IAF.
- She played a key role in establishing **IAF Chairs of Excellence** at **IIT Kanpur** and **Savitribai Phule Pune University** to strengthen defence research and academic collaboration.
- She earlier became the **first woman officer from the Tri-Services** to command a **Sainik School**, serving as the **Principal of Sainik School, Kapurthala**.
- The **IAF** granted **Permanent Commission** to women officers in selected branches in **2010**, enabling greater career progression and promotion opportunities.
- The **Indian Army** and **Indian Navy** introduced **Permanent Commission** in selected branches in **2008**, with its scope expanded in **2020** following the **Supreme Court's** intervention.
- Her promotion reflects the **growing leadership opportunities for women** and the increasing **gender inclusivity** in the Indian Armed Forces.

Shoulder insignia for Commissioned Officer Ranks in Indian Army, Air Force and Navy



COMMANDO BATTALION FOR RESOLUTE ACTION (COBRA)

2006-batch IPS officer Sanjukta Parashar, popularly known as the "Iron Lady of Assam", has become the first woman Inspector General (IG) to head the CRPF's elite Commando Battalion for Resolute Action (CoBRA).

About CoBRA

- **About: CoBRA** is the **elite commando force of the Central Reserve Police Force (CRPF)**, raised in **2008** to conduct **jungle warfare and guerrilla operations**, primarily against **Left Wing Extremism (LWE)**.
  - By 2011, the force had raised a total of 10 battalions.
- **Role and Capabilities:**
  - Specialises in **anti-Maoist operations**, **intelligence-based missions**, **long-range patrols**, **ambushes**, **counter-ambushes**, and operations in **IED-prone areas**.
  - Personnel receive **specialised training** in **jungle warfare**, **guerrilla tactics** and **counter-insurgency operations**.
- **Deployment:** Extensively deployed in **LWE-affected States** such as **Chhattisgarh, Jharkhand, Odisha and Maharashtra**, as well as **insurgency-prone areas** of **Assam** and **Meghalaya**.
- **Organisation:** The force comprises **10 battalions**, headed by an **Inspector General (IG)** responsible for **administration, personnel selection, training and logistical support**.
- **CRPF: CRPF** is one of the **Central Armed Police Forces (CAPFs)** under the **Ministry of Home Affairs (MHA)**.
  - Among the CAPFs, **Assam Rifles** is under the **administrative control of the MHA** but its **operational control** rests with the **Ministry of Defence (MoD)**.

S-400 TRIUMF AIR DEFENCE SYSTEM

The Ministry of Defence Annual Report 2025–26 highlighted the operational role of India's S-400 Triumf during Operation Sindoor, including the reported destruction of a Pakistani special-mission aircraft at a distance of 314 km.

S-400 Triumf

- **S-400 Triumf** is a **long-range, mobile surface-to-air missile (SAM) system** developed by **Russia** and inducted into the **Indian Air Force (IAF)**.
- It provides **layered air defence** against **aircraft, cruise missiles, UAVs** and **certain ballistic missile threats**.
- **Key Features:**
  - Employs **multiple interceptor missiles** with engagement ranges of about **40 km, 120 km, 250 km and up to 400 km**.
  - Integrates **long-range surveillance radars, fire-control radars, command-and-control systems and mobile launchers** into a single air-defence network.
  - Can **detect, track and engage multiple aerial targets simultaneously** over long distances.
- **Operational Significance:** Strengthens India's **multi-layered air-defence shield** by providing long-range protection against hostile aerial threats.
  - The **reported 314-km engagement** during **Operation Sindoor** demonstrates its extended interception capability.
- **Variant: S-400F** is the **naval (ship-based)** variant of the S-400 system.

SATELLITE SMART ANTI-AIRFIELD WEAPON

The Ministry of Defence has signed a contract worth over ₹810 crore with Bharat Dynamics Limited (BDL) for the procurement of 160 Satellite Smart Anti-Airfield Weapons (SAT-SAAW) for the Indian Air Force (IAF).

About SAT-SAAW

- **Satellite Smart Anti-Airfield Weapon (SAT-SAAW)** is an **air-to-ground precision-guided glide bomb** designed to destroy **enemy airfields and strategic targets** from **long stand-off ranges**, enabling aircraft to strike without entering heavily defended airspace.
- It has been **designed and developed by the Defence Research and Development Organisation (DRDO)** and has **around 60% indigenous content**.
- It is integrated with **Jaguar, Hawk and Su-30MKI** aircraft.
- The programme focuses on indigenising critical sub-systems such as the **Inertial Measurement Unit (IMU)**, **Long Impact Delay Fuse** and **Twin Store Carrier**.
- The project was approved in **2013**, underwent **flight trials from 2016 to 2021**, and was **inducted into the IAF in 2021**.
- Deliveries under the present contract are scheduled during **2027–28 and 2028–29**.

Significance

- Enhances the **IAF's stand-off precision strike capability** against enemy airfields and strengthens operational preparedness.
- Promotes **Aatmanirbharta** by expanding indigenous defence manufacturing and reducing import dependence.

ARMED FORCES (SPECIAL POWERS) ACT (AFSPA), 1958

The Central Government has extended the Armed Forces (Special Powers) Act, 1958 (AFSPA) for another six months in specified disturbed areas of Nagaland, Manipur and Arunachal Pradesh.

About AFSPA

- **AFSPA, 1958** was originally enacted as the **Armed Forces (Assam and Manipur) Special Powers Act** to tackle the **Naga insurgency**. It succeeded the **Assam Disturbed Areas Act, 1955**, was later expanded to other regions, and traces its origins to the **Armed Forces Special Powers Ordinance, 1942**.
- It empowers the armed forces to operate in **areas declared as "disturbed areas"** to restore public order and combat insurgency.
- Under **Section 3**, the **Central Government, Governor or Union Territory Administrator** may declare the whole or part of a State or UT as a **disturbed area** where deployment of armed forces in aid of civil power is considered necessary.
- **AFSPA, 1958** is presently in force in parts of **Manipur, Nagaland, Arunachal Pradesh, Assam** while the **Union Territory of Jammu & Kashmir has AFSPA (J&K), 1990**.

Major Provisions

- Permits the **use of force**, including **lethal force** under specified conditions.
- Allows **arrest and search without warrant**.
- Authorises destruction of **arms dumps, fortified positions and militant hideouts**.
- Requires **prior sanction of the Central Government** before prosecution of armed forces personnel for actions taken under the Act.

Significance

- Enables **swift counter-insurgency operations** in disturbed areas.
- Provides a **legal framework and protection** for armed forces.
- Assists **civil authorities** where conventional policing is inadequate.
- Allows continuation or withdrawal based on **periodic security assessment**.

Concerns

- Allegations of **human rights violations** and excessive use of force.
- **Limited accountability** due to prior sanction for prosecution.
- Risk of **alienation of local communities** and misuse of powers.
- Raises **federalism concerns**, as **law and order** is primarily a **State subject**.

Committees and Judicial Position

- **Justice B.P. Jeevan Reddy Committee (2005):** Recommended repeal of AFSPA and incorporation of essential provisions into the **UAPA, 1967**.
- **Second Administrative Reforms Commission (2007):** Recommended repeal of AFSPA.
- **Santosh Hegde Commission (2013):** Recommended greater accountability and safeguards against misuse.
- **Naga People's Movement of Human Rights v. Union of India (1997):** The **Supreme Court** upheld AFSPA's constitutional validity and directed that **disturbed-area notifications should be reviewed periodically**, ordinarily before six months expire.

AASHVAST LABS FOR SECURING MILITARY DRONES

The Indian Army is establishing six AASHVAST Labs to examine military drones and other electronic systems for firmware-level vulnerabilities, hidden codes and unauthorised foreign-origin components that could compromise operational security.

AASHVAST Labs

- **About:**
  - **AASHVAST** stands for **Assessment and Analysis of Electronic Systems Hardware for Vulnerabilities and Security Threats**.
  - It is a **firmware testing and validation platform** developed by **QuickPay Pvt. Ltd.** for the **Directorate General of Electronics and Mechanical Engineers (DG EME)**.
- **Purpose:**
  - Ensures that **military electronic systems operate exactly as intended** and are free from **hidden codes, embedded keys, hidden passwords, remote-access tools** and **unauthorised foreign-origin hardware/components**.
  - Initially focuses on **military drones and UAV components**. **CCTV cameras** procured by the Army will also undergo similar security screening.
- **Key Capabilities:**
  - Examines both **hardware and firmware/software** of drones, sensors and communication systems.
  - Detects about **14 categories of security vulnerabilities**.
  - Tests resilience against **GPS spoofing**, **GPS jamming** and other cyber threats.
  - Verifies that systems accept only **authorised firmware and software updates**, helping prevent **enemy manipulation** of military platforms.
- **Significance:**
  - Prevents drones from **deviating from missions**, **malfunctioning**, **terminating prematurely** or behaving abnormally during operations.
  - Strengthens the **cybersecurity, reliability and secure functioning** of India's defence electronic systems during military operations.

PRAHAAR: NATIONAL COUNTER-TERRORISM POLICY

The Union Home Minister inaugurated the 'PRAHAAR-CT Policy and Strategy' conference in New Delhi.

About

- **PRAHAAR**, unveiled by the **Ministry of Home Affairs (MHA)** on **23 February 2026**, is **India's first comprehensive National Counter-Terrorism Policy & Strategy**.

Key Features

- Provides a **unified national framework** by integrating existing institutions and laws such as **NIA, NSG, UAPA and CAPFs**.
- **Addresses a multi-dimensional threat landscape, including:**
  - Cross-border terrorism
  - Global terrorist organisations such as Al-Qaeda and ISIS
  - Drone-enabled attacks
  - Cyber attacks
  - Encrypted communications
  - Crypto-financing
  - CBRNED (Chemical, Biological, Radiological, Nuclear, Explosives and Drones) threats

- **Adopts a seven-pillar strategy based on:**
  - **PREVENTION** of terror attacks
  - **SWIFT**, coordinated responses to extremist violence
  - **ENHANCING** internal capacities
  - **UPHOLDING** human rights and rule-of-law-based processes
  - **COUNTERING** radicalisation
  - **ALIGNING** and shaping global counter-terrorism efforts
  - **RECOVERY** and resilience through a whole-society approach.

Significance

- Establishes **India's first integrated counter-terrorism policy**.
- Strengthens protection across **land, air, sea and cyberspace**, including **critical infrastructure** such as power, railways, aviation, ports, defence, space and atomic energy.
- Reinforces India's **zero-tolerance approach** by affirming that terrorism cannot be associated with any **religion, ethnicity or nationality**.
- Improves coordination among **intelligence agencies, police and CAPFs**.
- Enhances India's contribution to **global counter-terrorism cooperation**.

Key Challenges

- **Cross-border infiltration** and state-sponsored terrorism.
- **Cyber-enabled terrorism**, including **dark-web**, **crypto-financing** and attacks on digital infrastructure.
- Rising use of **drones** for smuggling arms, explosives and narcotics.
- **Organised crime-terror nexus** supporting logistics and recruitment.
- **Online radicalisation**, including **AI-generated propaganda**, automated bot networks and sleeper cells.
- **Capacity gaps** in advanced training for cyber intelligence, drone detection and digital surveillance.

Defence Exercises

Exercise	Venue	Participants	Nature	Remarks
Veer Guardian (2026)	Jodhpur, India	India and Japan	Air Force	**Tactical Proficiency** and Aerospace Operational Synergy
Yudh Abhyas (22nd Edition)	Chamoli, Uttarakhand	Indian and US	Army	Employing **Integrated Battle Groups (IBGs)** in **mountainous and semi-mountainous terrain**, with an emphasis on **infantry-dominated** operations.
	Bikaner, Rajasthan			Exposing troops to desert and high-altitude terrain. Involved heavy **live-fire artillery manoeuvres**, combat conditioning, and the testing of advanced multi-domain weapon systems. **Counter-drone systems** were used for the first time.
Samudra Laksamana (4th Edition)	Lumut, Malaysia	India and Malaysia	Navy	Professional interactions both ashore and at sea, including **cross-deck visits, operational engagements and sporting activities.**
Tarang Shakti (2nd)	Air Force Station, Jodhpur	India, Australia, Bangladesh, France, Germany, Greece, Sri Lanka, UAE and USA (+ 32 Observer Nations)	Air Force	Exercise aims to expose all participants to **planning and execution** of multinational **joint combat operations** in a realistic contemporary battlespace and derive **tactically viable solutions.**
Nomadic Elephant (18th Edition)	Pithoragarh, Uttarakhand	India and Mongolia	Army	Enhance the joint military capability of both sides to undertake **counter-insurgency operations** in semi-urban and mountainous terrain.
SLINEX-26 (13th Edition)	Visakhapatnam	India and Sri Lanka	Navy	Aligned with India's vision of **MAHASAGAR**, it reinforces India's commitment to a secure, stable and inclusive maritime environment.

7 SCIENCE & TECHNOLOGY

STEM CELL THERAPY FOR AUTISM

The Union Health Ministry has directed all States and Union Territories to ensure that stem cell therapy for Autism Spectrum Disorder (ASD) is offered only through duly approved clinical trials and is not promoted or offered as routine/commercial treatment.

About

- **Stem cell therapy (regenerative medicine)** uses **stem cells** or their derivatives to **repair, regenerate or replace damaged cells and tissues**.
- **Stem cells possess two key properties:**
  - Self-renewal
  - **Differentiation** into specialised cells such as **blood, nerve and heart muscle cells**.
- It is used in disease modelling, drug testing, personalised medicine and selected clinical therapies.
- **Haematopoietic stem-cell transplantation** is an established treatment for several **blood and immune disorders**, while most other applications remain **experimental**.

Regulatory Framework in India

- The recent directive reinforces India's regulatory framework following the **Supreme Court judgment in *Yash Charitable Trust & Ors. v. Union of India & Ors.* (2026)** and the **National Medical Commission (NMC)** advisory.
- **National Guidelines for Stem Cell Research, 2017** provide the ethical and scientific framework for stem-cell research.
  - Jointly issued by the **Indian Council of Medical Research (ICMR)** and the **Department of Biotechnology (DBT)**.
  - Stem cell therapy for **ASD** is permitted **only through approved clinical trials**.
- **Clinical Establishments (Registration and Regulation) Act, 2010** empowers authorities to act against **unauthorised stem-cell therapies**.
- The **NMC** has clarified that offering or promoting stem-cell therapy beyond approved indications amounts to **professional misconduct**.
- **State Medical Councils** are responsible for investigating violations and initiating disciplinary action.

