



SHAPING TALENT SINCE 2009

MONTHLY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

SEPTEMBER 2026



$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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Thirukkural

Context: Prime Minister Narendra Modi gifted Russian President Vladimir Putin a Russian translation of Thirukkural during the BRICS Summit.

About Thirukkural:

- Thirukkural is a classical Tamil work on ethics, philosophy and human values, written by Thiruvalluvar (Valluvar).
- The title means “sacred couplets.”
- It consists of 1,330 couplets, organised into 133 chapters, with 10 couplets per chapter. Each couplet contains seven words.

Three Books of Thirukkural:

- Aram (Virtue): 38 chapters on morality, ethics and personal values.
- Porul (Wealth/Polity): 70 chapters on governance, society and material life.
- Inbam (Love): 25 chapters on love and human relationships.

Key Themes:

- Emphasises morality, kindness, wisdom, education, charity and love.
- Promotes ethical conduct beyond divisions of caste, religion, creed and race..

Global Recognition:

- First translated into English in 1840.
- Has been translated into more than 60 languages.
- The Russian edition gifted to President Putin was translated by Naira Mkrtchyan and published by the Central Institute of Classical Tamil in 2026.



AI in Disaster Management

Context: During a recent disaster in Nepal, an AI-powered web portal matched crowdsourced information on missing persons with official records of the dead and injured. It also mapped damaged structures using open-source satellite imagery.

About AI in Disaster Management:

AI in disaster management uses Artificial Intelligence to analyse data and support disaster prediction, preparedness, response, rescue, relief and recovery. It enables faster analysis, early warnings and better decision-making.

Major AI Tools:

- GraphCast: AI-based weather forecasting.
- Google Flood Hub: Flood forecasting and early warnings.
- DisasterAWARE: Disaster monitoring and situational awareness.
- SKAI: Uses satellite imagery to assess disaster-affected areas.

Role of AI in Disaster Management:

- Early Warning and Forecasting: Analyses weather data to improve localised forecasts and predict extreme rainfall and floods.
- Risk Assessment and Hazard Mapping: Combines weather data, satellite images and maps to identify vulnerable areas.
- Search and Rescue: Uses drones with thermal cameras to locate survivors and AI tools to match missing-person reports with official records.
- Response and Relief: Analyses text, images and local-language information to identify affected areas and prioritise food, medical aid and other relief.
- Post-Disaster Recovery: Helps identify isolated settlements, assess infrastructure damage, locate helicopter landing sites and plan rehabilitation.

Challenges:

- Poor Data Quality: Inaccurate or incomplete data can lead to unreliable predictions.
- Misinformation: Unverified crowdsourced information can hamper disaster response.
- Need for Human Oversight: AI-generated outputs require expert verification, especially for critical decisions.
- Limited Institutional Capacity: Shortages of trained personnel, technical expertise and effective governance can hinder adoption.
- Digital Divide: Remote and vulnerable communities may lack internet connectivity and access to AI-based services.

Way Forward:

- Strengthen Early Warning Systems: Expand AI-based, localised forecasting for floods, cyclones and extreme rainfall.
- Integrate Multiple Data Sources: Combine satellite, drone, weather and crowdsourced data for real-time disaster assessment.
- Improve Data Verification: Establish mechanisms to validate information and curb misinformation.
- Build Institutional Capacity: Train disaster-management authorities and local governments in AI applications.
- Ensure Human Oversight and Inclusion: Keep experts involved in critical decisions and make AI-enabled services accessible to vulnerable communities.



Maharashtra Drought Crisis

Context: Maharashtra declared drought in 265 of its 358 tehsils, nearly three-fourths of the state, despite an overall rainfall deficit of 18%, compared with 13% nationally.

About Drought: Drought is a prolonged period of abnormally low precipitation that causes water shortages, affecting agriculture, ecosystems and human activities.

Types of Drought:

- **Meteorological Drought:** Rainfall falls significantly below the normal level.
- **Agricultural Drought:** Insufficient soil moisture affects crop growth and reduces yields.
- **Hydrological Drought:** Water levels in rivers, lakes, reservoirs and groundwater decline significantly.
- **Socio-economic Drought:** Water scarcity disrupts the availability of essential goods and services, including food, drinking water and energy.
- **Ecological Drought:** Water shortages damage vegetation, wildlife and ecosystem functions.

Reasons Behind the Drought in Maharashtra:

- **Regional Variation in Rainfall:** The Western Ghats receive heavy rainfall, while areas east of the Ghats lie in the rain-shadow region. In 2026, Marathwada recorded a 38% rainfall deficit and Vidarbha 27%, while Nashik received 37% excess rainfall.
- **Rainfall Variability:** Delayed monsoons, prolonged dry spells and early withdrawal reduce soil moisture and water availability.
- **Dependence on Monsoon:** Rainfed agriculture makes crop production highly vulnerable to irregular rainfall.
- **Groundwater Stress:** Repeated poor monsoons and excessive groundwater extraction reduce water availability.
- **Water-Intensive Crops:** Sugarcane cultivation in drought-prone areas increases pressure on limited water resources.

Way Forward:

- **Strengthen Early-Warning Systems:** Combine IMD forecasts, satellite data, soil moisture and groundwater levels for timely drought alerts.
- **Promote Watershed Development:** Expand check dams, farm ponds, contour bunding and percolation tanks to conserve water and recharge groundwater.
- **Improve Groundwater Management:** Regulate over-extraction, map aquifers and promote community-based groundwater budgeting.
- **Expand Micro-Irrigation:** Encourage drip and sprinkler irrigation to improve water-use efficiency.
- **Diversify Crops:** Shift from water-intensive crops such as sugarcane to millets, pulses, oilseeds and drought-resistant varieties suited to local conditions.
- **Promote Climate-Resilient Agriculture:** Encourage drought-tolerant seeds, mulching, soil-moisture conservation and climate-smart farming practices.

Kishau Multipurpose Project

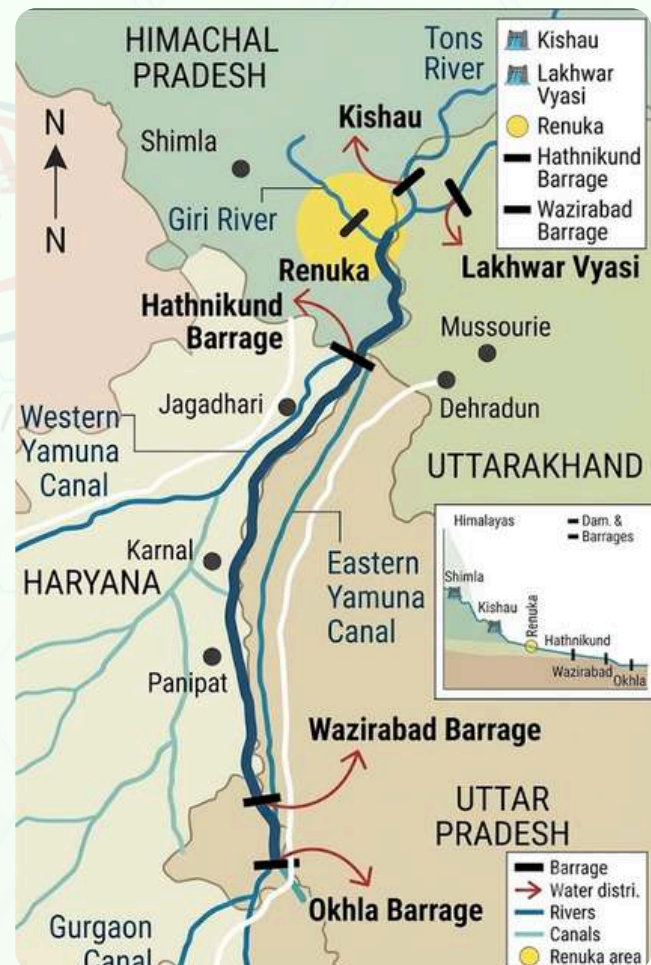
Context: Six Yamuna-basin stakeholders—Himachal Pradesh, Uttarakhand, Uttar Pradesh, Haryana, Rajasthan and Delhi—signed an agreement to implement the Kishau Multipurpose Project on the Tons River, at an estimated cost of ₹15,624 crore and with a planned capacity of 422 MW.

About the Kishau Multipurpose Project:

- **Location:** On the Tons River, near the border of Dehradun district (Uttarakhand) and Sirmour district (Himachal Pradesh).
- **Dam:** A proposed 232.6-metre-high concrete gravity dam.
- **Storage Capacity:** Approximately 1,562 million cubic metres (MCM).
- **Power Generation:** Expected to generate around 1,476 million units of hydropower annually.
- **Irrigation:** Expected to provide irrigation benefits to approximately 97,000 hectares.