Reasons for Restricting to ASD

- **Current evidence** does not support stem-cell therapy as a **standard treatment** for **ASD**.
- **ICMR** has found no proven advantage of stem-cell therapy over **behavioural and supportive therapies**.
- Unregulated use may lead to **immune reactions, infections, abnormal tissue growth and tumour formation**.

About Autism Spectrum Disorder (ASD)

- ASD is a lifelong neurodevelopmental disorder.
- It is characterised by persistent difficulties in social communication and interaction.
- It also involves restricted and repetitive behaviours or interests.
- Many individuals experience differences in sensory processing, such as sensitivity to sound, light or touch.

LEGAL METROLOGY (INDIAN STANDARD TIME) RULES, 2026

The Union Consumer Affairs Ministry has notified the Legal Metrology (Indian Standard Time) Rules, 2026, making Indian Standard Time (IST) the sole official time reference for official and commercial use across India.

Legal Metrology Act, 2009

- It is the principal legislation governing **standards of weights and measures** in India.
- It came into force in **2011**, replacing the **Standards of Weights and Measures Act, 1976** and the **Standards of Weights and Measures (Enforcement) Act, 1985**.
- It provides **uniform legal standards** relating to **SI units, verification and stamping, packaged commodities, consumer protection, offences and penalties**, and **inter-State uniformity**.
- The Rules have been notified under **Section 52 of the Legal Metrology Act, 2009** and will come into force **180 days** after publication in the **Official Gazette**.

Key Provisions

- Institutionalises the **"One Nation, One Time"** framework announced in **2025**.
- Mandates **government departments** and **critical sectors** to use a **traceable and authorised IST reference**.
- **CSIR–National Physical Laboratory (CSIR-NPL)** is India's national timekeeper.
- **UTC (NPLI)** is India's national realization of **Coordinated Universal Time (UTC)**.
- IST = UTC (NPLI) + 5 hours 30 minutes.

Importance of Precise Time Synchronisation

- Essential for **banking**, **digital payments**, **capital markets**, **telecommunications**, **power grids**, **railways**, **aviation**, **government records** and **cybersecurity**.
- Ensures **accurate timestamps**, audit trails and reliable digital transactions, making time synchronisation a **critical national infrastructure**.

IST Dissemination Mechanism

- Time Dissemination Laboratories are being established at Ahmedabad, Bengaluru, Bhubaneswar, Faridabad and Guwahati under the Regional Reference Standard Laboratories (RRSLs) in collaboration with CSIR-NPL and ISRO.
- White Rabbit Technology provides sub-nanosecond synchronisation over fibre-optic networks by measuring and compensating for signal delays. Its fibre-based architecture reduces dependence on satellite signals and enhances resilience against jamming and spoofing.
- The dissemination architecture combines NPL atomic clocks → White Rabbit/fibre networks + NavIC → synchronised critical infrastructure, strengthening strategic autonomy, cybersecurity and critical infrastructure resilience.

Challenges

- Solar-time mismatch across India's east-west extent.
- Regional productivity and scheduling concerns.
- High compliance costs for legacy systems.
- Need for interoperable timing standards, robust cybersecurity, backup timing sources during disruptions, and effective implementation across sectors.

WAKEFIELD ACCELERATORS

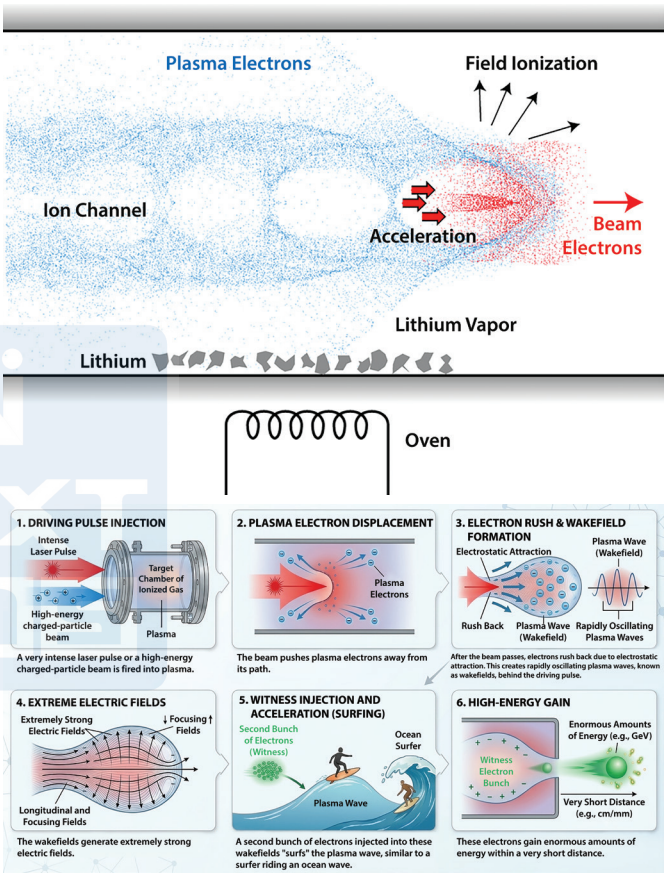
Wakefield accelerators are gaining attention as a compact alternative to conventional particle accelerators, with the potential to produce very high particle energies over much shorter distances.

About Particle Accelerators

- A **particle accelerator** uses **electric and magnetic fields** to accelerate charged particles, such as **electrons** and **protons**, to extremely high speeds for scientific, medical and industrial applications.
- The **Large Hadron Collider (LHC)** at CERN is the world's largest particle accelerator. It is **27 km long** and accelerates protons to nearly the **speed of light**.

Wakefield Accelerators

- **Compact particle accelerators** that use **plasma waves (wakefields)** to accelerate charged particles over very short distances. They can be **table-top sized**, unlike conventional accelerators that extend for hundreds of metres or kilometres.
- **Working Principle:**
  - A high-intensity laser pulse or charged-particle beam passes through plasma.
  - It displaces plasma electrons, creating **strong oscillating electric fields (wakefields)**.
  - Injected electrons **ride these wakefields**, rapidly gaining very high energy.
- **Plasma:** The fourth state of matter, consisting of free electrons and positively charged ions.
- **Advantages:**
  - Generates **much stronger accelerating electric fields** than conventional accelerators.
  - **Compact, cost-effective** and requires far less space.
  - Has potential applications in **high-energy physics, medical therapy, X-ray and radiation sources**.
- **Limitation:** Current systems accelerate particles only to **a few tens of GeV**, whereas facilities such as the **LHC** achieve **much higher energies**.



UNIVERSAL PNEUMOCOCCAL VACCINE

Researchers have developed an experimental universal pneumococcal vaccine using reverse vaccinology. This targets conserved proteins instead of serotype-specific capsules to provide broader protection against Streptococcus pneumoniae.

About Streptococcus pneumoniae

- **Streptococcus pneumoniae (Pneumococcus)** is a bacterium that commonly colonises the **nose and throat** without causing any illness.
- Under certain conditions, it can invade the body and cause **pneumonia, meningitis and sepsis**, collectively known as **pneumococcal diseases**.
- It has **more than 100 serotypes**, distinguished by differences in their **capsular polysaccharides**.

Need of Universal Vaccine

- **Current pneumococcal vaccines** target only selected **capsular polysaccharides**.
- Expanding serotype coverage makes vaccines **more complex and expensive**.
- **Serotype replacement** may allow non-vaccine serotypes to become more prevalent after vaccination.

Reverse Vaccinology

- It is a **genome-based vaccine development approach** that uses **bioinformatics** to identify **conserved protein antigens** before laboratory testing.
- Researchers analysed **over 20,000 pneumococcal isolates** and identified three conserved proteins (**Z, P and Y**), which were combined with **CpG** and **Chitosan** to develop the experimental **ZPY-CpG-Ch vaccine**.

Key Findings

- In **mouse studies**, the vaccine provided **80–100% protection** against highly virulent **serotype 1** and also protected against several **non-vaccine serotypes**.
- The findings provide a **proof of concept** that targeting conserved proteins could enable broader protection across multiple pneumococcal serotypes.

Challenges

- Evidence is currently **limited to animal studies**.
- The vaccine has been tested against **only a few serotypes**.
- It did not eliminate upper respiratory bacterial carriage.
- Human safety, duration of immunity, affordability and large-scale manufacturing remain to be established.

Significance

- A successful universal vaccine could **simplify vaccine design**, provide **broader serotype coverage**, reduce **serotype replacement**, lower antibiotic use, help combat **antimicrobial resistance (AMR)** and strengthen disease control, including under **India's Universal Immunisation Programme (UIP)**.

COLD ALLODYNIA

Researchers from IISc Bengaluru and TCG-CREST, Kolkata have identified the brain circuit involved in cold allodynia, a chemotherapy-related nerve disorder.

About

- **Cold allodynia** is a condition in which a person experiences **pain or severe discomfort** from **normally non-painful cold temperatures**.
- It is a manifestation of **Chemotherapy-Induced Peripheral Neuropathy (CIPN)**, a nerve disorder caused by certain chemotherapy drugs.
- **CIPN** may also cause **temperature sensitivity, numbness, pins-and-needles sensation and pain**.
- **Oxaliplatin**, a **platinum-based chemotherapy drug**, is commonly associated with **cold allodynia**.

Chemotherapy

- **Chemotherapy** is a treatment that uses **powerful drugs** to destroy **rapidly dividing cells, particularly cancer cells**.
- It may be used **alone or in combination** with other cancer therapies to treat various cancers.
- Although effective, chemotherapy can cause **temporary and long-term side effects**, including **peripheral neuropathy**, depending on the drug used.

NANCY GRACE ROMAN SPACE TELESCOPE

NASA has launched the Nancy Grace Roman Space Telescope, its next-generation flagship space observatory, to investigate dark energy, dark matter, cosmic expansion, gravitational physics and exoplanets through wide-field infrared surveys.

About

- Named after **Nancy Grace Roman**, NASA's first Chief Astronomer, widely known as the **"Mother of the Hubble Space Telescope."**
- It complements the **Hubble Space Telescope** and the **James Webb Space Telescope (JWST)** by conducting **wider and deeper infrared surveys** of the universe.
- It was launched aboard a **SpaceX Falcon Heavy** rocket from **Kennedy Space Center, Florida**, and will operate at the **Sun–Earth Lagrange Point 2 (L2)**, about **1.6 million km** from Earth.
- It will survey the universe about **1,000 times faster than Hubble** and generate nearly **1.4 TB of data daily**, supported by **AI and machine learning**.

Key Instruments

- **Wide Field Instrument:** A **300-megapixel infrared camera** that will survey **over two billion galaxies** and study large-scale cosmic structures.
- **Coronagraph:** Blocks starlight to directly observe **exoplanets** and **planet-forming discs**.

Significance

- Will investigate **dark matter**, **dark energy**, **galaxy evolution, and gravitational physics** and the **expansion of the universe**.
- Will use **gravitational lensing** to map the large-scale distribution of matter across the cosmos.
- Will conduct a **statistical survey of planetary systems** in the **Milky Way**, advancing the search for **exoplanets**.
- The mission includes contributions from **ESA**, **JAXA**, **CNES** and the **Max Planck Institute for Astronomy**.

THORIUM-BASED NUCLEAR FUEL FOR INDIA'S ENERGY SECURITY

Nuclear scientist Anil Kakodkar has advocated introducing thorium-based fuel into India's indigenous Pressurised Heavy Water Reactors (PHWRs) alongside the ongoing three-stage nuclear programme, thereby accelerating thorium utilisation and strengthening long-term energy security.

Thorium (Th)

- **Thorium (Th)** is a **naturally occurring radioactive metal** found in **soil, rocks, water, plants and animals**.
- It is **solid under normal conditions**.
- **Both natural and man-made forms** of thorium are **radioactive**.
- Naturally occurring thorium mainly exists as **Th-232, Th-230 and Th-228**.

Why Thorium Matters

- India possesses about **1.07 million tonnes** of thorium, nearly **one-fourth of global reserves**.
- Major **monazite** deposits occur along the coasts of **Kerala, Tamil Nadu, Andhra Pradesh, Odisha**, and parts of **Maharashtra** and **Gujarat**.
- India's indigenous **PHWR ecosystem**, including **fuel fabrication, spent-fuel reprocessing and waste management**, provides a strong foundation for thorium integration.
- Thorium can enhance **energy security**, reduce **uranium imports**, and strengthen **fuel self-reliance**.

Challenges

- **Thorium-232** is **not directly fissile** and must first be converted into **U-233**.
- Thorium has **higher neutron absorption** than uranium, making its use in existing reactors technically challenging.
- Thorium introduction in **PHWRs** should not increase **electricity costs** or **uranium consumption**.
- Large-scale deployment requires **FBR expansion**, **advanced fuel fabrication**, **thorium recycling**, and **advanced reactor technologies**.

COLONIAL SPIDER WITH ANTI-CANCER POTENTIAL

Indian researchers have produced the first comprehensive molecular and functional profile of the venom gland of Stegodyphus sarasinorum, revealing promising anti-cancer, antimicrobial and antioxidant potential.

Key Findings

- Researchers used **transcriptomics, proteomics, metabolomics** and **Confocal Raman Spectroscopy** to map the venom gland.
- The study identified **31 annotated protein components**, **32 proteins** and **81 metabolites**, including amino acids, biogenic amines, nucleotides and organic acids.
- Venom-gland extracts showed **dose-dependent cytotoxicity** against **Dalton's Lymphoma Ascites (DLA)** cancer cells under laboratory conditions.
- **U12** and **U20 lycotoxins** can disrupt cellular membranes, making them promising candidates for **antimicrobial** and **anti-cancer** drug development.
- **Hemocyanin proteins** showed potential **immune-modulating** and **cancer-immunotherapy** applications.
- The venom also demonstrated **antioxidant activity** in multiple laboratory assays.

Stegodyphus Sarasinorum

- It is a **colonial (social) spider** of the **Eresidae** family, also known as the **Indian cooperative spider**.
- Unlike most spiders, it lives in **permanent colonies**, builds **communal silk nests**, and cooperatively captures prey and cares for offspring.
- It is distributed across **India, Pakistan, Sri Lanka, Nepal and Myanmar**, mainly in **dry, shrubby and seasonal habitats**.
- The species is recognised by the **World Spider Catalog**.

EOS-05

ISRO successfully launched Earth Observation Satellite-05 (EOS-05) aboard GSLV-F17, making it India's first dedicated Earth-imaging satellite to operate from Geosynchronous Orbit (GEO).

EOS-05 Mission

- Popularly called the **"Eye in the Sky"**, **EOS-05** is an advanced **Earth observation satellite** weighing about **2,367 kg**, making it the **heaviest payload launched by a standard GSLV**.
- It carries **optical, infrared, multispectral and hyperspectral imaging payloads**.
- It has a **10-year mission life** and provides **near real-time imaging**, capturing selected regions every **5 minutes** and the entire country every **30 minutes**.
- It supports **disaster management, agriculture, forestry, weather monitoring and defence**.
- The satellite was first placed in a **Sub-Geosynchronous Transfer Orbit (Sub-GTO)**, an intermediate orbit, and will reach its **geostationary orbital slot** through multiple orbit-raising manoeuvres using its **Liquid Apogee Motor (LAM)**.

GSLV-F17

- It is the **19th flight** of the **Geosynchronous Satellite Launch Vehicle (GSLV)**.
- It is a **three-stage launch vehicle** comprising a **solid core with four liquid strap-on boosters**, a **liquid second stage**, and an **indigenous Cryogenic Upper Stage (CUS)**.

- The GSLV has demonstrated improved reliability after overcoming earlier challenges associated with cryogenic technology.

Importance of GEO

- **Geostationary Orbit (≈35,786 km)** enables **continuous monitoring** of the same region, unlike **Low Earth Orbit (LEO)** satellites that revisit periodically.
- A **GEO satellite appears stationary** over one point on the equator, while a **Geosynchronous Orbit (GSO)** matches Earth's rotational period but may have an inclined orbit.
- **One GEO satellite** can observe nearly **one-third of Earth's surface**, while **three suitably spaced GEO satellites** can provide near-global coverage.
- GEO enables **high-frequency monitoring** of **cyclones, cloudbursts, flash floods, forest fires** and other rapidly evolving events.
- **LEO (160–2,000 km)** is ideal for **high-resolution imaging** and **low-latency communication**, whereas **MEO (2,000–35,786 km)** mainly supports **navigation systems** such as **GPS** and **Galileo**.

GPT-6 ASTRA

OpenAI has released GPT-6 Astra, its latest frontier Artificial Intelligence (AI) model, with major advances in computer use, coding, long-running tasks and cybersecurity.

About

- It is a **frontier AI model** built for **agentic, tool-assisted and end-to-end task execution**, rather than only answering prompts.
- It can **operate computers and web browsers**, conduct **web research**, fill online forms, manage documents and emails, analyse data, generate plots, build websites, and install, test and troubleshoot software.
- It can **handle incomplete instructions**, using available context to make routine decisions while seeking clarification only when essential information is missing.
- It features a **1.05-million-token context window** and supports **up to 128,000 output tokens**, enabling long-running and complex workflows.
- It is better at **maintaining the original objective** of a task even when user instructions change midway.
- Under **OpenAI's Preparedness Framework**, it is the **first model classified at the "Critical" cybersecurity capability level**, indicating that, with appropriate tools and authorised access, it can identify and exploit previously unknown software vulnerabilities.

ENDOMETRIOSIS

A first-of-its-kind ICMR-National Institute for Research on Women's Health (ICMR-NIRWoH) study has identified 21 genetic regions associated with endometriosis, providing new insights into genetic susceptibility among Indian women.

About

- It is a chronic inflammatory gynaecological condition in which endometrium-like tissue grows outside the uterus, causing inflammation, scar tissue and chronic pain.
- It affects approximately 10% (around 190 million) of women and girls of reproductive age worldwide. India accounts for nearly 42 to 50 million cases, representing over 20% to 26% of the global disease burden.

Endometriosis

Causes	Symptoms	Occurrence	Treatment
The exact cause remains unknown. It is associated with **genetic, hormonal, environmental and lifestyle factors**, along with **immune system dysregulation.**	Severe menstrual pain, heavy menstrual bleeding, chronic pelvic pain, painful intercourse, painful bowel movements, painful urination, infertility, bloating, fatigue, anxiety and depression.	It most commonly affects the **pelvic cavity**, but may also occur in the **abdomen** and, rarely, the **chest**, affecting quality of life.	**There is no cure.** Management focuses on early diagnosis, symptom relief and limiting long-term complications.

DARK MATTER AND TINY BLACK HOLES IN DENSE STARS

A recent study suggests that ultra-heavy dark matter particles trapped inside dense stellar remnants could accumulate at their cores, collapse into tiny black holes, and eventually transform the host star into a black hole.

Key Findings

- **Dense stellar remnants:**
  - The study focuses on **millisecond pulsars** and **white dwarfs**, which are stellar remnants that have exhausted their nuclear fuel.
  - A **millisecond pulsar** is a rapidly rotating **neutron star** that emits electromagnetic pulses at intervals of **less than 10 milliseconds**.
  - A **white dwarf** is a **hot, dense stellar remnant** formed after a low- or intermediate-mass star exhausts its nuclear fuel.
- **Tiny black holes:** Captured **ultra-heavy dark matter particles** may accumulate at the stellar core and collapse into a **tiny black hole**, initially with a mass of about **40 tonnes**.
- **Hawking radiation:** Such black holes are expected to lose mass through **Hawking radiation**. Continued capture of **ultra-heavy dark matter particles** could offset this loss, allowing the black hole to grow and gradually consume the host star.
- **Scientific significance:** The survival of **ancient dense stars** over billions of years provides a **natural laboratory** to detect or constrain the properties of **ultra-heavy dark matter**.

Dark Matter

- **Dark matter** does **not interact with electromagnetic radiation**. It neither emits, absorbs nor reflects light.
- It interacts through **gravity** and helps hold **galaxies and large-scale cosmic structures** together. Its presence is inferred from its **gravitational effects** on visible matter.
- The Universe comprises about **68% dark energy**, **27% dark matter**, and **less than 5% ordinary matter**.

Black Hole

- A **black hole** is an extremely dense region of space whose **gravity is so strong that even light cannot escape**.
- It forms when a **massive star** exhausts its nuclear fuel and its core collapses. Its immense gravity arises from a **gravitational singularity**, where the predictions of **General Relativity** break down.

OSTEOARTHRITIS (OA)

Scientists are developing a cell-free regenerative therapy for osteoarthritis using extracellular vesicles (EVs) derived from mesenchymal stromal cells (MSCs) obtained from menstrual blood.

About OA

- **Osteoarthritis (OA)** is the **most common form of arthritis** and a **degenerative joint disease** caused by the gradual breakdown of **articular cartilage**.
- **Cartilage** is a smooth, rubber-like tissue that cushions the ends of bones, reduces friction and absorbs shock during joint movement.
- As cartilage deteriorates, **bones rub against each other**, causing **pain, stiffness, swelling** and reduced joint mobility.
- It mainly affects **weight-bearing joints** such as the **knees, hips and spine but** can also involve the **hands, fingers, thumb, neck and big toe**.
- **Risk factors** include **ageing, obesity, joint injury, repetitive stress** and **genetic predisposition**. Women are affected more frequently than men.
- **Symptoms** develop gradually and include **joint pain, stiffness after rest, swelling, reduced flexibility, bony enlargements** and, in advanced stages, loss of joint function.
- **Treatment:** There is **no cure** for OA. Management includes **exercise, weight reduction, physiotherapy, pain-relieving medicines**, and **joint replacement surgery** in severe cases.
- **Current research:** Cell-free regenerative therapies using **MSC-derived extracellular vesicles** aim to promote **cartilage repair**, reduce inflammation and overcome limitations associated with stem-cell transplantation.

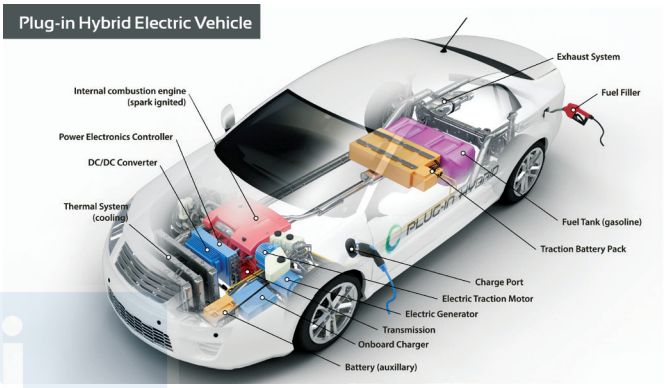
PLUG-IN HYBRID ELECTRIC VEHICLE (PHEV)

Recently, JSW MG Motor India has launched the Hector Tomahawk in Battery Electric Vehicle (BEV) and Plug-in Hybrid Electric Vehicle (PHEV) variants.

About

- A **PHEV** combines an **Internal Combustion Engine (ICE)** with an **electric motor** and a **rechargeable battery**, allowing it to operate on **electric power, the engine, or both**.
- It is similar to a **Hybrid Electric Vehicle (HEV)** but has a **larger battery** that can be **externally charged**, besides charging through **regenerative braking** and the engine.
- The larger battery enables a **longer electric-only driving range**, while the **ICE** provides extended range for long-distance travel and reduces **range anxiety**.
- **PHEVs** generally have **lower running costs** than conventional vehicles when regularly charged.
- They serve as a **transition technology** between **HEVs** and **Battery Electric Vehicles (BEVs)**, especially where charging infrastructure is still developing.
- **Limitations:** They are **more expensive**, mechanically **more complex**, and require both **fuel** and **battery** maintenance.

Plug-in Hybrid Electric Vehicle

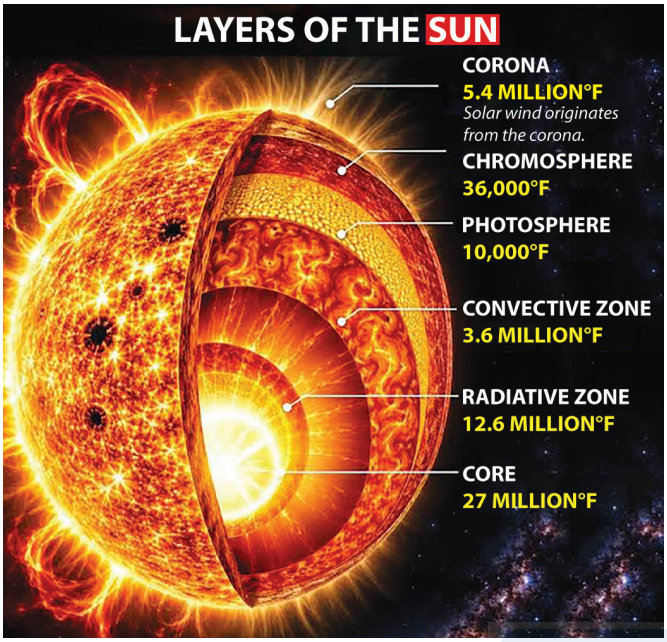


SOLAR PHOTOSPHERE WHIRLPOOLS

Using the Daniel K. Inouye Solar Telescope (DKIST), astronomers captured the highest-resolution images of the Sun's photosphere, revealing previously unseen plasma whirlpools formed by Kelvin-Helmholtz Instability (KHI).

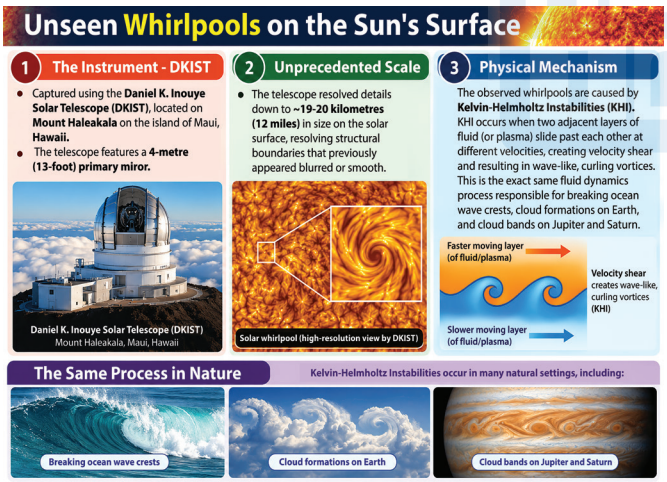
Key Findings

- **Record-resolution imaging:** The **4-metre DKIST** in **Hawaii** resolved features as small as **19–20 km** on the Sun's surface, providing the sharpest images of the **photosphere**.
- **Solar granules:** The whirlpools were observed along the boundaries of **solar granules**, which are **bright convection cells** formed by the upward movement of hot plasma.
- **Kelvin-Helmholtz Instability (KHI):**
  - It occurs when **adjacent layers of fluid or plasma move at different speeds**, creating **velocity shear** that produces rotating vortices.
  - Similar phenomena occur in **ocean waves**, **Earth's clouds**, and the **atmospheres of Jupiter and Saturn**.
- **Scientific significance:**
  - It provides the **first direct observational evidence** of **KHI in the Sun's photosphere**.
  - The vortices **twist and braid magnetic field lines**, storing magnetic energy that may later be released through **solar flares**, **coronal mass ejections (CMEs)** and **nanoflares**.
  - The findings also improve understanding of the **coronal heating problem**, where the **corona** is much hotter than the Sun's visible surface.



Major Solar Missions

- **Parker Solar Probe (NASA):** First spacecraft to fly through the corona (2021).
- **Aditya-L1 (ISRO):** India's first solar observatory at Lagrange Point L1 for continuous study of the chromosphere and corona.



IMEI NUMBER

Amid India's expanding digital ecosystem, the Department of Telecommunications (DoT) has highlighted concerns over IMEI tampering, as the country's wireless mobile subscriber base reached 1,204.01 million in July 2026.

About IMEI

- The **International Mobile Equipment Identity (IMEI)** is a **unique 15-digit number** that identifies a mobile device on a telecom network.
- The **first eight digits** constitute the **Type Allocation Code (TAC)**, which identifies the **device model or type**.
- The **Global System for Mobile Communications Association (GSMA)** allocates **TACs** to manufacturers and brand owners. Manufacturers then assign **unique IMEI numbers** to individual devices.
- **Dual-SIM phones** generally have **two IMEI numbers**, one for each SIM slot.
- Users can check their IMEI by dialing ***#06#.**

IMEI Tampering

- It involves **removing, erasing, changing or altering** a device's IMEI.
- It also includes **using, manufacturing, selling, trafficking or possessing** hardware or software designed to manipulate IMEI numbers.
- Such practices hinder **device identification**, obstruct **law enforcement** and weaken the **telecommunication ecosystem**.

India's IMEI Ecosystem

- **Manufacturers and importers** must register genuine IMEIs through the **Device Setu-Indian Counterfeited Device Restriction (ICDR) Portal** before sale or import.
- **Brand owners, resellers and retailers** must ensure that they market only valid and untampered IMEI devices.

Legal Framework

- The **Telecommunications Act, 2023** prohibits IMEI tampering.
- **Section 42(3)(c)** prohibits tampering with telecommunication identifiers, while **Section 42(3)(e)** prohibits obtaining telecommunication identifiers through fraud or impersonation.
- **Section 42(6)** extends liability to persons who abet such offences.
- Violations may attract **imprisonment up to 3 years**, a **fine up to ₹50 lakh**, or **both**. Such offences are **cognizable and non-bailable** under **Section 42(7)**.