Significance:

- **Water Security:** Improves the availability of water for drinking, irrigation and industrial use in the Yamuna basin.
- **Clean Energy:** Adds renewable hydropower to the regional energy mix.
- **Yamuna Rejuvenation:** Regulated water releases may help improve flows in the Yamuna.
- **Cooperative Federalism:** Promotes cooperation among states and Union Territories in managing shared river-water resources.
- **Regional Development:** Better access to water and electricity can support agriculture, industry and urban development.



UN Adopts Equal Earth Map

Context: The United Nations General Assembly reportedly adopted the “Correct the Map” resolution, endorsing the Equal Earth projection as a more proportionate representation of the world’s land areas.

More on the News:

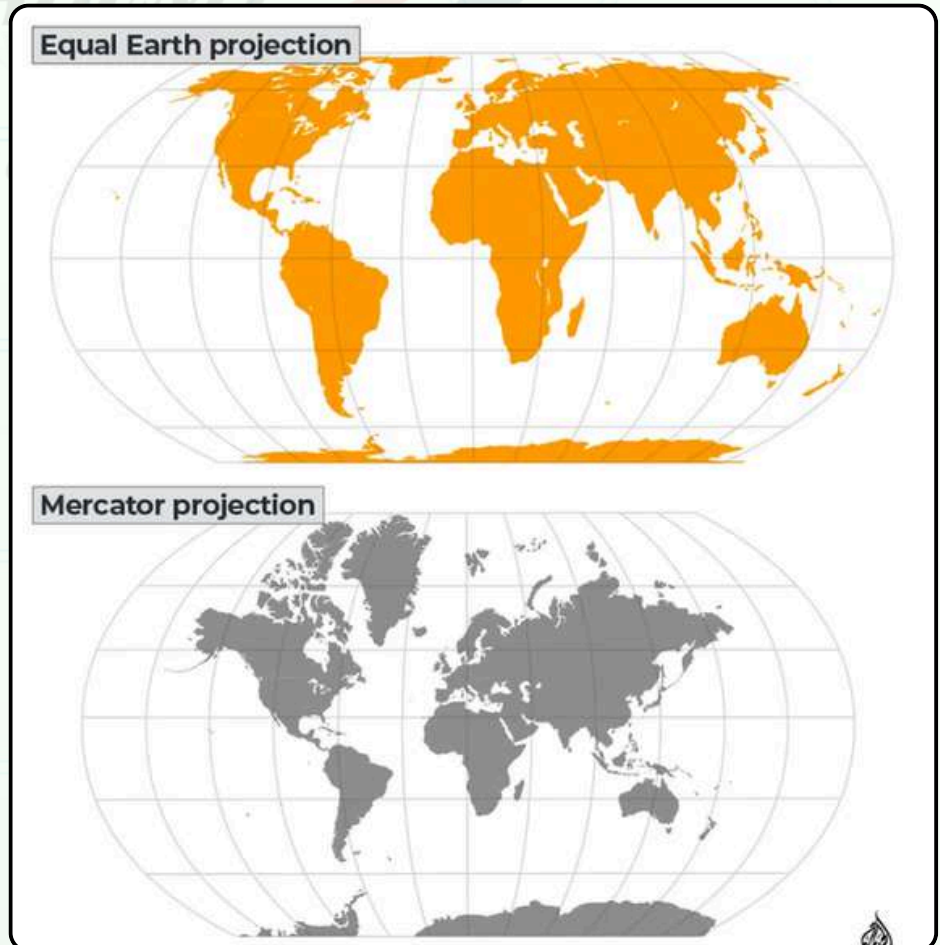
- The resolution was reportedly adopted with 164 votes in favour, one against and six abstentions, including India among those voting in favour.

About the Equal Earth Map:

- **Origin:** Developed in 2018 by cartographers Bojan Šavrič, Tom Patterson and Bernhard Jenny.
- **Type:** An equal-area, pseudocylindrical map projection designed to represent the relative sizes of countries and continents accurately.
- **Key Features:**
 - **Equal-Area Representation:** Preserves the relative surface areas of landmasses.
 - **Recognisable Shapes:** Provides a visually familiar representation of continents while maintaining accurate area proportions.
 - **Straight Parallels:** Lines of latitude appear straight and horizontal.
 - **Flexible Centering:** Can be centred on different meridians, allowing different regions to be placed at the centre of the map.

Mercator Projection:

- **Origin:** Developed by Gerardus Mercator in 1569, primarily for maritime navigation.
- **Type:** A cylindrical, conformal map projection that preserves local angles and directions.
- **Limitation:** It increasingly exaggerates the size of regions towards the poles.
- **Example:** Greenland appears comparable in size to Africa, although Africa is approximately 14 times larger.



Appointment of Chief Election Commissioner (CEC) and Election Commissioners (ECs)

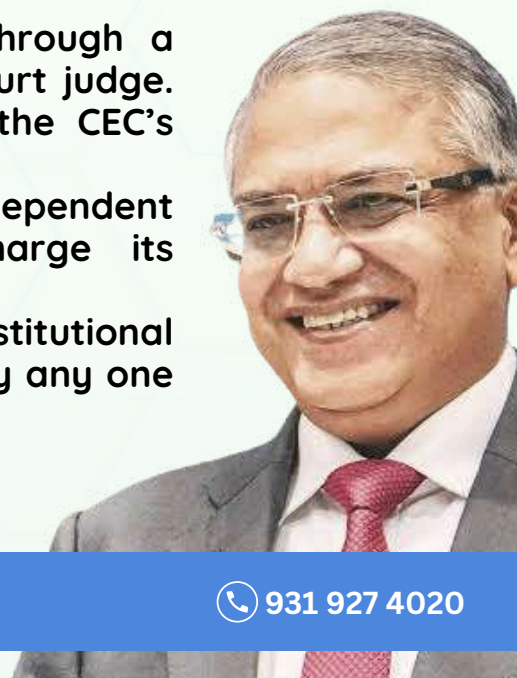
Context: The Supreme Court referred challenges to the 2023 law governing the appointment of the CEC and ECs to the Chief Justice of India (CJI) for consideration by a five-judge Constitution Bench.

Background:

- **Constitutional Provision:** Article 324(2) empowers the President to appoint the CEC and ECs, subject to a law made by Parliament.
- **Anoop Baranwal Judgment, 2023:** In the absence of a parliamentary law, the Supreme Court directed that appointments be recommended by a committee comprising the Prime Minister (PM), Leader of Opposition (LoP) and CJI.
- **2023 Act:** Parliament enacted the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023.
- **Changed Selection Committee:** The Act replaced the CJI with a Union Cabinet Minister nominated by the PM. The committee now comprises the PM, a PM-nominated Cabinet Minister and the LoP.
- **Reason for Challenge:** The main concern is whether this composition adequately protects the independence and impartiality of the Election Commission of India (ECI).

Safeguards for the ECI's Independence:

- **Constitutional Status:** Article 324 establishes the ECI and entrusts it with the superintendence, direction and control of elections.
- **Institutional Autonomy:** The ECI must function independently of political pressure to ensure free and fair elections.
- **Security of Tenure:** The CEC can be removed through a process similar to that applicable to a Supreme Court judge. Other ECs can be removed by the President on the CEC's recommendation.
- **Financial and Administrative Autonomy:** Independent functioning is essential for the ECI to discharge its constitutional responsibilities effectively.
- **Impartial Appointments:** Involving multiple institutional stakeholders can help prevent excessive influence by any one branch of government.



Key Concerns Regarding ECI Independence:

- **Executive Majority:** The government has two of the three members on the selection committee.
- **Limited Independent Oversight:** The Cabinet Minister is part of the Council of Ministers, raising concerns about their ability to act as an independent counterweight.
- **Perception of Bias:** Public confidence depends on both the ECI's actual impartiality and the perception that it operates neutrally.
- **Limited Opposition Representation:** The LoP is the only Opposition representative on the committee.
- **Institutional Credibility:** Concerns about the appointment process may affect public trust in the electoral system.

Way Forward:

- **Broaden Representation:** Consider including an independent constitutional or institutional member in the selection process.
- **Introduce Independent Screening:** Establish a search committee to identify and assess suitable candidates.
- **Ensure Transparency:** Define clear selection criteria based on integrity, competence, experience and independence.
- **Strengthen Parliamentary Oversight:** Improve scrutiny and accountability while respecting Parliament's constitutional authority.
- **Protect Institutional Autonomy:** Strengthen safeguards relating to tenure, removal, finances and administrative functioning.