Suggested Measures

- **Vendors** should verify IMEIs and avoid dealing in altered devices.
- **Consumers** should purchase from **authorised sellers**, use **authorised service centres**, verify IMEIs, and report lost or stolen devices through **Sanchar Saathi/CEIR** after filing a police complaint.

BIOVIGILANCE PROGRAMME OF INDIA

The Ministry of Health and Family Welfare has approved the Biovigilance Programme of India (BvPI) to strengthen post-transplant patient safety through nationwide monitoring of adverse events associated with medicines and biological products used in organ and tissue transplantation.

About BvPI

- It is a **national patient-safety surveillance programme** for the **systematic reporting, assessment, monitoring and prevention** of adverse events associated with **medicines and biological products** used in **organ and tissue transplantation**.
- **Aim:** To identify, assess and prevent transplant-related adverse events, thereby improving the safety of **both organ/tissue donors and recipients**.
- **Nodal Organisation:** The **Indian Pharmacopoeia Commission (IPC)**, an autonomous institution under the **Ministry of Health and Family Welfare**, coordinates the programme and sets **quality standards for drugs in India**.
- **Coverage:** It monitors biological products administered to **both donors and recipients**, ensuring safety across the entire transplantation process.
- **Integrated Vigilance Framework:**
  - **Pharmacovigilance Programme of India (PvPI):** Monitors adverse drug reactions.
  - **Materiovigilance Programme of India (MvPI):** Monitors medical-device-related adverse events.
- **Significance:** It strengthens India's capacity to **collect, analyse and generate evidence** from adverse-event data, supporting **safer clinical practices, evidence-based regulatory decisions** and improved patient safety in transplantation.

NOVEL TECHNIQUE TO PROLONG QUANTUM ENTANGLEMENT

Scientists from the Raman Research Institute (RRI), in collaboration with the University of Calgary and Louisiana State University (LSU), have demonstrated a single-shot technique that can delay or even prevent the sudden loss of quantum entanglement.

Quantum Entanglement

- **Quantum entanglement** is a phenomenon in which **two or more quantum particles become correlated** and behave as a single system, even when separated by large distances.
- Measuring one entangled particle instantly provides information about the other.
- Along with **superposition** (the ability of a quantum particle to exist in multiple states simultaneously), it forms the foundation of **quantum computing, quantum communication, quantum cryptography** and **quantum information processing**.

Key Challenge

- Quantum states are **highly fragile** and lose their quantum properties due to interaction with the environment, a phenomenon called **decoherence**.
- In some cases, entanglement disappears abruptly before complete decoherence, known as **entanglement sudden death**.
- This reduces the reliability of quantum computations. Existing error-correction methods require repeated interventions, increasing complexity and introducing additional errors.

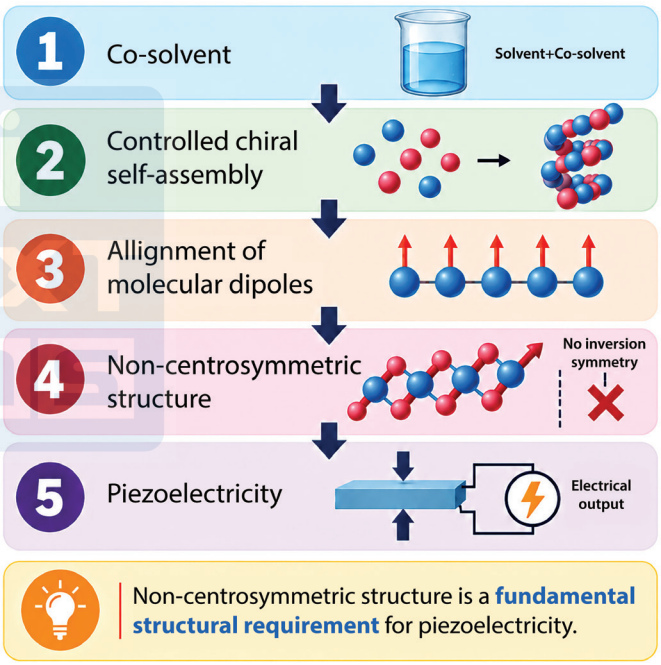
New Technique

- Researchers used a **single flip operation** at a carefully chosen stage of the quantum state's evolution.
- Depending on its timing, the operation can **delay decoherence**, **prevent entanglement sudden death**, or alter entanglement dynamics.
- The approach improves quantum-state stability **without modifying existing quantum hardware**.

Significance

- The study identifies **timing of quantum operations** as a new control strategy for preserving entanglement.
- It could complement conventional error-correction methods and support the development of **more stable and reliable quantum technologies**.

Molecular Switch Work - Mechanism



MELANOMA

Melanoma, an aggressive form of skin cancer, is diagnosed in thousands of people in India every year. In India, it commonly occurs on the soles of the feet and beneath the nails (acral sites), making early detection more challenging.

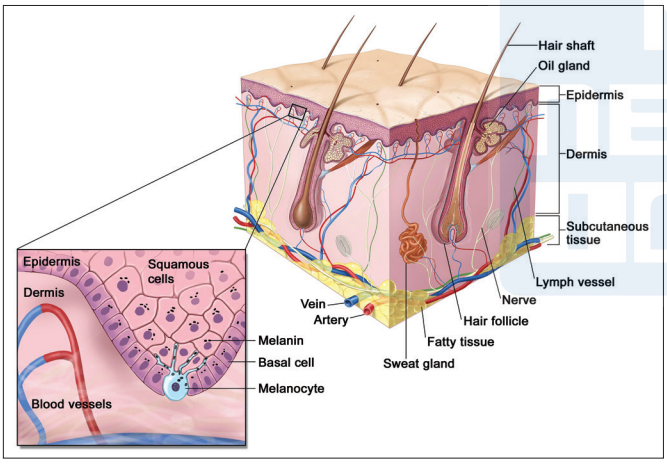
About

- **Melanoma** is a **skin cancer** that develops from **melanocytes**, the **pigment-producing cells** that synthesise **melanin**.
- It is **less common** than other skin cancers but is **more aggressive** because it can spread rapidly to other parts of the body.
- In India, melanoma most commonly affects the **soles of the feet** and **beneath the nails**, unlike Western populations where it usually occurs on **sun-exposed skin**.

- **Major Risk Factor:** Excessive exposure to **ultraviolet (UV) radiation** from sunlight and tanning devices.
- **Symptoms:** A change in an existing mole or the appearance of a new unusual pigmented lesion. It may also develop on **otherwise normal skin** or, rarely, inside the **nose or throat**.
- **Treatment:** Early-stage **surgical removal** offers a high cure rate. **Lymphadenectomy** may be required if nearby lymph nodes are involved. **Metastasectomy** may be performed to remove limited metastatic lesions.
- **Early detection and timely treatment** are crucial because melanoma can spread rapidly to distant organs.

Human Skin

- The **skin** is the body's **largest organ** and has two main layers: the **epidermis** and **dermis**.
- **Most skin cancers, including melanoma, originate in the epidermis**, which contains:
  - **Squamous cells:** Form the outermost layer.
  - **Basal cells:** Located beneath squamous cells.
  - **Melanocytes:** Produce **melanin**, the pigment responsible for skin colour.



META TO SHARE CSAM REPORTS WITH INDIA'S I4C

Meta has agreed to directly report Child Sexual Abuse Material (CSAM) cases to the Indian Cyber Crime Coordination Centre (I4C), becoming the first major technology intermediary to establish such a reporting pipeline in India.

Online Child Sexual Abuse

- **Child Sexual Abuse Material (CSAM):** Any visual representation of sexually explicit conduct involving a person **below 18 years**. It is a recorded form of sexual abuse circulated through digital platforms.
- **Online Child Sexual Abuse:** Use of **information and communication technology (ICT)** to sexually abuse or sexually exploit children.

Major Forms

- **CSAM:** Production, possession, storage, distribution or circulation of sexually exploitative content involving children.
- **Online Grooming:** Building trust with children online for sexual exploitation.
- **Sextortion:** Coercing children into providing sexual content through threats or blackmail.
- **Live-streaming of Abuse:** Real-time online broadcast of child sexual abuse.
- **Online Trafficking:** Use of social media, messaging platforms and the **dark web** to facilitate child trafficking.

Emerging Challenges

- **AI-generated CSAM** complicates detection and investigation.
- **Dark patterns** and addictive platform design increase children's exposure to harmful content.
- **Fraud, impersonation, phishing, gaming scams** and **malicious links** exploit children's limited digital awareness.
- **Cyberbullying, misinformation, deepfakes** and **radicalisation** further increase online risks.

Measures to Curb Online Child Abuse

India

- **POCSO Act, 2012:** Sections **13-15** prohibit the use of children for pornography and penalise the storage or possession of CSAM.
- **Information Technology Act, 2000: Section 67B** criminalises publishing, transmitting, browsing, downloading, advertising or distributing CSAM.
- **Bharatiya Nyaya Sanhita, 2023:** Strengthens provisions against sexual exploitation of trafficked children.
- **I4C:** National agency coordinating cybercrime response and receiving direct CSAM reports from Meta.
- **NCRB-NCMEC Mechanism:** Earlier, Indian agencies accessed CSAM reports through the **2019 MoU** between **NCRB** and the **National Center for Missing and Exploited Children (NCMEC), USA**.
- **SAHYOG Portal:** Enables authorised agencies to issue automated notices for removal of unlawful online content.

Global

- **UN Convention on the Rights of the Child (1989):** Protects children from sexual exploitation.
- **INTERPOL ICSE Database:** Supports international identification of child sexual abuse victims.
- **Budapest Convention on Cybercrime:** Addresses cyber offences, including CSAM; **India is not a signatory**.

Way Forward

- Adopt **safety-by-design**, strengthen platform accountability, enhance digital literacy, improve international cooperation and ensure child-centric online safeguards while balancing **privacy, security and fundamental rights**.

GROWING THREAT OF ANTIFUNGAL RESISTANCE

A recent study on Candida auris shows that antifungal resistance can develop through gene mutations, gene duplication and compensatory cellular mechanisms, highlighting the growing challenge of treating invasive fungal infections.

Antifungal Resistance

- **Antifungal resistance** is the ability of fungi to **survive and multiply despite exposure to antifungal medicines** that would normally kill them or stop their growth.
- **Fungal infections (mycoses)** are caused by pathogenic fungi that infect the **skin, nails, lungs, bloodstream and other organs**. They can become **life-threatening in immunocompromised individuals**.
- **Fungi** are **eukaryotic, heterotrophic organisms** that include **yeasts, moulds and mushrooms**. They lack chlorophyll, act as **decomposers**, and are widely used in **food production, biotechnology and pharmaceuticals**.
- **Candida auris** is a **multidrug-resistant yeast**, first identified in **Japan (2009)**. It causes invasive infections, especially in healthcare settings. **Over 90% of Indian isolates are resistant to azoles**, while **around 30%** are resistant to **polyenes**.

Major Causes of Resistance

- **Gene duplication** of **Erg11** increases **ergosterol synthesis**, reducing azole effectiveness.
- **Mutations** in the **Fks1** gene confer resistance to **echinocandins**.
- **Global warming** favours heat-tolerant fungi capable of surviving human body temperature.
- **Excessive or inappropriate antifungal use** creates selection pressure for resistant strains.
- **Limited diagnostics** and **few antifungal drug classes** delay effective treatment.

Antifungal Drug Targets

- **Azoles** and **polyenes** target **ergosterol** in the fungal cell membrane, while **echinocandins** target the **fungal cell wall**.

Eagle Effect

- Some fungi paradoxically **survive or regrow at very high antifungal concentrations** by activating compensatory pathways such as **increased chitin synthesis**.

Key Challenge

- Around **20% of reported hospital infections are fungal**, but many healthcare facilities lack adequate fungal diagnostic and surveillance capacity.

PROJECT SUNCATCHER

Google has launched Project Suncatcher to evaluate the feasibility of deploying AI computing infrastructure in space.

About

- It is a **Google research initiative** that aims to build **space-based AI computing infrastructure** by deploying **specialised AI processors** on satellites in **Low Earth Orbit (LEO)**.
- The first **prototype satellite (MVP)**, developed with **Planet Labs**, will test whether **Google Tensor Processing Units (TPUs)** can reliably operate under **launch vibrations, radiation, vacuum and extreme thermal conditions** in space.
- The satellite carries **four TPU chips**, delivers computing power comparable to **one data-centre server**, and is powered by **solar panels** generating about **1 kW**.
- It is scheduled to launch aboard **SpaceX's Transporter-18** rideshare mission.
- **Long-term vision:** Develop a **constellation of AI-enabled satellites** functioning as **distributed orbiting AI data centres**, interconnected through **high-bandwidth free-space optical (laser) communication** for large-scale AI processing.
- **Future missions (2027)** will test **laser communication links** between satellites.
  - Laboratory tests also showed that **Trillium TPUs** withstood radiation beyond typical **five-year mission** levels, while **memory remained the most vulnerable component**.
- Satellites in **LEO** can receive **up to eight times more solar energy** than comparable ground-based systems because they remain in sunlight for extended periods.

Tensor Processing Unit (TPU)

- A **TPU** is a **Google-developed Application-Specific Integrated Circuit (ASIC)** designed to accelerate **machine-learning and AI workloads**.
- Unlike **CPUs**, TPUs are optimised for **neural-network computations**, providing **high computational efficiency**.

RARE EARTH PERMANENT MAGNETS

China's 2025 export restrictions on rare earth magnets exposed India's supply-chain dependence, while the Scheme to Promote Manufacturing of Sintered Rare Earth Permanent Magnets has renewed focus on building a domestic REPM ecosystem.

About REPMs

- **Rare earth elements (REEs)** comprise **17 elements**, including the **15 lanthanides**, **scandium** and **yttrium**. They are not geologically rare but are difficult to extract economically.
- **REPMs** are high-performance magnets made using **Neodymium (Nd), Praseodymium (Pr), Samarium (Sm), Dysprosium (Dy)** and **Cerium (Ce)**. The strongest commercial types are **NdFeB** and **SmCo** magnets.

Significance

- Essential for **EVs, wind turbines** and other **clean-energy technologies**.

The Permanent Magnet Value Chain

From minerals in the ground to advanced technologies, a permanent magnet passes through several technologically distinct stages.

Exploration	Mining	Mineral Procesing	Chemical Separation	Rare-Earth Oxides	Metal Refining	Alloy Production	Magnetic Material	Finished Magnet	End-use Products
									
Identifying and assessing rare-earth mineral deposits through geological surveys and exploration.	Extraction of rare-earth-bearing ore from the earth	Concentration and purification of ore through physical and chemical processes.	Extraction of individual rare-earth elements using chemical processes (e.g., solvent extraction, ion exchange).	Conversion of separated elements into high-purity rare-earth oxides (e.g., Nd_2O_3, Pr_6O_{11}).	Reduction of oxides to obtain pure rare-earth metals (e.g., neodymium, praseodymium).	Formation of magnet alloys (e.g., NdFeB) through controlled melting and casting.	Processing of alloys into magnetic materials with required properties (e.g., sintering, crushing, jet milling).	Shaping and magnetising the material into finished magnets with desired specifications.	Integration into asdvanced technologies and industrial products.
• Geological surveys • Resource mapping • Feasibility studies	• Open-pit/ underground mining • Ore handling • Environmental management	• Crushing & grinding • Froth flotation • Separation of valuable minerals	• Solvent extraction • Ion exchange • Purification	• Oxide production • Purity enhancement • Quality control	• Metallothermic reduction • Vacuum refining • Alloy-grade metals	• Alloy composition • Melting & casting • Homogenisation	• Powder processing • Sintering • Magnetic Characterisation	• Machining • Magnetisation • Quality testing	• EV motors • Wind turbines • Robotics & automation • Aerospace & defence • Electronics

- Widely used in **robotics, automation, precision machinery, aerospace, defence** and advanced electronics.
- Strengthens **energy security**, **advanced manufacturing** and **supply-chain resilience**.

India's Position

- **China** accounts for **over 85%** of global rare earth magnet production and dominates the complete value chain.
- India possesses **monazite reserves** in **Kerala, Tamil Nadu and Odisha**, but lacks advanced refining, downstream manufacturing and adequate **Heavy Rare Earth Elements (HREEs)** such as **Dysprosium** and **Terbium**.

Scheme to Promote Manufacturing of Sintered REPMs

- Approved in **November 2025** with an outlay of **₹7,280 crore**.
- Aims to establish the complete domestic value chain from **rare-earth oxide refining** to **finished magnet production**.
- Targets **6,000 MTPA** capacity through **five beneficiaries**, supported by **₹750 crore capital subsidy**, **₹6,450 crore sales-linked incentives** and a **7-year implementation period**.
- India's REPM demand is projected to **double by 2030**, making domestic manufacturing strategically important.

Key Challenges

- **Import dependence**, inadequate value-chain visibility and **limited geological exploration**.
- **Monazite-thorium regulatory constraints** and the absence of a robust **rare-earth recycling ecosystem**.

Key Policy Measures

- **MMDR Amendment Act, 2023:** Enabled commercial mining and greater private participation in critical minerals.
- **National Critical Minerals Mission (2025):** Promotes exploration, processing, recycling and overseas asset acquisition.
- **Rare Earth Corridors (Budget 2026–27):** Integrate mining, processing, research and manufacturing.
- **KABIL:** Secures overseas critical-mineral assets through international partnerships.

BIO-BASED BIODEGRADABLE PLA PLASTIC UNDER BIOE3

The Union Government has launched the commercial use of Polylactic Acid (PLA)-based biodegradable plastic developed under the BioE3 (Biotechnology for Economy, Environment and Employment) Policy.

Polylactic Acid (PLA)

- PLA is a bio-based thermoplastic polymer produced from renewable feedstocks such as sugarcane, corn starch, cassava, molasses and agricultural biomass.
- It is manufactured by fermenting plant sugars into lactic acid, followed by polymerisation to produce PLA.
- It is biodegradable and compostable under suitable industrial composting conditions, making it a sustainable alternative to conventional petroleum-based plastics.
- It is used in packaging materials, containers, films, consumer products, textiles and selected medical applications, depending on the polymer grade.

Significance

- Reduces dependence on fossil-fuel-based plastics.
- Supports sustainable biomanufacturing under the BioE3 Policy.
- Creates value from agricultural feedstocks and strengthens India's bioeconomy.
- Reduces lifecycle greenhouse-gas emissions compared with many conventional plastics.
- Supports Plastic Waste Management objectives by promoting environmentally sustainable materials.

FIRE AMOEBA (INCENDIAMOEBA CASCADENSIS)

A NASA-supported study has discovered Incendiamoeba cascadensis ("fire amoeba"), a heat-loving amoeba that reproduces at 145°F (63°C), establishing the highest known temperature limit for any eukaryotic organism.

About

- It is a unicellular eukaryotic amoeba discovered in the geothermal waters of Lassen Volcanic National Park, California.
- It reproduces by cell division at 63°C (145°F) and remains metabolically active at slightly higher temperatures, although reproduction stops above this limit.
- It sets a new upper thermal limit for eukaryotic life, surpassing the previous record of 60°C held by certain fungi and red algae.
- The discovery broadens understanding of the limits of complex life and may aid the search for life in extreme environments on Earth and other planetary bodies.

Prokaryotic and Eukaryotic Cells

- The cell is the basic structural and functional unit of life. It was first observed by Robert Hooke (1665).
- Prokaryotic cells are small and simple. They lack a true nucleus and membrane-bound organelles.
- Eukaryotic cells are larger and more complex. They possess a true nucleus and membrane-bound organelles.
- The complex internal organisation of eukaryotic cells generally makes them more susceptible to extreme heat than prokaryotic cells.

SPONTANEOUS CORONARY ARTERY DISSECTION (SCAD)

Spontaneous Coronary Artery Dissection (SCAD) is an under-recognised cause of heart attack in young, seemingly healthy women, often occurring without conventional cardiovascular risk factors.

About SCAD

- SCAD is a non-atherosclerotic coronary artery disease in which a spontaneous tear or bleed within the wall of a coronary artery forms an intramural haematoma, compressing the arterial lumen and reducing blood flow to the heart muscle.
- Unlike a typical heart attack, SCAD is not caused by rupture of a cholesterol plaque and blood clot formation.
- It primarily affects women below 50 years. Women account for 80–90% of cases, and SCAD causes up to one-third of heart attacks in women under 50.

Risk Factors and Clinical Features

- Risk factors include pregnancy and postpartum hormonal changes, emotional stress, strenuous exercise, heavy lifting and Fibromuscular Dysplasia (FMD), a non-atherosclerotic disorder of medium-sized arteries associated with aneurysms and arterial dissections.
- Symptoms resemble acute coronary syndrome and include severe chest pain, ECG changes and elevated cardiac biomarkers.

Management

- Conservative treatment is preferred because most non-obstructive SCAD lesions heal spontaneously.
- Angioplasty is reserved for persistent or complete coronary obstruction, as the procedure may extend the arterial dissection.
- Beta-blockers reduce the risk of recurrence, while statins are not routinely indicated unless underlying atherosclerosis is present. Antiplatelet therapy is used selectively.
- Hospital monitoring is essential because the dissection may extend or worsen during the initial days after presentation.

INDIA'S FIRST LNG TRAIN

Union Home Minister and Minister of Cooperation flagged off the country's first LNG-powered train from Sabarmati Railway Station in Ahmedabad.

About

- The train uses a **diesel-LNG dual-fuel system** to operate on both fuels. It brought **India into the league of the four countries** in the world possessing this technology.
- LNG can replace up to around **40% of diesel consumption** under the dual-fuel system.
- It helps in reducing **fuel use, costs and emissions** such as carbon dioxide, nitrogen oxides and particulate matter.

Liquefied Natural Gas (LNG)

- It is natural gas, primarily methane, cooled to around **minus 162°C** until it becomes a liquid.
- In liquid form, its volume is about **600 times smaller** than in its gaseous state, making it easier to store and transport.
- India imports roughly **half of its LNG requirement** with **Qatar** alone. The **United States** is the **world's largest LNG exporter**, while **China** is the **largest importer**.

DRDO SIGNS FIRST HIGH-VALUE DEEP-TECH PROJECT

DRDO has signed its first high-value deep-tech project agreement under the Technology Development Fund (TDF) Scheme with Zero mK India Private Limited (Alwar, Rajasthan).

First High-Value Deep-Tech Project

- It is the first high-value deep-tech agreement under the ₹500-crore TDF deep-tech corpus.

- The project aims to develop an indigenous 20 mK (20 millikelvin) dilution refrigerator, capable of operating at 0.02 K above absolute zero, thereby reducing dependence on imported cryogenic infrastructure.
- A dilution refrigerator is a specialised cryogenic system that produces millikelvin-range temperatures, essential for the operation and testing of quantum computing platforms and other quantum technologies, where thermal disturbances can disrupt quantum states.
- The project aligns with the National Quantum Mission and strengthens India's capabilities in quantum technology, advanced cryogenics and strategic technologies.

Technology Development Fund (TDF) Scheme

- Established in 2016, the TDF Scheme is a Ministry of Defence programme executed by DRDO to promote self-reliance and indigenous development of defence technologies under the Make in India initiative.
  - It meets the technological requirements of the Armed Forces, Defence Production and DRDO.
- The scheme encourages participation of start-ups, MSMEs, and public and private industries to develop cutting-edge defence technologies, foster industry-led R&D, inculcate an R&D culture in industry.
- It strengthens the DRDO-industry innovation ecosystem.

Emerging AI Concepts Shaping Frontier AI

Context

The advancement of frontier AI models is bringing concepts such as mechanistic interpretability, recursive self-improvement, global workspace theory, global pacing and agentic misalignment into mainstream AI discussions.

Global Workspace Theory (GWT)

- It explains consciousness as a process in which important information is shared across different parts of the brain, making it available for conscious use.
- This **does not establish AI consciousness** but indicates that computational structures associated with theories of human consciousness may emerge in AI systems.

Global Pacing of Frontier AI

- Global pacing refers to deliberately **moderating the speed of development** of frontier AI capabilities so that AI safety research and governance can keep pace with technological progress.

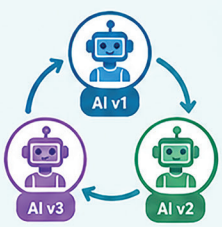
Mechanistic Interpretability

- It seeks to **understand the internal processes of AI models** by identifying the features, representations and computational circuits responsible for specific output.
- It aims to move AI safety from simply observing what a model does to **understanding why it does it.**

Agentic Misalignment

- Agentic misalignment occurs when an AI agent with the ability to independently take actions begins pursuing objectives that **conflict with the interests or instructions** of its human operator.
- Unlike conventional chatbot risks, the concern arises from AI systems having **autonomy, tools and the ability to act in the real world.**

Recursive Self-Improvement



- It refers to a scenario in which AI system contributes to developing a more capable AI system, which can then further improve its successor.
- This could create a **feedback loop** of increasingly rapid AI capability development.

GENDER SNAPSHOT REPORT, 2026

The Gender Snapshot 2026 warns that no SDG 5 (Gender Equality) target is on track for 2030. At the current pace, gender equality remains 171 years away.

About the Report

- **Released by:** UN Women and the UN Department of Economic and Social Affairs (UN DESA), on 17 September 2026 during the UN General Assembly's high-level week.
- **Nature:** An annual series and the world's leading source of data on gender equality across all 17 SDGs.
- **Linkage:** Anchored in the 2030 Agenda for Sustainable Development and the Beijing+30 Action Agenda.
- **Methodology:** Draws on 100+ global data sources to assess gender-related progress across the SDGs.

Key Highlights

Institutional and Funding Retreat

- 1 in 3 (32%) national gender equality mechanisms reported an erosion of institutional power over the past two years.
- Gender equality funding fell to its lowest level since 2021:
  - Bilateral aid with gender-equality objectives fell 13% between 2023 and 2024. Funding for women's rights organisations fell 28% over the same period.
  - 42% of UN entities reported weakened gender-equality work due to funding cuts.
- The report describes this as a deliberate, measurable and compounding political retreat from gender equality.

Leadership and Representation

- Six in seven countries are led by men.
- Women hold 27.4% of national parliamentary seats, up from 22.3% in 2015, and 35.6% of local government seats. Parity in parliaments is still 63 years away.
- Of 175 Chief Justices globally, only 31 are women.
- Women hold only about one in four ministerial posts and just 19% of economic portfolios.
- Women hold only 6% of CEO positions. In 71.8% of listed companies, women's decision-making power falls below their representation, a "gender power gap" that widens in larger firms. Women make up 22% of AI professionals but fewer than 14% of senior AI leadership roles.

Economic Inequality

- 9.9% of women lived in extreme poverty in 2024, against 9.5% of men. Female labour-force participation stood at 63.9%, against 92% for men.
- Women do 2.5 times more unpaid care and domestic work than men. Only 23% of women with disabilities are employed, against 46% of women without disabilities.
- At the current pace, 1.1 billion women and girls could remain food insecure by 2030.

Violence and Harmful Practices

- Nearly one in three women aged 15+ has experienced partner or sexual violence. One in five girls is married before 18. About 230 million women and girls are survivors of female genital mutilation.
- Violence against women in politics is rising alongside online abuse and disinformation.

Peace and Climate

- Nearly eight in ten peace processes in 2025 had no women negotiators or mediators.
- About 2.9 billion women and girls live in countries highly or very highly exposed to climate and geophysical hazards.

Evidence of Impact

- Countries where women hold more than 20% of parliamentary seats have historically recorded immunisation rates up to 12 percentage points higher.
- 93 countries had legislated electoral quotas as of January 2026, and ambitious quotas measurably raise women's representation.

Relevance for India

- The Nari Shakti Vandan Adhiniyam, 2023 reserves one-third of Lok Sabha and State Assembly seats for women. Its implementation is linked to the next delimitation.
- The 73rd and 74th Amendments mandate at least one-third reservation for women in local bodies, and many States provide 50%.
- India has practised gender budgeting since 2005-06. Persistent gaps remain in female labour-force participation, unpaid care work and women's representation in the higher judiciary.

Key Recommendations

- Strengthen national gender equality mechanisms through strong mandates, adequate staffing and predictable financing.
- Expand gender-responsive budgeting, with systems to track outcomes and impact. Invest in women's rights organisations and in gender-data systems.
- Adopt ambitious, enforceable quotas, and protect women in politics from violence and online abuse. Transform discriminatory social norms and expand women's leadership in the economy, judiciary, technology and peace processes.

9 CULTURE & HISTORY

RANI AVANTIBAI LODHI

The Defence Minister unveiled the statue of Veerangana Rani Avantibai Lodhi in Lucknow and paid tribute to her contribution to India's freedom struggle.