Preventive Detention and National Security Act (NSA), 1980

Context: In *Mulla Afroz v. Union of India* (2026), the Supreme Court quashed an accused person's preventive detention under the National Security Act (NSA), 1980.

More on the News:

- The Court found no sufficient link between the material relied upon and the detention order and imposed costs of ₹10 lakh on the Uttar Pradesh government.

Supreme Court's Observations:

- **Preventive, Not Punitive:** Preventive detention cannot become a means of punishment for past offences.
- **Custodial Confession:** A confession made before a police officer, without independent supporting material, cannot by itself justify preventive detention.



Understanding Preventive Detention:

- **Meaning:** Preventive detention involves detaining a person to prevent anticipated harmful conduct, rather than punish an offence already committed.
- **Constitutional Basis:** The Constitution permits preventive detention but prescribes safeguards against arbitrary use.
- **Article 22:** Provides safeguards, including communication of detention grounds and an opportunity to make a representation, subject to constitutional exceptions.
- **Exceptional Power:** Since detention may occur without a prior criminal conviction, strict compliance with constitutional and legal safeguards is essential.

Key Constitutional Dimensions:

- **Article 21:** Protects life and personal liberty. Any restriction through preventive detention must have a valid legal basis.
- **Procedural Fairness:** Authorities must follow prescribed procedures and rely on relevant material.
- **Article 20(3):** Protects an accused person against being compelled to testify against themselves.
- **Judicial Review:** Courts can examine detention orders for procedural violations, irrelevant material, lack of a rational connection with the stated grounds and non-application of mind.

About the National Security Act (NSA), 1980:

- **Purpose:** Empowers the executive to order preventive detention to protect national security, defence, foreign relations, public order and the supply and maintenance of essential supplies and services.
- **Constitutional Basis:** Article 22(3)(b) permits exceptions to certain ordinary arrest safeguards for preventive detainees.
- **Maximum Detention:** Up to 12 months, subject to the statutory review and confirmation process.
- **Communication of Grounds:** Grounds may be withheld for up to five days, extendable to 15 days in exceptional circumstances, with reasons recorded in writing.

Criticism of the NSA:

- **Restriction on Liberty:** Preventive detention limits safeguards available in ordinary criminal proceedings.
- **Wide Executive Discretion:** Orders rely on the detaining authority's subjective satisfaction rather than proof of guilt through a criminal trial.
- **Possibility of Misuse:** Broad grounds such as national security and public order may be invoked in cases that could be handled under ordinary criminal law.
- **Prolonged Detention:** A person may be detained for an extended period without a conventional criminal trial.

India's Data Center Boom and Climate Sustainability

Context: India's rapidly expanding data center industry is attracting significant investment. However, rising electricity and water demand, transmission constraints and heat generation are creating environmental and infrastructure challenges.

About Data Centers:

- **Meaning:** Specialised facilities housing servers, storage systems, networking equipment and cooling infrastructure to store, process and transmit digital data.
- **Digital Backbone:** Support cloud computing, Artificial Intelligence (AI), digital payments, e-governance and other digital services.
- **Rapid Expansion:** India's data center capacity grew from around 520 MW in 2020 to nearly 1.5 GW and is projected to reach 6.5 GW by 2030.

Drivers of India's Data Center Boom:

- **Digitalisation:** Growth in digital payments, e-commerce, OTT platforms and e-governance is increasing data storage requirements.
- **AI Expansion:** Generative AI and high-performance computing require greater computing capacity.
- **Cloud Adoption:** Businesses and governments are increasingly shifting services to cloud platforms.
- **Data Localisation:** Greater emphasis on domestic data storage and processing is encouraging investment in Indian facilities.
- **Large Digital User Base:** India had 1.09 billion internet subscribers as of March 2026. Average monthly data consumption reached 24.01 GB per user in 2025.
- **State Incentives:** Tax benefits, subsidised land and electricity, and faster clearances are attracting investments.

Key Environmental and Infrastructure Concerns:

- **Rising Electricity Demand:** Data centers require continuous power. Electricity consumption is projected to rise from 13 TWh in 2024 to 57 TWh by 2030.
- **Transmission Bottlenecks:** Inadequate grid infrastructure can restrict access to renewable energy, cause renewable power curtailment and increase infrastructure costs for consumers.
- **High Water Consumption:** Water-intensive cooling systems put pressure on local water resources. A 100 MW data center may consume around 2 million litres of water daily. Annual sectoral consumption is projected to increase from 150 billion litres in 2024-25 to 358 billion litres by 2030.
- **Waste Heat and Urban Heating:** Data centers release substantial heat, potentially worsening the Urban Heat Island (UHI) effect. A cited Cambridge study reported an average land-surface temperature increase of 2°C within a 10 km radius, with increases of up to 9.1°C in extreme cases.

Way Forward:

- **National Sustainability Framework:** Establish common standards for energy efficiency, renewable energy use, water consumption, cooling and emissions.
- **Clean Energy and Grid Modernisation:** Promote renewable energy, battery storage and stronger transmission networks, supported by data-center-specific grid assessments.
- **Sustainable Water Management:** Encourage treated wastewater reuse, conduct water-impact assessments and safeguard municipal and agricultural water needs.
- **Sustainable Siting and Cooling:** Prioritise locations with low water stress, reliable electricity, renewable energy potential and suitable climatic conditions. Adopt energy- and water-efficient cooling technologies.
- **Efficiency Standards:** Consider an “AI Energy Star” rating to benchmark the energy efficiency and environmental performance of data centers and AI systems.
- **Transparency and Accountability:** Require disclosure of energy and water consumption and ensure operators bear an appropriate share of infrastructure and resource costs.

Proposed Article 371K for Ladakh

Context: The Ministry of Home Affairs (MHA) has proposed a new Chapter K under Article 371 to establish an elected body for the Union Territory (UT) of Ladakh, aimed at strengthening democratic representation and protecting its unique regional interests.

Background:

Article 371 and its subsequent provisions (Articles 371A–371J) provide special constitutional arrangements for specific states, addressing their distinct cultural, social and administrative needs. These provisions are part of Part XXI of the Constitution, which deals with Temporary, Transitional and Special Provisions.

Key Features of the Proposed Article 371K:

- **Elected UT-Level Body:** A directly elected institution to strengthen democratic representation in Ladakh.
- **Legislative Powers:** May cover land, culture, language, forests, environment and natural resources, along with specified subjects under the UT framework.
- **Ladakh-Specific Governance:** Seeks a tailored governance model suited to Ladakh’s geographical, cultural and administrative circumstances.
- **Constitutional Safeguards:** The proposed provision would be incorporated into Part XXI of the Constitution.
- **Current Status:** The MHA has reportedly discussed the broad framework, but a detailed draft proposal has not yet been provided to civil society representatives.



Proposed Article 371K vs. Sixth Schedule:

Basis	Proposed Article 371K	Sixth Schedule
Constitutional Basis	Proposed special provision under Part XXI	Articles 244(2) and 275(1)
Governance Model	Ladakh-wide elected institution with defined powers	Autonomous District and Regional Councils
Nature of Autonomy	Special safeguards within the UT framework	Autonomous governance arrangements for specified tribal areas
Legislative Powers	To be defined under the proposed framework	Powers over specified subjects, including land, forests, agriculture, customs and local administration

Significance:

- Could strengthen democratic participation in Ladakh's governance.
- May help protect the region's cultural identity, land and natural resources.
- Could provide a governance arrangement suited to Ladakh's distinct needs.

Government Amends E-Commerce Rules, 2026

Context: The Department of Consumer Affairs has notified the Consumer Protection (E-Commerce) (Amendment) Rules, 2026, to strengthen consumer protection, transparency and accountability in online marketplaces.

More on the News:

- **Legal Framework:** The amendments fall under the Consumer Protection Act, 2019.
- **Implementation Date:** The rules will come into force on 1 January 2027.

About the Consumer Protection Act, 2019:

- Replaced the Consumer Protection Act, 1986, to strengthen consumer rights, including in e-commerce and direct selling.
- Established the Central Consumer Protection Authority (CCPA), empowered to investigate unfair trade practices, order product recalls and penalise misleading advertisements.
- Strengthened the three-tier consumer dispute redressal system: District, State and National Commissions.
- Introduced e-Daakhil for online filing of consumer complaints.

Key Amendments to E-Commerce Rules:

- **Grievance Redressal:** Grievance officers must provide consumers with a copy of their recorded complaint.
- **National Consumer Helpline (NCH):** E-commerce entities must join the NCH convergence programme to facilitate consumer grievance resolution.
- **Fair Search Results:** Platforms must not manipulate search results in ways that mislead consumers or make results less relevant to their queries.
- **Sponsored Listings:** Paid or sponsored listings must carry clear and prominent disclosures.
- **Transparent Price Reductions:** Platforms must display both the reduced price and the prior price, defined as the lowest price offered during the preceding 30 days.
- **Dark Patterns:** Entities must comply with the 2023 guidelines on preventing and regulating dark patterns, conduct annual self-audits and prominently display a compliance certificate.
- **Product Information:** Platforms must disclose important details, including expiry or best-before dates, return and refund policies, warranties, delivery terms and payment information.