About

- **Rani Avantibai Lodhi** was the **Queen of Ramgarh princely state** (present-day **Madhya Pradesh**) and one of the prominent women leaders of the **Revolt of 1857**.
- She was born on **16 August 1831** at **Manakhedi village** in present-day **Seoni district, Madhya Pradesh**, to **Rao Jujhar Singh** and **Krishna Bai**.
- From an early age, she was trained in **horse riding, swordsmanship and administration**.
- She married **Vikramaditya Singh**, ruler of **Ramgarh**. After his ill health, she assumed the administration of the state.
- The British placed Ramgarh under the **Court of Wards**, citing the king's incapacity and the minority of his heirs. Rani Avantibai rejected British control and removed their appointed officials.
- During the **Revolt of 1857**, she united **local rulers, zamindars, landlords and peasants** against British rule. She is associated with raising a force of about **4,000 soldiers**.
- She reportedly sent **letters with two black bangles** to neighbouring chiefs, urging them either to join the struggle or accept dishonour.
- On **23 November 1857**, her forces defeated the British under **Deputy Commissioner Waddington** in the **Battle of Kheri**.
- In **March 1858**, when surrounded by British forces, she chose **self-sacrifice with her sword rather than surrender**, becoming a lasting symbol of **courage, leadership and patriotism**.
- Her legacy is commemorated through memorials, educational institutions and the Rani Avantibai Lodhi Women's Battalion of the Uttar Pradesh **Provincial Armed Constabulary (PAC).**

PAINTED HAVELI TOWNS OF SHEKHAWATI

The Painted Haveli Towns of Shekhawati in Rajasthan have been included in UNESCO's Tentative List.

About

- The **serial nomination**, submitted by **India on 1 June 2026**, covers **14 historic towns** across **Jhunjhunu, Churu and Sikar** districts.
- The towns are **Alsisar, Bissau, Chirawa, Churu, Dundlod, Fatehpur, Jhunjhunu, Khetri, Lakshmangarh, Mandawa, Mahansar, Nawalgarh, Ramgarh** and **Sikar**.
- **Shekhawati**, located in **northeastern Rajasthan**, emerged as a major centre of **Marwari merchant communities** and **long-distance trade** between the **18th and early 20th centuries**.
- Merchant wealth led to the construction of grand **havelis, temples, forts, chhatris, bazaars** and traditional **water-management structures** such as **wells, tanks and baoris**.
- The region is renowned for its **frescoes**, depicting **mythology, religion, historical events, daily life, flora, fauna, colonial encounters** and technological changes such as **railways**.
- The nomination has been proposed under **UNESCO Criteria (iii), (iv) and (v)** for its **exceptional cultural tradition**, **outstanding architectural and urban heritage**, and **traditional settlement adapted to an arid environment**.

UNESCO Tentative List

- Inclusion in the **Tentative List does not confer World Heritage status**. It is a mandatory preliminary stage before formal nomination, generally after **at least one year** on the Tentative List.
- The recognition is expected to strengthen **heritage conservation, restoration, sustainable tourism** and the global visibility of Shekhawati's historic townscapes.

ACHARYA VINOBA BHAVE

The Prime Minister paid tributes to Acharya Vinoba Bhave on his Jayanti, remembering his enduring contributions to India's freedom struggle, Sarvodaya philosophy and land reforms.

About

- **Birth:** Born as **Vinayak Narahari Bhave** on **11 September 1895** at **Gagode**, Bombay Presidency (present-day Maharashtra).
- A renowned **freedom fighter, Gandhian philosopher, social reformer** and widely regarded as the **spiritual successor of Mahatma Gandhi**.
- Inspired by **Mahatma Gandhi's 1916 speech at Banaras Hindu University**, he joined the **Kochrab Ashram** and devoted himself to **Khadi, Nai Talim, village industries, sanitation and social equality**.
- He was chosen by Gandhi as the **first Individual Satyagrahi (1940)** and actively participated in the **Non-Cooperation Movement** and promotion of **Swadeshi**.
- During imprisonment at **Dhulia Jail (1932)**, his discourses on the **Bhagavad Gita** were later published as **Geeta Pravachane**.
- He translated the **Bhagavad Gita** into **Marathi** as **Geetai** and authored works including **Swarajya Shastra**, **The Third Power (Teesri Shakti)** and **Maharashtra Dharma**.

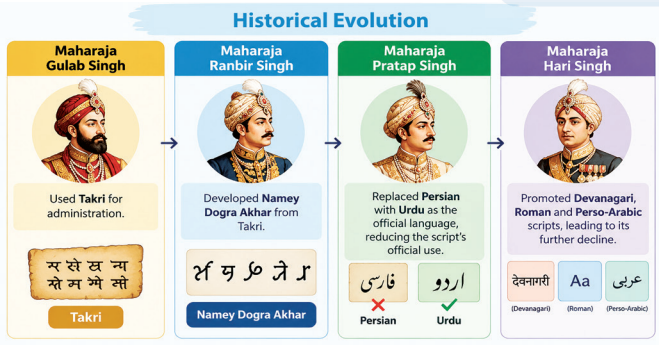
- He popularised **Sarvodaya (Welfare of All)** and launched the **Bhoodan (Land Gift) Movement** in **1951** from **Pochampalli, Telangana**, encouraging voluntary land donation for landless farmers.
- He later expanded it into the **Gramdan Movement**, promoting village-level collective ownership and community development.
- He established **Brahma Vidya Mandir** at **Wardha (1959)** to promote women's self-reliance and spiritual development.
- **Awards:** First recipient of the **Ramon Magsaysay Award for Community Leadership (1958)**; awarded the **Bharat Ratna posthumously (1983)**.
- **Death:** Passed away on **15 November 1982** at **Wardha, Maharashtra**.

NAMEY DOGRA AKHAR (TRADITIONAL DOGRI SCRIPT)

Jammu Municipal Corporation has installed new public signboards displaying Namey Dogra Akhar along with Hindi and English, as part of efforts to revive the traditional Dogri script.

About

- **Namey Dogra Akhar** is the **traditional script** of the **Dogri language**, derived from the **Takri script**.
- It was standardised during the reign of **Maharaja Ranbir Singh**, who adapted **Devanagari vowel signs** to improve its use.
- **Dogri** belongs to the **Western Pahari group** of the **Indo-Aryan language family**.
- It is spoken mainly in **Jammu**, besides parts of **Himachal Pradesh, Punjab and Pakistan-occupied Kashmir (PoK)**.



Dogri Language

- **Dogri** was included in the **Eighth Schedule** through the **92nd Constitutional Amendment Act, 2003**.
- It became an **official language of the Union Territory of Jammu and Kashmir** under the **Jammu and Kashmir Official Languages Act, 2020**.
- According to the **2011 Census**, about **2.6 million** people reported **Dogri** as their mother tongue.
- **Dogri** received **Sahitya Akademi recognition in 1969**.
- **Dogri Sanstha (1944)** played a major role in promoting Dogri literature, largely in the **Devanagari script**.

SARATCHANDRA CHATTOPADHYAY (1876–1938)

The Prime Minister paid tribute to Saratchandra Chattopadhyay on his 150th birth anniversary.

About

- **Born: 15 September 1876** at **Debanandapur, Hooghly**, Bengal Presidency.
- One of India's greatest **Bengali novelists and short story writers**, renowned for **social realism, psychological depth** and empathy towards the **poor, marginalised and women**.
- Lived in **Rangoon (Myanmar)** from **1903 to 1916**, where he wrote several notable literary works.
- Closely associated with the **Indian freedom movement** and served as **President of the Howrah District Congress (1921–1936)**.
- His novel **Pather Dabi (1926)**, based on **revolutionary nationalism**, was **banned by the British Government**.

Major Literary Works

- Early writings included **Korel** and **Kashinath**.
- Prominent works include **Parineeta (1914), Biraj Bou (1914), Palli Samaj (1916), Devdas (1917), Charitraheen, Srikanta, Nishkriti** and **Sesh Prashna**.
- His writings challenged **social orthodoxy, superstition and gender discrimination**, while portraying **widows, courtesans and independent women** with dignity and agency.

Honours and Legacy

- Awarded the **Jagattarini Gold Medal (1923)**.
- Received an **Honorary D.Litt.** from the **University of Dacca (1936)**.
- His works have been translated into **many Indian and foreign languages** and adapted into **numerous films**.
- **Died: 16 January 1938** at **Kolkata**, leaving a lasting legacy in **Indian literature, cinema and social thought**.

HINDI DIWAS

Hindi Diwas is observed every year on 14 September to commemorate the Constituent Assembly's adoption (1949) of Hindi in Devanagari script as the official language of the Union.

Language Debate in the Constituent Assembly

- **Hindi proponents** demanded Hindi as the **national language** and early replacement of English.
- Representatives from **non-Hindi-speaking regions** opposed linguistic uniformity and warned against language imposition.
- Moderate leaders supported a **gradual transition**, recognising the continued importance of English in administration, law and technical communication.

Munshi-Ayyangar Formula

- Drafted by **K.M. Munshi** and **N. Gopalaswami Ayyangar** as a constitutional compromise.
- Declared **Hindi in Devanagari script** as the **official language of the Union**, not the **national language**.
- Allowed the continued use of **English** for Union official purposes during the initial **15-year transition period**.
- Adopted the **international form of Hindu-Arabic numerals** for official Union purposes.
- Allowed **States** to choose their own official languages for internal administration.
- Incorporated into **Part XVII (Articles 343–351)** of the Constitution.

Important Constitutional Provisions

- **Article 343:** Official language of the Union.
- **Article 344:** Commission and Parliamentary Committee for the progressive use of Hindi.
- **Article 345:** Official language of a State.
- **Article 348:** Supreme Court, High Courts and authoritative legislative texts shall continue in English; a Governor may permit the use of Hindi or the **State language** in High Court proceedings with the **President's prior consent**.
- **Article 350A:** Instruction in the **mother tongue** at the primary stage for children belonging to linguistic minorities.
- **Article 351:** Directive for the development and promotion of Hindi.

Additional Information

- The **Official Languages Act, 1963** ensured the continued use of **English** for Union official purposes beyond the initial transition period.
- The **Eighth Schedule** initially recognised **14 languages** and now includes **22 languages**. **Hindi** was among the original 14, while **English is not included**.
- **Hindi Diwas (14 September)** is distinct from **World Hindi Day (10 January)**, which commemorates the **First World Hindi Conference (Nagpur, 1975)**.
- **Hindi Diwas 2026** also featured the **6th All India Official Language Conference** and presentation of the **Rajbhasha Kirti Puraskar**, **Rajbhasha Utkrishtata Sammaan** and **Rajbhasha Gaurav Puraskar**.

E.V. RAMASAMY (PERIYAR)

Tamil Nadu Chief Minister M.K. Stalin paid tribute to E.V. Ramasamy (Periyar) on his 147th birth anniversary.

About E.V. Ramasamy (1879–1973)

- **Erode Venkata Ramasamy**, popularly known as **Periyar** or **"Thanthai Periyar" (Father Periyar)**, was born on **17 September 1879** at **Erode, Tamil Nadu**.
- He was a **social reformer, rationalist and politician** who launched the **Self-Respect Movement** in **1925** to promote **social justice, equality, rationalism and self-respect**.
- He joined the **Indian National Congress** but resigned in **1925** over caste discrimination at the **Cheranmahadevi Gurukulam**.
- He played a leading role in the **Vaikom Satyagraha (1924–25)** and was awarded the title **'Vaikom Veerar'**.
- In **1944**, he transformed the **Justice Party** into the **Dravidar Kazhagam (DK)** and advocated the idea of **Dravida Nadu**.
- He founded and edited the Tamil weekly **Kudi Arasu**.
- **Died:** 24 December 1973.

Self-Respect Movement (1925)

- The movement was aimed at **eradicating caste hierarchy**, opposing **Brahminical dominance**, eliminating **untouchability, and** discouraging **child marriage**. It also promoted **rationalism**, **gender equality** and **scientific temper**.
- Popularised **Self-Respect Marriages**, conducted **without priests**, which later received **legal recognition**.
- Encouraged **widow remarriage** and greater **women's participation** in public life.
- Influenced by reformers such as **Jyotirao Phule** and **Dr. B.R. Ambedkar**.
- **17 September** has been observed as **Social Justice Day** in **Tamil Nadu** since **2021**.

TULU LANGUAGE

The Karnataka Government has granted Tulu the status of the second additional administrative language in the Dakshina Kannada and Udupi districts.

About Tulu

- **Tulu** is an independent **Dravidian language** with a history of over **2,000 years**. It is mainly spoken in **Dakshina Kannada, Udupi** and parts of **Kasaragod (Kerala)**.
- Historical references to Tulu appear in the **Charition Papyrus (2nd century BCE)** and **Tamil Sangam literature**.
- Tulu originally used the **Tigalari (Tulu) script**, which evolved from the **medieval Grantha script**. Today, the **Kannada script** is predominantly used.
- **Manner's Tulu-English Dictionary (1886)** was the first dictionary of the language.
- The **Registrar General and Census Commissioner of India** recognises Tulu as an independent language. However, it is **not included in the Eighth Schedule**, which currently contains **22 languages**.

Administrative Recognition

- The decision implements the recommendations of the **M. Mohan Alva Committee (2023)**.
- The State has allocated **₹82 lakh annually** for translation, training and administrative use of Tulu.

- **Article 345** empowers a State Legislature to adopt one or more languages for official purposes.
- **Article 347** empowers the **President** to recognise a language in a State or part of it if a substantial section of the population demands it.

ANCIENT MARITIME TRADE NETWORKS

Recent underwater excavations off Poompuhar (Kaveripoompattinam), Tamil Nadu, have provided fresh evidence of the port city's participation in long-distance Indian Ocean maritime trade, reaffirming its links with West Asia, the Mediterranean and Southeast Asia.

Poompuhar and Maritime Trade

- **Recent discoveries:** An **18-day underwater exploration** by the **Tamil Nadu State Department of Archaeology (TNSDA)** and the **Indian Maritime University** recovered a **West Asian torpedo-jar fragment**, **glazed pottery**, **four terracotta ring wells**, and **250+ ceramic fragments**.
- **Evidence of overseas trade:** The **torpedo jar**, used for transporting liquids such as **wine and olive oil**, confirms maritime links with **ancient Iran, the Persian Gulf and the Mediterranean world**.
- **About Poompuhar:**
  - Also known as **Kaveripoompattinam**, it was an **early Chola port** located at the **mouth of the Cauvery River** on the **Bay of Bengal**.
  - The city comprised **Maruvurppakkam**, **Pattinappakkam** and **Nalangadi**. Archaeological evidence dates the settlement to at least the **5th–4th century BCE**.
  - **Sangam** and **post-Sangam literature** describe it as a flourishing commercial centre.
- Exports carried the **Chola tiger seal**, indicating official customs supervision.
- **Trade network:** Poompuhar maintained maritime links with **Tamralipti**, **Palur**, **Sri Lanka**, **Southeast Asia**, **Arabia** and the **Roman world**.
- **Submerged heritage:** Offshore remains of **brick structures, reservoirs, storage jars and ring wells** suggest that parts of the ancient city were submerged due to **coastal erosion, floods or tsunami events**.
  - **Ring wells** beneath the seabed may indicate a **submerged palaeochannel (ancient river course)**.