Significance:

- Improves transparency in online shopping and pricing.
- Helps consumers identify misleading advertisements, hidden charges and manipulative interface designs.
- Strengthens grievance redressal and accountability of e-commerce platforms.
- Promotes fair competition and greater consumer trust in digital marketplaces.

Supreme Court on Three-Language Policy

Context: The Supreme Court urged the Union government to make the three-language policy mandatory for Class 6 students from 1 January 2027, instead of imposing it on the current batch.



Supreme Court's Suggestions:

- **Adequate Transition Time:** Avoid sudden changes and give students and parents sufficient time to adjust.
- **Optional Third Language:** Keep the third language optional for the current Class 6 batch.
- **Provide Incentives:** Use the transition period to encourage students to learn a third language.
- **Engaging Learning Methods:** Teach the language through interactive and interesting methods to develop students' natural interest.

Existing CBSE Guidelines:

- Classes 7-9: Students have been granted relaxation under the Central Board of Secondary Education (CBSE) guidelines.
- Class 6: The current batch was initially scheduled for full implementation, including a mandatory third-language paper in the Class 10 Board examination by 2031.

Significance:

- Provides students and schools with time to adapt to changes in language education.
- Encourages multilingualism while reducing the burden of sudden policy changes.
- Highlights the importance of balancing educational reforms with students' learning needs and regional linguistic diversity.

18th BRICS Summit 2026

Context: The 18th BRICS Summit was held in New Delhi on 12-13 September 2026 under India's chairship, culminating in the adoption of the New Delhi Declaration.



Key Highlights of the New Delhi Declaration

1. Global Governance and Multilateral Reforms

- **BRICS Reform Roadmap:** India proposed converting 10 governance-reform proposals into a roadmap based on Representation, Responsiveness and Rule-making, enabling the Global South to become a rule-shaper rather than a rule-taker.
- **UN Reform:** Reaffirmed support for comprehensive UN reform and greater representation of developing countries in the UN Security Council (UNSC).
- **African Representation:** Supported greater African representation in global institutions, in line with the Ezulwini Consensus and Sirte Declaration.
- **Global South Solidarity:** Recognised historical racial injustice, decolonisation and Asian-African solidarity.

2. Economic, Financial and Trade Cooperation

- **Cross-Border Payments:** The BRICS Payment Task Force aims to make international payments faster, cheaper and interoperable through local-currency settlements.
- **Financial Resilience:** The BRICS Insurance Resilience Centre (BIRC) and India's BRICS Risk Lab at GIFT City IFSC seek to strengthen financial-risk management.
- **Trade Protectionism:** Opposed unilateral tariffs and non-tariff barriers and raised concerns about the potential trade-distorting effects of the EU's Carbon Border Adjustment Mechanism (CBAM).

3. Food Security and Agriculture

- **BRICS Grain Exchange:** Proposed cooperation to improve food-market stability and reduce the impact of supply disruptions, price volatility and geopolitical crises.
- **Agricultural Innovation:** The AGRIN network promotes cooperation on agricultural inputs, genetic resources and information.
- **Farmers' Rights:** The Global Forum on Farmers' Rights in Seed Systems seeks to connect agricultural innovation with farmers' access to seeds and genetic resources.

4. Technology, Artificial Intelligence and Space

- **Digital Public Infrastructure (DPI):** The BRICS DPI Repository can facilitate the sharing of scalable digital solutions, including India's Aadhaar, UPI, CoWIN and India Stack.
- **Space Cooperation:** Amendments to the BRICS Remote Sensing Satellite Constellation (RSSC) will accommodate new members. A proposed BRICS Space Council could expand cooperation in satellite applications and space technology.

5. Climate, Energy and Natural Resources

- **Climate Equity:** Reaffirmed commitment to the UNFCCC and Paris Agreement, emphasising climate finance and technology transfer by developed countries.
- **CBDR-RC Principle:** Highlighted Common but Differentiated Responsibilities and Respective Capabilities as a key principle of equitable climate action.
- **Ecosystem Conservation:** Cooperation through the Tropical Forest Forever Facility (TFFF), India-led International Big Cats Alliance (IBCA) and landscape-based conservation approaches seeks to strengthen ecosystem resilience.

6. Health, Social Development and Human Security

- **Preventive Healthcare:** The BRICS Mission for Healthy Lifestyle (2026–2029) promotes preventive health, while the BRICS Network of Centres of Excellence on Mental Well-Being, coordinated by NIMHANS, Bengaluru, encourages research and institutional cooperation.
- **Traditional Medicine:** A proposed expert working group on Traditional, Complementary and Integrative Medicine (TCIM) aims to promote evidence-based knowledge sharing.
- **Pandemic Preparedness:** An Integrated Early Warning System for Mass Infectious Diseases seeks to improve early detection and coordinated responses.
- **Future of Work:** BRICS CONNECT focuses on employability, new skills and emerging technologies. Cooperation on portable social-security arrangements aims to support cross-border workers.

7. Peace, Security and Regional Issues

- **Counter-Terrorism:** Reaffirmed zero tolerance towards terrorism, opposed double standards and supported progress on the Comprehensive Convention on International Terrorism (CCIT). It also condemned the 22 April 2025 terrorist attack in Jammu and Kashmir.
- **Palestine:** Reiterated support for a two-state solution, with a viable Palestinian state within the 1967 borders and East Jerusalem as its capital.
- **Regional Conflicts:** Addressed instability in Lebanon, Syria and Sudan and supported African-led solutions to African conflicts.
- **Nuclear and Maritime Security:** Condemned attacks on peaceful civilian nuclear facilities under IAEA safeguards. India's proposed Seafarers Emergency Support Network seeks to protect seafarers, commercial shipping and critical maritime supply routes during crises.

Challenges Facing BRICS

- **Geopolitical Differences:** Members have diverse political systems and foreign-policy priorities. Some favour a stronger anti-Western stance, while India, Brazil and South Africa generally support a more inclusive, non-Western platform.
- **China-Centric Asymmetry:** China's dominance in manufacturing, trade, technology and critical-mineral processing, alongside India-China tensions and trade imbalances, may constrain cooperation and India's strategic autonomy.
- **External Economic Pressure:** US tariffs, sanctions and other economic measures can test members' resilience and complicate efforts to diversify trade and finance.
- **Weak Institutionalisation:** BRICS lacks a permanent secretariat and centralised decision-making framework, limiting policy continuity and implementation.
- **Representation-Influence Gap:** Despite its substantial share of global GDP and population, BRICS has limited influence in some global financial institutions, including the IMF.
- **Global Polarisation:** An overly confrontational approach towards Western institutions could undermine BRICS' aim of building an inclusive and representative global order.

Way Forward

- **Ensure Implementation:** Translate summit commitments into time-bound action plans with clear targets, designated agencies, financing and periodic reviews.
- **Reform Financial Institutions:** Strengthen the New Development Bank (NDB) through greater capitalisation, wider membership and faster lending. Expand local-currency financing and payment interoperability without prematurely pursuing a common currency.
- **Deepen Economic Integration:** Simplify customs procedures, improve payment connectivity, promote mutual recognition of standards and expand sector-specific market access.
- **Secure Critical Minerals:** Encourage joint exploration, processing, recycling, strategic reserves and technology-sharing to build resilient supply chains.
- **Promote Responsible Technology:** Share digital public infrastructure while protecting privacy, cybersecurity and data sovereignty and encouraging responsible AI.
- **Adopt Issue-Based Cooperation:** Prioritise areas of shared interest, including climate finance, health security, food resilience, maritime safety and development finance.
- **India as a Bridge:** Use BRICS to strengthen Global South representation while maintaining constructive engagement with the US, EU, G20, Quad and SCO, preserving strategic autonomy.

26th Shanghai Cooperation Organisation (SCO) Summit 2026

Context: The 26th SCO Council of Heads of State Summit was held in Bishkek, Kyrgyzstan, focusing on regional security, economic development, connectivity and cooperation among member states.