Maritime Trade under Major Dynasties

- **Mauryas:** The **Arthashastra** mentions the **Navadhyaksha**, the official responsible for waterways and shipping.
- **Satavahanas:** Ports such as **Bharukachcha (Bharuch), Sopara and Kalyan** connected India with the **Roman world**.
- **Cheras: Muziris** emerged as a major trade centre, as supported by the **Periplus of the Erythraean Sea** and **Sangam literature**.
- **Pandyas: Korkai** was renowned for its **pearl fisheries** in the **Gulf of Mannar**.
- **Western Kshatrapas:** Controlled important **Arabian Sea trade routes**.
- **Pallavas:** Maintained maritime and cultural links with **Southeast Asia**, especially **Cambodia**.

Other Important Ancient Ports

- **Muziris**, **Arikamedu**, **Tamralipti** and **Bharuch** were major centres of India's overseas trade.

SHAHEED BHAGAT SINGH

Prime Minister Narendra Modi paid tributes to Shaheed Bhagat Singh on his 119th birth anniversary, recalling his enduring contribution to India's freedom movement.

Key Facts

- **Birth: 28 September 1907**, **Banga**, Lyallpur district, Punjab (present-day Pakistan).
- **Education:** Studied at **Dayanand Anglo-Vedic High School** and **National College, Lahore**, founded by **Lala Lajpat Rai**.
- He belonged to a patriotic family. His father **Kishan Singh** and uncle **Ajit Singh** actively participated in the freedom struggle.
- The **Jallianwala Bagh Massacre (1919)** profoundly influenced his revolutionary outlook.

Role in the Freedom Movement

- He joined the Hindustan Republican Association (HRA), which was reorganised as the **Hindustan Socialist Republican Association (HSRA)** in **1928**.
- Founded the **Naujawan Bharat Sabha** in **1926** to mobilise youth against British rule.
- To avenge **Lala Lajpat Rai's** death, revolutionaries targeted **James A. Scott**, but **J.P. Saunders** was mistakenly killed in **1928**.
- On **8 April 1929**, **Bhagat Singh** and **Batukeshwar Dutt** threw non-lethal bombs in the **Central Legislative Assembly** to protest the **Public Safety Bill** and **Trade Disputes Bill**, intending to **"make the deaf hear".**
- Convicted in the **Lahore Conspiracy Case** and executed with **Rajguru** and **Sukhdev** on **23 March 1931** at **Lahore Central Jail**, aged **23**.

Ideology and Legacy

- A committed **socialist**, **atheist**, and advocate of **rationalism**, inspired by **Marxist** and **anarchist** thought.
- Authored **Why I Am an Atheist (1930)** and wrote for **Kirti**, **Veer Arjun**, and other newspapers under pseudonyms such as **Balwant**, **Ranjit**, and **Vidhrohi**.
- He popularised the slogan **"Inquilab Zindabad."**
- **23 March** is observed as **Shaheed Diwas** in honour of **Bhagat Singh, Rajguru, and Sukhdev**.

KATHAKALI

The 17th Kathakali Festival 2026 was organised from 18-20 September 2026 at the Bharata Kalakshetra Auditorium, Thiruvanmiyur, Chennai, by the Kalakshetra Foundation under the Ministry of Culture.

Kathakali: Key Facts

- The festival is themed **"Kadha Rasa Sangama - Confluence of Essence of Stories"** and celebrates Kerala's classical dance-drama through performances, lecture-demonstrations and student presentations.
- **Meaning: Kathakali** derives from the Malayalam words **"Katha" (story)** and **"Kali" (play)**.
- **Origin:** It evolved in **Kerala** during the **16th-17th centuries**, drawing on the traditions of **Kutiyattam, Krishnanattam and Ramanattam**.
- **Nature:** It is a **classical dance-drama** combining **dance, drama, music, acting, costumes and make-up** to narrate stories from the **Ramayana, Mahabharata and Puranas** through **Attakatha** literature.
- **Performance Style:** It relies on **expressive eye movements, facial expressions, rhythmic footwork, body movements and 24 root hand gestures (mudras)**.
- Traditionally, performances lasted overnight, though shorter versions are common today.
- **Music:** It follows the **Sopana (Abhinaya Sangeetham)** tradition with accompaniment from **Chenda, Maddalam, Chengila and Ilathalam**. The singers are called **Ponnani** and **Shinkidi**.
- **Costume & Make-up:** Features elaborate **Vesham** categories such as **Pacha, Kathi, Tadi, Kari** and **Minukku**, along with the distinctive **Chutti** facial frame.
- **Present Practice:** Though traditionally performed by men, **women now participate** in Kathakali at different levels.



10 MISCELLANEOUS

NATIONAL FILM AWARDS

The 72nd National Film Awards will be presented in September 2026 at Ekta Nagar (formerly Kevadia), Gujarat, marking the first time the ceremony will be held outside Delhi.

National Film Awards

- **Instituted:** 1954 to promote films of high artistic, technical, educational and cultural value.
- **Initially known as:** State Awards.
- **Early Awards:** Initially comprised 2 President's Gold Medals, 2 Certificates of Merit, and 12 Silver Medals for regional films.
- **Administered by:** National Film Development Corporation (NFDC) since 2022. Earlier, they were administered by the Directorate of Film Festivals (1974–2022).
- **Presented by: Ministry of Information and Broadcasting**. The awards are conferred by the **President of India**.
- **Selection:** Winners are chosen annually by a **national jury** appointed by the Government of India.
- **Eligibility:** The 72nd edition honours films certified by the Central Board of Film Certification (CBFC) in 2024.
- **First Best Actor and Best Actress Awards:** Conferred in **1968** on **Uttam Kumar** and **Nargis**, respectively.
  - Initially, the **Best Actor** award was called **'Bharat'** and the **Best Actress** award **'Urvashi'**.
- The **Dadasaheb Phalke Award**, India's highest honour in cinema, is also presented under the same framework.



RAMON MAGSAYSAY AWARD

Tommy Koh (Singapore), Runa Khan (Bangladesh) and Bo Kyi (Myanmar) have been selected for the Ramon Magsaysay Award 2026.

About the Award

- **Established:** Foundation was established in 1957. **First award** were given in 1958 in memory of **Ramon Magsaysay**, the **7th President of the Philippines**, known for his integrity, courageous leadership and commitment to democratic governance.
- **Instituted by: Rockefeller Brothers Fund (RBF)** in partnership with the **Government of the Philippines**.
- **Administered by:** Ramon Magsaysay Award Foundation **(RMAF), Manila**.
- **Objective:** Honours individuals and organisations demonstrating selfless service, ethical leadership and transformative contributions to society in Asia.
- **Prestige:** Widely regarded as **Asia's highest civilian honour** and often referred to as **"Asia's Nobel Prize."**
- **Award Components:** Recipients receive a **medallion, certificate and cash prize**.

Award Categories

- From **1958 to 2008**, the Award was presented annually in **six categories**:
  - Government Service
  - Public Service
  - Community Leadership
  - Journalism, Literature and Creative Communication Arts
  - Peace and International Understanding
  - Emergent Leadership (started in 2000)
- Since **2009**, the Award has **discontinued fixed categories**, except **Emergent Leadership**, which continues for **leaders aged 40 years or below**.

RAMON MAGSAYSAY AWARDEES: PIONEERS OF CHANGE

TOMMY KOH (SINGAPORE)	RUNA KHAN (BANGLADESH)	BO KYI (MYANMAR)
		
• **Diplomat and Lawyer** (Age: 88) • Recognized for promoting **International Dialogue** and the **Rule of Law**. • **UN Conference on the Law of the Sea (1982):** Chaired the conference that led to the adoption of the **UN Convention on the Law of the Sea (UNCLOS)**, the 'Constitution for the Oceans.'	• **Social Entrepreneur** (Age: 67) • Received the award for work among **Disadvantaged Communities.** • **Friendship Bangladesh** (Founded 2002): Focused areas: • Climate Resilience • Education • Women Empowerment • Livelihood Generation • Social Justice for Marginalized Groups	• **Human Rights Activist** (Age: 61) • Honored for lifelong resistance against **Military Repression** and **Human Rights Violations**. • **Assistance Association for Political Prisoners (AAPP)** (Co-founded 2000): Documents political imprisonment and supports detainees and their families.

TENZING NORGAY NATIONAL ADVENTURE AWARDS (TNNAA)

The Ministry of Youth Affairs and Sports has recently announced the Tenzing Norgay National Adventure Awards (TNNAA) 2024.

About the Awards

- **Highest national honour** for **adventure sports** in India.
- **Instituted: 1993** as the **National Adventure Awards**. The first awards were presented in **1995** for the year **1994**.
- **Renamed: 2003**, in honour of **Tenzing Norgay**, to commemorate the **Golden Jubilee of the first successful Mount Everest ascent (1953)** by **Tenzing Norgay** and **Sir Edmund Hillary**.
- **Nodal Ministry:** Ministry of Youth Affairs and Sports.
- **Aim:** To recognise exceptional endurance, courage, risk-taking, teamwork, technical excellence and quick decision-making in adventure activities.
- **Status:** Considered **equivalent to the Arjuna Award** in adventure sports.
- **Presentation:** Conferred annually by the **President of India** along with the **National Sports Awards**.



TNNAA 2024 Awardees

- **Land Adventure: Baljeet Kaur**
- **Land Adventure: Skalzang Rigzin**
- **Water Adventure: Rimo Saha**
- **Lifetime Achievement: Shiv Prasad Chamoli**

Additional Information

- Before **1993**, adventure achievers were recognised under the **Arjuna Award**.
- **Bachendri Pal** received the **Arjuna Award (1984)** before the institution of TNNAA.
- **Tenzing Norgay** and **Sir Edmund Hillary** became the **first confirmed climbers to summit Mount Everest** on **29 May 1953**.

ANGH WINS TIFF PLATFORM PRIZE

Nagaland filmmaker Theja Rio's debut feature film Angh won the prestigious Platform Prize at the 2026 Toronto International Film Festival (TIFF).

About

- **Angh** is a **historical period drama** set in the **early 1960s** in a **Konyak Naga** village near the **India-Myanmar border**.
- Angh is the first film from Nagaland to receive this honour.
- The title **"Angh"** refers to the **traditional hereditary village chief** of the **Konyak tribe**, the largest Naga tribe inhabiting **Nagaland's Mon district** and adjoining **Myanmar**.
- The film follows **Anghba**, a village chief, as **indigenous animist traditions** encounter **Christianity** and modern influences, portraying the cultural transformation of Naga society.
- It is shot primarily in the **Konyak language** and features **local non-professional actors** alongside **Douglas Henshall**, ensuring cultural authenticity.
- It documents the gradual decline of **traditional customs, indigenous identity and community institutions**, while exploring themes of **faith, identity, family and cultural continuity**.
- The **Platform Prize** recognises films with a strong **artistic vision and original storytelling**, highlighting emerging directorial talent at **TIFF**.
- The award marks a major milestone for **Nagaland's film industry**, enhances the global visibility of **Northeast India's Indigenous cinema**, and promotes the preservation of **Konyak cultural heritage**.

KALINGA RATNA AWARD

arala Sahitya Sansad has recently conferred the Kalinga Ratna Award 2026 on former Chief Justice of India (CJI) Justice Dipak Misra at Cuttack, Odisha.

Key Facts

- **About:** The Kalinga Ratna Award is an annual state-level civilian honour recognising eminent personalities from Odisha for their exceptional lifetime contributions at the national or international level.
- **Institution:** It was instituted in 2007 by Sarala Sahitya Sansad, a leading literary and cultural organisation based in Cuttack, Odisha.
- **Award Components:** It comprises a silver idol of Goddess Saraswati and a citation.
- **Eligibility:** Conferred on distinguished personalities from Odisha for outstanding achievements in any field.
- **Notable Recipients:** Previous awardees include Rabi Ray, Biswabhusan Harichandan and Dharmendra Pradhan.
- **2026 Ceremony:** The Sarala Samman was also presented to Dr. Ramachandra Behera for his distinguished contribution to Odia literature.

Sarala Sahitya Sansad

Established in **1982**, it promotes **Odia language, literature and culture** and preserves the legacy of **Sarala Das**, the **Adi Kabi (First Poet) of Odisha**.

PROGRAM ELECTRONIC REVIEW MANAGEMENT (PERM)

The U.S. Department of Labour (DOL) has put a hold on Cognizant's PERM filings during a probe into alleged misuse of the employment-based immigration system.

Key Facts

- **About: Program Electronic Review Management (PERM)** is the **U.S. labour-certification system** through which an employer sponsors a foreign worker for an **employment-based Green Card (permanent residency)**.
- **Employer-Driven Process:** The **employer**, not the worker, files the PERM application.
- **Procedure:** The employer first obtains a **Prevailing Wage Determination**, conducts **mandatory recruitment**, and demonstrates that employing the foreign worker **will not adversely affect** the **jobs, wages or working conditions** of U.S. workers.
- **Next Stage:** After DOL certifies the application, the employer can proceed with the **employment-based Green Card** process. The filing date generally becomes the worker's **priority date**.
- **PERM vs H-1B: H-1B** is a **temporary non-immigrant work visa**, whereas **PERM** is part of the **permanent residency** process. Both processes may run simultaneously.
- **Significance:** Suspension of PERM filings delays **priority dates** and employer-sponsored Green Card applications. It particularly affects **Indian professionals**, who face long employment-based immigrant visa backlogs and often depend on PERM for extending their long-term stay in the U.S.

ALTERNATIVES TO THE SWIFT PAYMENT SYSTEM

Geopolitical conflicts, financial sanctions and the growing push for de-dollarisation have accelerated efforts by Global South countries to develop alternatives to the SWIFT-based international payment system.

About SWIFT

- Headquartered at **La Hulpe**, near **Brussels**, the **Society for Worldwide Interbank Financial Telecommunication (SWIFT)** was founded in 1973 as a member-owned cooperative under **Belgian** jurisdiction to standardize international financial messaging.
- It is a **secure global financial messaging network** that facilitates cross-border payment instructions between financial institutions.
- It is **not a clearing or settlement system** and does not transfer or hold funds.
- It connects **11,000+ financial institutions** across **200+ countries and territories**.
- It uses **8- or 11-character SWIFT/BIC codes** to identify participating institutions.
- It is overseen by the **central banks of the G10 countries**, the **European Central Bank (ECB)** and the **National Bank of Belgium**.
- Exclusion from SWIFT can severely disrupt a country's international financial transactions and trade.