Key Outcomes of the SCO Summit 2026

- **Bishkek Declaration:** Adopted to mark the SCO's 25th anniversary and outline priorities for security, development, connectivity and regional cooperation.
- **Universal Security Centre:** Approved regulations for a centre to strengthen cooperation against terrorism, extremism, organised crime and other transnational threats.
- **English as an Official Language:** Endorsed English as an official SCO language alongside the existing official languages, potentially facilitating India's participation.
- **Anti-Drug Cooperation:** Approved regulations for the Executive Committee of the SCO Anti-Drug Centre to combat drug trafficking and related threats.
- **Climate Change:** An MoU established a framework for cooperation on climate mitigation, adaptation and resilience.
- **Information Cooperation:** An MoU seeks to promote institutional exchanges and wider dissemination of member states' perspectives and initiatives.
- **Artificial Intelligence:** An MoU aims to facilitate knowledge-sharing, responsible and inclusive AI, and cooperation in technology and innovation.



India's Stance at the SCO

- **Three Key Pillars:** Emphasised Security, Connectivity and Opportunity as the main pillars of SCO cooperation.
- **Counter-Terrorism:** Called for decisive action against the entire terror ecosystem, including terror financing, recruitment and safe havens, and opposed double standards.
- **Dialogue and Diplomacy:** Stressed that conflicts cannot be resolved solely through military means and called for dialogue and diplomacy.
- **Afghanistan:** Highlighted the importance of peace and stability in Afghanistan for Eurasian security and reiterated India's development and humanitarian assistance.
- **Youth and Innovation:** Promoted entrepreneurship, start-ups, technology, innovation and people-to-people exchanges.
- **Civilisational Cooperation:** Proposed hosting the first SCO Civilisation Dialogue Forum to strengthen cultural and civilisational ties.
- **Scientific and Cultural Exchanges:** Supported initiatives such as the Young Scientist Forum and Young Author's Conclave.

Challenges for India in the SCO

- **CPEC and Sovereignty Concerns:** China's Belt and Road Initiative (BRI) and the China-Pakistan Economic Corridor (CPEC), which passes through Pakistan-occupied Kashmir (PoK), conflict with India's sovereignty concerns.
- **Pakistan Factor:** Bilateral disputes and cross-border terrorism concerns complicate India's engagement within the organisation.
- **Consensus-Based Decision-Making:** The need for consensus can restrict India's ability to advance proposals opposed by influential members such as China or Pakistan.
- **Connectivity Constraints:** Pakistan's denial of transit access limits India's direct land connectivity with Central Asia, affecting trade and energy cooperation.
- **Geopolitical Balancing:** The SCO's strategic dynamics, particularly China-Russia cooperation, require India to balance its engagement with the SCO alongside partnerships with the US and the Quad.
- **Limited Economic Integration:** Intra-SCO trade remains constrained by differing economic priorities and limited integration, while India's trade within the grouping is less diversified than that of China and Russia.
- **Divergent Interests:** Differences over Ukraine, West Asia, Afghanistan and relations with Western countries make it difficult to build a common regional agenda.

Way Forward

- **Strengthen Counter-Terrorism:** Promote coordinated action against terrorism, terror financing, radicalisation, recruitment and safe havens without political double standards.
- **Deepen Central Asian Engagement:** Expand India's economic, diplomatic, cultural and people-to-people relations with Central Asian countries.
- **Promote Alternative Connectivity:** Strengthen the Chabahar Port and International North-South Transport Corridor (INSTC) to improve access to Eurasia while respecting sovereignty and territorial integrity.

FCRA Amendment Bill, 2026

Context:

The Foreign Contribution (Regulation) Amendment Bill, 2026 has been referred to a Joint Parliamentary Committee (JPC) for examination.

Key Provisions

- **Designated Authority for Asset Management:**
- Proposes a Designated Authority to manage foreign contributions and assets created from such funds when an organisation's FCRA registration is cancelled, surrendered, expires or is not renewed.
- **Automatic Cessation & Asset Vesting:**
- FCRA registration will automatically cease upon expiry or non-renewal. Foreign-funded assets may vest with the Designated Authority until the organisation obtains fresh registration within the prescribed period.
- **Enhanced Transparency:**
- Organisations would be required to disclose:
 - Official websites and social media accounts
 - Project-wise activities
 - Donor details
 - Utilisation and reporting information
- **Time-Bound Utilisation:**
- Foreign contributions must be utilised within prescribed timelines.
- **Restrictions on Assets:**
- Organisations under suspension cannot transfer, sell or mortgage foreign-funded assets without prior government approval.
- **Revised Penalties:**
- The maximum punishment for violations is proposed to be reduced from 5 years to 1 year, or fine, or both.

Concerns

- **Excessive Executive Control:** Vesting foreign-funded assets with a government-designated authority could increase executive discretion and affect the autonomy of civil society organisations.
- **Property Rights:** Permanent vesting of assets may raise concerns under Article 300A, which protects the right to property, particularly if adequate judicial safeguards are absent.
- **Compliance Burden:** Stricter reporting, automatic cessation and time-bound utilisation requirements may disproportionately affect smaller NGOs with limited administrative capacity.
- **No Clear Appeal Mechanism:** Concerns have been raised regarding the absence of an effective appeal mechanism when the government denies renewal of an FCRA registration.

United Nations Security Council (UNSC) Reforms

Context: At the 18th BRICS Summit in New Delhi, the UN Secretary-General highlighted the need to make global institutions more representative and responsive to present-day geopolitical realities, including through reform of the United Nations Security Council (UNSC).

More on the News

- **Global South Representation:** Developing countries are demanding a greater role in global decision-making.
- **India's BRICS Agenda:** India is using its BRICS chairship to promote institutional reforms, inclusive multilateralism and fairer global rule-making.
- **Three-R Framework:** India's proposed reform agenda focuses on Representation, Responsiveness and Rule-making, enabling developing countries to help shape global rules.

India's Position on UNSC Reform

- **Greater Representation:** India supports stronger representation of developing countries in decisions on international peace, security and development.
- **G4 Cooperation:** India, Brazil, Germany and Japan coordinate through the G4 to advocate expansion of the UNSC and permanent membership for themselves.
- **Text-Based Negotiations:** India supports negotiations based on a formal text to move UNSC reform beyond prolonged discussions towards concrete outcomes.
- **African Representation:** India supports greater African representation, in line with the Ezulwini Consensus and Sirte Declaration, which call for permanent and non-permanent African seats on a reformed UNSC.

Concerns and Challenges

- **Representation Deficit:** Institutions such as the UNSC, IMF, World Bank and WTO do not adequately reflect contemporary geopolitical and economic realities.
- **Power Asymmetry:** The veto power of the five permanent UNSC members (P5), unequal voting arrangements and donor-driven financing can create imbalances in global decision-making.
- **Declining Trust in Multilateralism:** Geopolitical rivalries, selective application of rules and fragmented minilateral groupings weaken trust and hinder consensus-building.
- **Unequal Economic Governance:** The WTO dispute-settlement crisis, unilateral trade measures and financial vulnerabilities disproportionately affect developing economies.
- **Technology and Capacity Gaps:** Limited digital infrastructure, technological capabilities and negotiating capacity can leave developing countries as rule-takers in emerging fields such as artificial intelligence (AI), cyberspace, biotechnology and outer space.

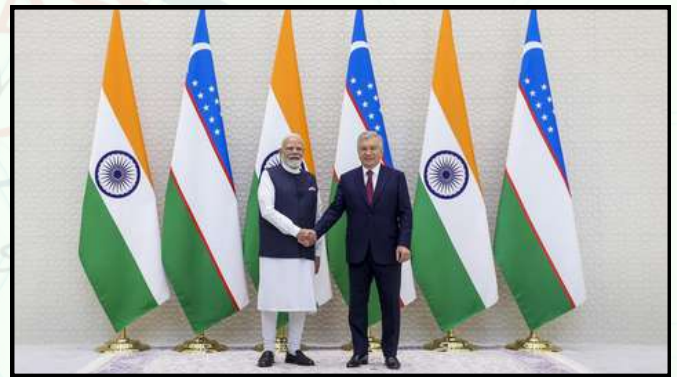


Way Forward

- **Time-Bound UNSC Reform:** Advance structured, text-based negotiations with clear timelines and substantive outcomes.
- **Broaden Representation:** Reform the UNSC to reflect contemporary geopolitical, demographic and economic realities.
- **Reform Financial Governance:** Reassess IMF quotas and World Bank governance to strengthen the voice of emerging and developing economies.
- **Revive WTO Dispute Settlement:** Restore an effective, rules-based dispute-settlement mechanism while safeguarding the developmental interests of poorer countries.
- **Strengthen Global South Coordination:** Use platforms such as BRICS, G20 and the African Union to coordinate positions on UN reform, climate justice, trade and development finance.
- **Promote Inclusive Technology Governance:** Build the technical and diplomatic capacity of developing countries to participate in global rule-making on AI, cyberspace, biotechnology, outer space and critical minerals.