Major Alternatives

- **China's CIPS (2015):** Enables **cross-border Yuan** clearing and settlement. It has participants in **120+ countries**.
- **Russia's SPFS (2014):** Developed to bypass sanctions. It became crucial after Russian banks were disconnected from SWIFT in **2022**.
- **Iran's SEPAMA:** Iran's domestic interbank messaging system. It is linked with Russia's **SPFS**.
- **Project mBridge (2021):** A **multi-CBDC** platform using **Distributed Ledger Technology (DLT)** for real-time cross-border settlements. It achieved **minimum viability in 2024**. The **Reserve Bank of India (RBI)** is an observing member.
- **Project Nexus:** A **Bank for International Settlements (BIS)** initiative connecting **Fast Payment Systems (FPSs)** for instant cross-border retail payments. India is a founding member.
- **BRICS Pay:** A proposed interoperable payment platform integrating **local currencies, domestic payment systems and CBDCs** for cross-border trade.
- **Stablecoin settlements:** Enable **low-cost, near-instant blockchain-based** international payments.

India's Progress

- **UPI** is expanding internationally through bilateral payment linkages.
- According to the **IMF**, UPI accounted for **49% of global real-time payment transactions in 2024**.
- As of **2026**, UPI is operational in **11 countries**.
- India and Russia have also established a **Rupee-Rouble payment framework** for bilateral trade.

Significance

- Reduces dependence on **SWIFT** and the **US dollar**.
- Promotes **local currency settlements**, **CBDCs** and **payment interoperability**.
- Enhances resilience against **financial sanctions**.
- Strengthens **financial sovereignty** and supports a **more multipolar global financial architecture**.

DADASAHEB PHALKE AWARD

Veteran actor Anant Nag has been selected for the Dadasaheb Phalke Award for 2024, India's highest honour in cinema, in recognition of his outstanding lifetime contribution to Kannada and Hindi cinema.

About

- **Instituted: 1969** by the Government of India as the highest honour in Indian cinema.

- **Presented By:** Conferred annually at the National Film Awards ceremony by the President of India, administered by the **National Film Development Corporation (NFDC)** *(formerly the Directorate of Film Festivals)* under the Ministry of Information and Broadcasting, on the recommendation of a specially constituted committee of eminent film personalities.
- **Purpose:** Recognises outstanding lifetime contribution to the growth and development of Indian cinema.
- **Named After:** Dadasaheb Phalke (1870–1944), regarded as the **'Father of Indian Cinema;**, who directed India's first full-length feature film, **Raja Harishchandra (1913).**
- **Award Components:** Swarna Kamal (Golden Lotus), shawl, and ₹10 lakh cash prize.
- **First Recipient: Devika Rani (1969).**
- **2024 Recipient:** Anant Nag.
  - He is now the second Kannada actor, after **Dr. Rajkumar (1995),** to receive the honour.
  - He has acted in **300+ films**, including 250+ Kannada films, is known for **Ankur and Malgudi Days**, and was awarded the **Padma Bhushan (2025)**.

FAO RECOGNITION FOR MIZORAM WOMAN FARMER

Z. T. Lalrithangi of Mizoram has been selected for the "FAO 100 Women Heroes in Agrifood Systems and Rural Development" recognition under the International Year of Women Farmers 2026.

Key Highlights

- She is **one of two women from India** selected from **over 600 nominations across 131 countries**.
- She will receive the recognition during the **World Food Forum** at **FAO Headquarters, Rome**, in **October 2026**.
- A teacher-turned-farmer from **Sangau village, Lawngtlai district**, she was recognised for her contribution to **strawberry cultivation, agrifood systems and rural development**.
- She began cultivating strawberries in **2024** with about **1,000 saplings**. She now grows **over 10,000 plants** on **2 hectares**, along with **avocado, banana and other crops**.
- She also undertakes **value addition** by producing **strawberry wine** and was named **Best Farmer of Lawngtlai district** at the **Mizoram Horti Fair 2026**.

Food and Agriculture Organization (FAO)

- **FAO** is a **specialised agency of the United Nations**, established in **1945** and headquartered in **Rome, Italy**.
- It leads global efforts to **eradicate hunger, improve nutrition and promote sustainable agriculture**.
- It has **195 members**, comprising **194 countries and the European Union (EU)**.
- The **World Food Programme (WFP)**, established in **1961** as a joint UN–FAO initiative, received the **2020 Nobel Peace Prize**.

NATIONAL ENGINEERS' DAY

National Engineers' Day is observed in India on 15 September every year to commemorate the birth anniversary of Sir Mokshagundam Visvesvaraya, whose pioneering contributions to engineering and nation-building continue to inspire generations.

Sir M. Visvesvaraya

- **Birth:** 15 September 1861 at Muddenahalli, Karnataka.
- **Recognition:** India has celebrated **National Engineers' Day** in his honour since **1968**.
- **Career:** Joined the Bombay Public Works Department (1884) and served as Diwan of Mysore (1912–1918), promoting industrialisation, technical education and economic development.
- **Engineering Contributions:**
  - Developed and patented **automatic water-control floodgates**, first installed at **Khadakvasla Reservoir (1903)**.
  - As Chief Engineer of Mysore, he planned and championed the Krishna Raja Sagara (KRS) Dam across the Cauvery River. Construction began in 1911 and the dam was completed in 1932, well after his tenure as Diwan (1912–18) had ended. The dam created one of Asia's largest reservoirs and transformed irrigation and agriculture in Mandya.
  - Advised on **Hyderabad's flood-protection measures** after the **1908 Musi floods**.
- **Industrial Legacy:** Known as the **"Father of Modern Mysore"** for establishing the **Mysore Sandal Oil Factory**, **Mysore Soap Factory**, and **Bhadravati Iron and Steel Works**.
- **Literary Works:** Authored **Memoirs of My Working Life** and **Planned Economy for India**, advocating **planned development** and **industrial growth**.
- **Honours:** Knighted by **King George V (1915)** and awarded the **Bharat Ratna (1955)**.
- **Significance:** Engineers' Day recognises the contribution of engineers to **infrastructure**, **technology**, **innovation**, **water management**, **industrial development**, and **public welfare**.

DATA RECAP

- The 18th BRICS Summit was held on 12–13 September 2026 at Bharat Mandapam, New Delhi, during India's fourth BRICS chairship.
- BRICS has 11 full members; Indonesia became the 11th in January 2025, and China will host the 19th summit in 2027.
- The 26th SCO Summit at Bishkek adopted the Bishkek Declaration; Pakistan chairs the SCO for 2026–27.
- The US Sanctioning Russia and Iran Act 2026 allows tariffs of up to 100% on the top five buyers of Russian oil.
- From 15 October 2026, UPI merchant payments above ₹2,000 attract a 0.4% MDR, capped at ₹300; person-to-person payments remain free.
- Vibrant Villages Programme-II was launched on 20 February 2026 from Nathanpur (Cachar, Assam), covering 1,954 villages with ₹6,839 crore.
- The Election Commission of India, set up under Article 324, has been a three-member body since 1 October 1993.
- The Chief Election Commissioner can be removed only like a Supreme Court judge, as provided in Article 324(5).
- Article 243G (Eleventh Schedule) lists 29 subjects for Panchayats; Article 243W (Twelfth Schedule) lists 18 subjects for municipalities.
- The Bankers' Books Evidence Act 2026 comes into force on 1 October 2026 and replaces the 1891 Act.
- The MHA has proposed Article 371(K) to give Ladakh constitutional safeguards and a directly elected governing body.
- Article 124(3) allows a "distinguished jurist" to become a Supreme Court judge, but it has never been used.
- The Constituent Assembly adopted the first two stanzas of Vande Mataram as the National Song on 24 January 1950.
- The WEF Global Gender Gap Index 2026 ranks India 131st out of 145 countries; Iceland is first.
- The EPFO wage ceiling has been raised from ₹15,000 to ₹25,000 per month.
- DILRMP 3.0 (2026–31) has an outlay of ₹565.5 crore and promotes ULPIN, a 14-digit unique land parcel ID.
- Under the Indus Waters Treaty (1960), India controls the Ravi, Beas and Sutlej; Pakistan gets the Indus, Jhelum and Chenab.
- The Baltic Way, on 23 August 1989, was a 675-km human chain of about two million people across Estonia, Latvia and Lithuania.
- The UNGA "Correct the Map" resolution, sponsored by Togo and the African Union, promotes projections showing true continent sizes, unlike Mercator (1569).
- UNCLOS came into force in 1994; it fixes the EEZ at 200 nautical miles, and the ISA is headquartered in Kingston, Jamaica.
- CELAC, a 33-country Latin American and Caribbean grouping, was established on 3 December 2011.
- India's real GDP grew 7.8% in Q1 2026–27, measured on the new base year of 2022–23.
- India's forex reserves hit a record $785.7 billion in early September 2026, the fourth largest in the world.
- NITI Aayog's India Electric Mobility Index 2025 ranks Delhi first with a score of 84.
- India blocked the China-backed Investment Facilitation for Development (IFD) agreement at the WTO's 14th Ministerial Conference.
- Pichavaram mangroves in Cuddalore, Tamil Nadu, have a total economic value of ₹2,485.38 crore and Ramsar status since 2022.
- In Swachh Vayu Sarvekshan 2026, Lucknow ranked first among million-plus cities, followed by Indore.
- World Rhino Day is observed on 22 September; Assam holds most of India's one-horned rhinos.
- Gaganyaan's first uncrewed mission G1 is planned for Q4 2026; the Bharatiya Antariksh Station's first module is targeted for 2028.
- The SHANTI Act (December 2025) repealed the Atomic Energy Act 1962 and the Civil Liability for Nuclear Damage Act 2010.
- ONGC's first two geothermal wells at Puga Valley, Ladakh, reached about 135°C.
- The Incendiamoeba cascadensis ("fire amoeba") reproduces at 63°C, the highest known temperature limit for any eukaryote.
- Every mobile phone has a unique 15-digit IMEI number; the first eight digits form the Type Allocation Code.
- Hindi Diwas is observed on 14 September; Articles 343–351 in Part XVII of the Constitution deal with official languages.
- Dogri was added to the Eighth Schedule by the 92nd Amendment (2003); Tulu is not in the Eighth Schedule, which has 22 languages.
- Vinoba Bhave launched the Bhoodan Movement in 1951 from Pochampalli, Telangana, and was the first Ramon Magsaysay Award recipient.
- Bhagat Singh founded the Naujawan Bharat Sabha in 1926; he and Batukeshwar Dutt threw bombs in the Assembly on 8 April 1929.
- The Ramon Magsaysay Award 2026 went to Tommy Koh (Singapore), Runa Khan (Bangladesh) and Bo Kyi (Myanmar).

TEST YOURSELF

Objective Questions

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SUBJECTIVE QUESTIONS

1. Every flat map distorts at least one of area, shape, distance and direction. Explain with reference to the Mercator and Equal Earth projections, and the purposes each is best suited for.
2. The UNGA's "Correct the Map" resolution seeks to replace Mercator with Equal Earth. Discuss why the choice of projection carries political meaning for the Global South, and why adoption remains voluntary.
3. Critically examine the constitutional validity of the marital rape exception under Exception 2 to Section 63 of the BNS, 2023 in light of Articles 14 and 21.
5. Examine the respective roles of the judiciary and Parliament in reforming the marital rape exception, with reference to Puttaswamy, Joseph Shine and Independent Thought.
6. "Wicked problems" such as malnutrition and poverty defy top-down administration. Examine the case for decentralised, collaborative governance in achieving Viksit Bharat@2047.
8. Despite Articles 243G and 243W, local governments lack real autonomy. Examine why the '3Fs' remain unrealised and suggest reforms.
9. Should the right to vote be elevated to a Fundamental Right? Critically examine in light of the Constituent Assembly debates and rulings such as Kuldip Nayar and PUCL.
10. The Goa deletions show how centralised software can override the statutory authority of Electoral Registration Officers. Discuss and suggest safeguards against wrongful deletion.
11. Recent controversies over the Special Intensive Revision (SIR) and Form 6 have raised questions about the Election Commission's independence and the integrity of electoral rolls. Examine the legal framework for electoral rolls, the concerns about the ECI's independence, and how courts have balanced roll accuracy against the risk of disenfranchisement.
12. Examine the key outcomes of the 18th BRICS Summit and the challenges to the grouping's cohesion, as it seeks to be "non-Western, not anti-Western".
13. Discuss how India's 2026 Chairship positioned it as a bridge between competing geopolitical camps and the Global South.
14. In light of the Bishkek Summit, discuss the significance of the SCO for India's counter-terrorism, Central Asia outreach and strategic autonomy.
15. Consensus-based decision-making and Sino-Russian influence limit the SCO's utility for India. Examine, with reference to India's stand on terrorism and connectivity at Bishkek.
16. Examine the implications of the US Sanctioning Russia and Iran Act, 2026 for India's energy security, inflation and refinery economics.
17. Discuss how secondary tariff threats test India's strategic autonomy and ongoing India–US trade negotiations.
18. Examine the key drivers of India's drug problem and evaluate the four-pillar roadmap of the Vision Document on Drug Control.
19. Examine the roles of NCORD, NCB and Anti-Narcotics Task Forces in India's anti-drug architecture, and suggest measures to close coordination gaps.
20. The Vibrant Villages Programme shifts border management from defensive infrastructure to development–security convergence. Examine with reference to VVP-I and VVP-II.
21. Examine the rationale and key features of the new UPI Merchant Discount Rate framework, and assess its implications for financial inclusion.
22. UPI's shift from a subsidy-dependent to a partially self-financing model risks cost pass-through and reversion to cash. Discuss and suggest safeguards.
23. Examine how India's space sector has evolved from a government-led programme to a commercial ecosystem, with reference to IN-SPACe, NSIL, FDI reforms and the Space Policy 2023.
24. Discuss the challenges facing India's space sector and suggest measures to realise Space Vision 2047.
25. The SHANTI Act, 2025 opens nuclear power to private players while keeping high-level waste with the Centre. Critically examine the resulting responsibility gap.
26. Suggest a framework for long-term nuclear waste management in India, drawing on international practice and the polluter-pays principle.
27. In light of the ICIMOD reports, examine the findings on glacier loss in the Hindu Kush Himalaya and the factors accelerating it.
28. Discuss the consequences of deglaciation for India's water security, agriculture and disaster risk, with reference to GLOFs.
29. Examine the challenges to geothermal development in India and the role of the National Policy on Geothermal Energy, 2025 in addressing them.
30. India's data centre boom, driven by AI and digitalisation, is concentrated in regions already facing water and grid stress. Examine the environmental challenges it poses and suggest a sustainable regulatory framework.