India-Uzbekistan Relations Upgraded to Comprehensive Strategic Partnership

Context: India and Uzbekistan upgraded their 15-year-old Strategic Partnership to a Comprehensive Strategic Partnership during Prime Minister Narendra Modi's visit to Uzbekistan. Uzbekistan also conferred the Oliy Darajali Do'stlik Order on the Indian Prime Minister.



Key Outcomes of the Summit

- **Trade Target:** Both countries aim to increase annual bilateral trade from over US\$1 billion to US\$5 billion by 2030.
- **Uranium Supply:** Agreed to establish a long-term uranium supply arrangement to support India's peaceful use of nuclear energy.
- **Digital Payments:** NPCI International Payments Limited and Uzbekistan's National Interbank Processing Center agreed on a framework to enable Indian UPI apps to scan Uzbekistan's UZQR codes for merchant payments.
- **Cultural Cooperation:** A Letter of Intent was signed for the restoration and conservation of the Buddhist sites of Fayaz Tepa and Kara Tepa in southern Uzbekistan. These ancient monasteries reflect the spread of Buddhism along the Silk Routes into Central Asia.
- **Environmental Cooperation:** India announced a US\$1 million grant for afforestation in the Aral Sea region, complementing Uzbekistan's Yashil Makon initiative and India's Ek Ped Maa Ke Naam campaign.

About India-Uzbekistan Relations

- **Historical Ties:** Centuries of trade and cultural exchange along the Silk Routes have shaped relations between the two countries.
- **Diplomatic Relations:** India was among the early countries to recognise Uzbekistan's independence in 1991. Formal diplomatic relations were established on 18 March 1992 through a protocol signed in Tashkent.
- **Strategic Partnership:** Bilateral relations were elevated to a Strategic Partnership in 2011.
- **Trade Relations:** India is among Uzbekistan's major trading partners, with bilateral trade reported at approximately US\$1.32 billion.

Major Trade Items

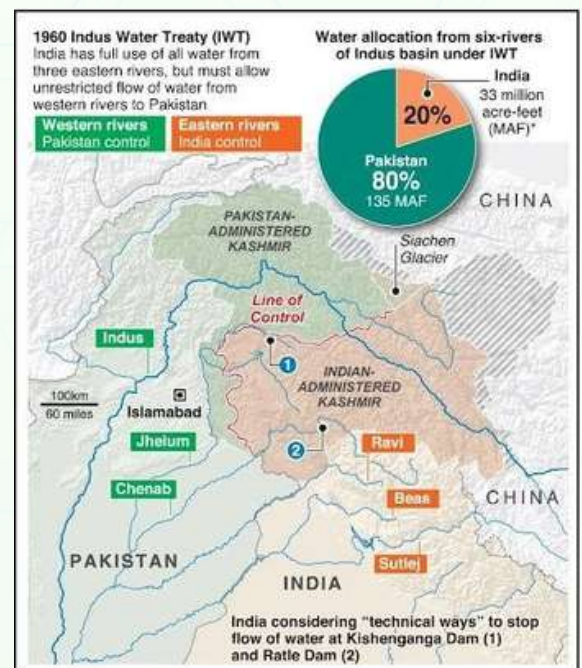
- **India's Exports:** Pharmaceuticals, mechanical equipment, vehicle parts, services, frozen buffalo meat, optical instruments and mobile phones.
- **India's Imports:** Fruits and vegetables, services, fertilisers, juice products and extracts, and lubricants.

Significance for India

- **Energy Security:** Long-term uranium supplies can support India's civilian nuclear energy programme.
- **Economic Cooperation:** The trade target and digital-payment connectivity can expand commercial exchanges and facilitate business transactions.
- **Strategic Engagement:** Stronger ties deepen India's engagement with Central Asia, a region important for regional stability, energy and connectivity.
- **Cultural Diplomacy:** Conservation of Buddhist heritage strengthens historical and people-to-people links.
- **Environmental Cooperation:** Joint afforestation efforts create opportunities for cooperation on land restoration and ecological resilience.

Indus Waters Treaty (IWT), 1960

Context: The Permanent Court of Arbitration (PCA) at The Hague ruled that the Indus Waters Treaty remains in force and issued interim measures concerning the Ratle Hydroelectric Project. India rejected the Court's legitimacy, maintaining that it was constituted in violation of the Treaty.



About the Indus Waters Treaty

- Signed in 1960: An agreement between India and Pakistan, facilitated by the World Bank, to regulate the sharing of the Indus River system's waters.
- Water Allocation:
 - Eastern Rivers — Ravi, Beas and Sutlej: Primarily allocated to India.
 - Western Rivers — Indus, Jhelum and Chenab: Primarily allocated to Pakistan. India retains specified rights for domestic use, limited irrigation and run-of-the-river hydropower projects, subject to Treaty provisions.
- Dispute Resolution Mechanism: The Treaty provides a graded mechanism to resolve disputes:
 - Permanent Indus Commission (PIC): Addresses questions related to the Treaty's interpretation and implementation.
 - Neutral Expert: Examines specified technical differences.
 - Court of Arbitration: Adjudicates disputes falling within its jurisdiction under the Treaty.

Background to the Dispute

- Hydroelectric Projects: Pakistan challenged the design features of India's Kishenganga and Ratle hydropower projects, alleging violations of Treaty provisions governing the Western Rivers.
- Divergence over Dispute Resolution: Pakistan sought a Court of Arbitration, while India favoured the Neutral Expert mechanism.
- World Bank's Role: In 2016, the World Bank paused both processes amid concerns over parallel proceedings. After efforts to reach an amicable solution failed, it resumed the processes in 2022, leading to the constitution of a Neutral Expert and a Court of Arbitration.
- India's Position: India has consistently challenged the Court of Arbitration's jurisdiction and has not participated in its proceedings.

Key Hydroelectric Projects

- Kishenganga Project: A 330 MW run-of-the-river hydropower project on the Kishenganga River, a tributary of the Jhelum, in Jammu and Kashmir.
- Ratle Project: An 850 MW hydropower project on the Chenab River in Jammu and Kashmir.

India's Response and the Treaty's Status

- Following the Pahalgam terror attack on 22 April 2025, India placed the Treaty in abeyance until Pakistan credibly and irrevocably ends its support for cross-border terrorism.
- India has reiterated that the decision to keep the Treaty in abeyance remains in force.
- India maintains that the Court of Arbitration was constituted in breach of the Treaty and therefore rejects its legitimacy and award.



OPEC and OPEC+

Context: OPEC+ decided to keep its October 2026 oil production target unchanged amid global economic uncertainty and disruptions in Middle Eastern oil supplies.

About OPEC and OPEC+

- **OPEC (Organization of the Petroleum Exporting Countries):** An intergovernmental organisation of oil-exporting countries that coordinates petroleum policies among its members.
- **OPEC+:** A broader coalition comprising OPEC members and cooperating non-OPEC oil-producing countries.
- **Origin and Evolution**
- **OPEC:** Established in 1960 at the Baghdad Conference by five founding members — Iran, Iraq, Kuwait, Saudi Arabia and Venezuela — to strengthen cooperation among oil-producing countries.
- **OPEC+:** Formed in 2016 through the Declaration of Cooperation in Vienna to coordinate production between OPEC and other major oil producers amid falling oil prices and growing US shale oil production.
- **Headquarters:** Vienna, Austria.

Membership

- **OPEC Members:** The membership list and total number of members can change as countries join or withdraw.
- **OPEC+ Partners:** The coalition includes OPEC members and non-OPEC producers that participate in production-coordination arrangements. Major non-OPEC participants include Russia, Kazakhstan, Azerbaijan, Oman and Bahrain.

Key Roles of OPEC+

- **Global Oil Supply Management:** Coordinates production adjustments, including output cuts and increases, to influence the balance between global oil supply and demand.
- **Crude Oil Prices:** Production decisions can affect international benchmark prices, including Brent and West Texas Intermediate (WTI).
- **Inflation and the Global Economy:** Changes in crude oil prices influence transportation, manufacturing and energy costs, with wider effects on inflation.
- **Energy Market Stability:** Seeks to limit excessive market volatility through cooperation among major oil-producing countries.



SEMICON India 2026

Context: Prime Minister Narendra Modi inaugurated SEMICON India 2026 at Yashobhoomi, New Delhi, on 17 September 2026, highlighting India's efforts to build a globally competitive semiconductor industry.



India Semiconductor Mission (ISM)

- **Semicon 1.0**
 - **Objective:** Establish a globally competitive semiconductor and display manufacturing ecosystem in India.
 - **Launch:** The India Semiconductor Mission was launched in December 2021 under the Digital India Corporation.
 - **Outlay:** ₹76,000 crore.
 - **Implementation Period:** Designed for 2021-2026.
- **Semicon 2.0**
 - **Objective:** Strengthen the entire semiconductor value chain, covering chip design, manufacturing equipment, materials, fabrication, packaging, research and development (R&D), and skilled workforce development.
 - **Nodal Ministry:** Ministry of Electronics and Information Technology (MeitY).
 - **Implementing Agency:** India Semiconductor Mission (ISM).
 - **Budget Outlay:** ₹1,27,500 crore (approximately ₹1.28 lakh crore).
 - **Implementation:** Applications will initially remain open for three years, while approved projects may receive an implementation period of up to six years.

What Are Semiconductors?

- **Semiconductors** are materials whose electrical conductivity can be controlled. They have properties between those of conductors, such as copper, and insulators.
- They can be engineered to switch, amplify, sense and control electrical signals.
- **Transistors** act as tiny electronic switches, while **integrated circuits (ICs)** contain millions or billions of transistors and other components on a small semiconductor chip.
- **Applications:** Smartphones, computers, automobiles, medical equipment, defence systems, satellites and data centres.

Why Does India Need a Domestic Semiconductor Ecosystem?

1. High Import Dependence

- India relies heavily on imported chips, with an estimated 90-95% of its semiconductor consumption met through imports, according to the supplied figures.
- Global chip manufacturing is concentrated in a few economies, including Taiwan, South Korea, Japan, China and the United States.
- This concentration exposes India to global supply-chain disruptions and geopolitical uncertainties.

2. National Security

- Semiconductors are essential for unmanned aerial vehicles (UAVs), naval platforms, aircraft, communication systems and other defence technologies.
- Domestic manufacturing can reduce dependence on foreign suppliers and strengthen the resilience of strategic sectors.

3. Foreign Exchange Savings

- Semiconductor imports place pressure on India's foreign exchange resources.
- According to the supplied figures, India spent approximately US\$150 billion on chip imports between FY 2016-17 and FY 2024-25.

4. Employment and Skill Development

- The semiconductor ecosystem can generate high-value jobs in chip design, fabrication, testing, packaging and equipment manufacturing.
- At SEMICON India 2026, the IT Minister announced a plan to train one lakh people for upcoming semiconductor factories.
- Infineon also reported a 28% increase in hiring in India, highlighting growing demand for semiconductor-related talent.

India's LPG Import Diversification

Context: Disruptions in the Strait of Hormuz amid the West Asian crisis reshaped India's LPG import sources. The United States accounted for 53% of India's LPG imports during March-August 2026, compared with 7.9% in the preceding six months, according to the supplied figures.

Why Is the Strait of Hormuz Important?

- **Location:** A narrow waterway connecting the Persian Gulf with the Gulf of Oman and the Arabian Sea.
- **Geographical Position:** Lies between Iran to the north and Oman and the United Arab Emirates (UAE) to the south.
- **Global Significance:** Around one-fifth of global oil flows pass through the Strait, making it a critical energy transit route.
- **India's Dependence:** A significant share of India's imported crude oil, LPG and LNG has traditionally been sourced from or transported through the Gulf region.
- **Strategic Vulnerability:** Any disruption can raise energy prices, affect fuel availability and increase economic pressure on importing countries.

Why Did US LPG Imports Surge?

- **Supply Disruptions:** The West Asian crisis constrained supplies from traditional Gulf suppliers.
- **Alternative Sourcing:** The United States emerged as an important alternative source of LPG.
- **Export Capacity:** The US is one of the world's major LPG producers and exporters.
- **Price Competitiveness:** Competitive US propane prices made American supplies attractive to Indian buyers.
- **Strategic Diversification:** India increased sourcing from alternative regions to reduce exposure to geopolitical risks and disruptions along key shipping routes.

About Liquefied Petroleum Gas (LPG)

- **Composition:** LPG is a mixture of hydrocarbon gases, primarily propane and butane, stored in liquid form under pressure.
- **Sources:** It is obtained mainly as a by-product of natural gas processing and crude oil refining.
- **Major Uses:** Household cooking, hotels and restaurants, industrial applications, autogas and petrochemical production.

LPG in India

- India has more than 33 crore LPG connections.
- Annual LPG consumption exceeds 33 million tonnes.
- India meets approximately 60% of its LPG requirements through imports, according to the supplied figures.

Major Producers and India's Import Sources

- **Major Global Producers and Exporters:** United States, Saudi Arabia, Qatar, UAE, Russia, Canada and Australia.
- **Traditional Suppliers to India:** UAE, Qatar, Saudi Arabia and Kuwait have been important sources of India's LPG imports.
- **Recent Shift:** During March–August 2026, the US share of India's LPG imports rose to 53%, compared with 7.9% in the preceding six months, reflecting a shift towards alternative suppliers during the disruption.

Impact on India

- **Household Energy Security:** Ensuring uninterrupted LPG supplies became a priority for millions of households.
- **Supply Restrictions:** Supplies to some industrial and commercial consumers were temporarily restricted to prioritise household demand.
- **Demand Management:** The minimum interval between household LPG refill bookings was increased.
- **Higher Domestic Production:** Indian refineries maximised LPG production to partly offset import disruptions.
- **Alternative Imports:** Importers sourced additional cargoes from suppliers outside the affected region, particularly the US.
- **Lower Consumption:** LPG consumption reportedly declined from around 90,000 tonnes per day to 80,000 tonnes per day during the disruption.

Lessons for India's Energy Security

- **Diversification of Sources:** Reduce excessive dependence on a single region or maritime chokepoint.
- **Strategic Storage:** Strengthen storage facilities and emergency stockpiles for critical fuels.
- **Domestic Production:** Expand refining capacity and domestic LPG production.
- **Long-Term Supply Agreements:** Secure contracts with suppliers across different geographical regions.
- **Alternative Fuels:** Encourage electric cooking, biogas and other suitable alternatives to reduce dependence on imported LPG.
- **Maritime Security:** Strengthen international cooperation to safeguard critical sea lanes and energy supply chains.

Country / Region Share		% Share of Total
 UAE		39.34%
 Qatar		21.45%
 Saudi Arabia		14.66%
 Kuwait		14.26%
 Norway		2.22%
 Singapore		2.20%
 Oman		1.83%
 Bahrain		1.01%



SEBI's IT Resilience Index (ITRI)

Context: The Securities and Exchange Board of India (SEBI) has introduced the IT Resilience Index (ITRI) to quantitatively assess the robustness of critical information technology systems of Market Infrastructure Institutions (MIIs), moving beyond routine compliance checks.

About the IT Resilience Index (ITRI)

- **Definition:** A quantitative index designed to measure the ability of critical IT systems to withstand, respond to and recover from disruptions.
- **Introduced by:** Securities and Exchange Board of India (SEBI).
- **Objective:** Strengthen the resilience of technology systems that support India's securities markets and reduce the risk of widespread market disruption.

About Market Infrastructure Institutions (MIIs)

MIIs provide the essential infrastructure required for the functioning of securities markets.

- **Types:** Stock exchanges, clearing corporations and depositories.
- **Key Functions:**
 - **Trading:** Facilitate the buying and selling of securities.
 - **Clearing and Settlement:** Ensure that securities and funds are transferred following trades.
 - **Securities Holding:** Maintain records and facilitate the safekeeping of securities.
- **Systemic Importance:** Disruptions in MIIs can affect market operations, investor confidence and financial stability.

Why Has SEBI Introduced ITRI?

- **Growing Technological Dependence:** Capital markets increasingly rely on digital infrastructure, and even brief outages can disrupt trading and affect investors.
- **Protection of Critical Functions:** The index assesses the resilience of systems supporting trading, clearing, settlement and securities holding.
- **Increasing Digitalisation:** Online trading, algorithmic transactions and faster settlement cycles have increased the importance of reliable IT systems.
- **Systemic Importance of MIs:** Given their role in financial markets, MIs require strong cybersecurity, operational safeguards and business continuity arrangements.
- **Beyond Compliance:** ITRI aims to shift regulatory assessment from checking compliance with prescribed requirements towards measuring actual IT resilience and technology risks.

How Will ITRI Work?

- **Nine Parameters:** IT resilience will be assessed using nine parameters, with weights reflecting their importance to systemic risk.
- **Key Parameters and Weights:**
 - Availability — 20%
 - Security — 20%
 - Business Continuity — 10%
 - Reliability — 10%
 - Scalability — 5%
- **Industry Standards Forum (ISF):** The ISF of MIs will develop detailed sub-parameters and measurement criteria.
- **Periodic Refinement:** Parameter weights may be revised using evidence from actual outages, cyber incidents and stress tests.
- **Early Warning System (EWS):** MIs will develop systems to identify declining resilience and enable timely corrective action.

SHAPING TALENT SINCE 2009

Significance

- **Investor Protection:** Helps reduce the risk of technology failures affecting investors.
- **Market Stability:** Strengthens the continuity of critical market operations.
- **Cybersecurity:** Encourages proactive identification and management of technology-related risks.
- **Regulatory Oversight:** Enables a more measurable, risk-based approach to monitoring the technological resilience of financial markets.

Variable Rate Reverse Repo (VRRR)

Context: The Reserve Bank of India (RBI) absorbed ₹71,971 crore from the banking system through an overnight Variable Rate Reverse Repo (VRRR) auction. Against the notified auction size of ₹75,000 crore, bids were accepted at a weighted average rate of 5.24%.

About Variable Rate Reverse Repo (VRRR)

- **Definition:** VRRR is a liquidity management tool used by the RBI to absorb surplus funds from the banking system.
- **Mechanism:** Banks park their surplus funds with the RBI for a specified period.
- **Rate Determination:** The interest rate is determined through competitive bidding rather than being fixed in advance by the RBI.
- **Objective:** It helps manage excess liquidity, stabilise short-term interest rates and regulate money market conditions.
- **Liquidity Position:** The supplied figures estimate surplus liquidity in the banking system at around ₹4.92 lakh crore.

Other RBI Liquidity Operations

Open Market Operations (OMO)

The RBI buys or sells government securities in the open market to regulate liquidity.

- **OMO Purchase:** The RBI buys government securities, injecting money into the banking system.
- **OMO Sale:** The RBI sells government securities, absorbing money from the banking system.

Comparison of RBI Liquidity Instruments

Feature	Repo Rate	Reverse Repo Rate	Variable Rate Repo (VRR)	Variable Rate Reverse Repo (VRRR)
Meaning	RBI lends to banks against eligible securities	RBI absorbs funds from banks under the reverse repo facility	RBI lends funds through an auction at a variable rate	RBI absorbs funds through an auction at a variable rate
Primary purpose	Provide liquidity to banks	Absorb liquidity	Inject short-term liquidity	Absorb surplus liquidity
Rate determination	Policy rate set by RBI	Administered rate set by RBI	Competitive auction	Competitive auction
Liquidity impact	Injects liquidity	Absorbs liquidity	Injects liquidity	Absorbs liquidity

Significance

- **Liquidity Management:** Helps the RBI manage surplus funds in the banking system.
- **Interest Rate Stability:** Supports orderly conditions in the short-term money market.
- **Monetary Policy Transmission:** Helps align money market rates with the RBI's monetary policy stance.
- **Inflation Management:** By influencing liquidity and short-term interest rates, it supports the broader monetary policy framework.

Deep-Sea Exploration

Context: India is expanding its deep-sea exploration capabilities under the Deep Ocean Mission. This has highlighted the need to balance technological development and access to critical minerals with the protection of fragile deep-sea ecosystems.

About Deep-Sea Exploration

Deep-sea exploration involves the scientific study of the deep ocean to understand its geology, mineral resources, biodiversity, ecosystems and physical conditions. It uses advanced technologies such as submersibles, remotely operated vehicles (ROVs) and underwater robotic systems.

India's Deep-Sea Exploration Initiatives

- **ISA Exploration Contracts:** India holds three exploration contracts with the International Seabed Authority (ISA), covering approximately 95,000 sq km of international seabed areas.
- **Polymetallic Nodules:** Exploration has identified an estimated 366 million tonnes of polymetallic nodules containing valuable minerals such as nickel, copper, cobalt and manganese.
- **Deep Ocean Mission:** India is developing deep-sea technologies, underwater robotics and the MATSYA-6000 human-occupied submersible under this mission.
- **Deep-Sea Mining Trials:** The National Institute of Ocean Technology (NIOT) has tested a deep-sea mining machine at depths of around 5,270 metres.
- **Biodiversity Surveys:** Surveys across 19 seamounts have studied approximately 1,300 deep-sea organisms, including nearly 23 species reported as new to science.

Key Environmental Concerns

- **Limited Scientific Understanding:** Deep-sea ecosystems remain poorly understood, making it difficult to predict the long-term consequences of large-scale seabed disturbance.
- **Seabed Damage:** Mining activities can disturb sediments, alter seabed structures and damage fragile habitats.
- **Biodiversity Loss:** The discovery of new species highlights the ecological significance of deep-sea environments and the need to conserve them.
- **Potentially Irreversible Impacts:** Because many deep-sea organisms grow and reproduce slowly, recovery from environmental damage may take decades or longer.
- **Resource Extraction vs Conservation:** The strategic importance of critical minerals must be balanced against ecological risks and long-term environmental costs.

Way Forward

- **Adopt the Precautionary Principle:** Conduct extensive scientific research and environmental assessments before undertaking activities that could cause irreversible damage.
- **Set Strict Environmental Standards:** Establish clear ecological safeguards and monitoring requirements before approving commercial exploitation.
- **Strengthen Environmental Baselines:** Expand biodiversity surveys and ecosystem studies to understand natural conditions and measure potential impacts.
- **Separate Exploration from Exploitation:** Continue scientific research and technological development without treating exploration contracts as automatic approval for commercial mining.
- **Promote a Circular Economy:** Reduce mineral demand through resource efficiency, recycling, reuse and the substitution of scarce materials.
- **Mission LiFE:** Encourage sustainable consumption and resource conservation to reduce dependence on new extraction.

India-UK Carbon Pricing Cooperation

Context: The United Kingdom has recognised India's Carbon Credit Trading Scheme (CCTS) as an eligible carbon-pricing mechanism under its Carbon Border Adjustment Mechanism (CBAM). This could help eligible Indian exporters reduce carbon-related costs when exporting goods to the UK.

Key Highlights of the UK's Recognition

- **Carbon-Price Relief:** UK importers of eligible Indian goods covered by CBAM may claim relief for the effective carbon price already paid under India's CCTS, subject to evidence and verification requirements.
- **Avoiding Double Carbon Costs:** The recognition supports the principle of accounting for carbon costs already borne in the exporting country, reducing the risk of charging the same carbon cost twice.
- **Boost to Indian Exports:** Lower effective CBAM liabilities could improve the competitiveness of eligible Indian goods in the UK market. The actual relief will depend on the carbon price paid and the applicable verification rules.

About the Carbon Credit Trading Scheme (CCTS)

- **Definition:** CCTS is India's domestic carbon market mechanism that uses tradable Carbon Credit Certificates (CCCs) to create financial incentives for reducing greenhouse-gas emissions.
- **Legal Foundation:** The Energy Conservation (Amendment) Act, 2022.
- **Notification:** Formally notified by the Ministry of Power on 28 June 2023.
- **Evolution:** It represents a shift towards a broader carbon market, building on India's earlier Perform, Achieve and Trade (PAT) mechanism.



Key Components of CCTS

- **Compliance Mechanism:** Designated energy-intensive industries are assigned greenhouse-gas emission-intensity targets. The Bureau of Energy Efficiency (BEE) oversees the framework.
- **Offset Mechanism:** Eligible projects outside the mandatory compliance system, including qualifying renewable-energy and forestry projects, may generate carbon credits under applicable rules.
- **Monitoring, Reporting and Verification (MRV):** Emission reductions are measured, reported and independently verified to ensure credibility and transparency.
- **Carbon Credit Certificates (CCCs):** Eligible entities can earn certificates for qualifying emission reductions. These certificates can be traded through India's carbon market framework and designated power exchanges.

Significance for India

- **Export Competitiveness:** Recognition may reduce carbon-related costs for eligible Indian exports to the UK.
- **Green Investment:** Carbon pricing can encourage industries to adopt cleaner technologies and improve energy efficiency.
- **Climate Cooperation:** It strengthens cooperation between India and the UK on carbon markets and emissions reduction.
- **Global Carbon Market Integration:** It highlights the growing importance of internationally recognised carbon-pricing systems in global trade.

Water Hyacinth and Vembanad Lake

Context: A one-month pilot project is planned in Kumarakom, Kottayam, Kerala, to remove invasive water hyacinth from Vembanad Lake using robotic technology.

About Water Hyacinth (*Pontederia crassipes*)

- **Nature:** A free-floating perennial aquatic plant native to tropical and subtropical South America. It is an invasive alien species (IAS) in many parts of the world.
- **Habitat:** Commonly found in freshwater lakes, ponds, rivers and wetlands.
- **Reproduction:** Spreads rapidly through seeds and vegetative propagation, forming dense mats on the water surface.
- **Key Feature:** Its spongy, bulbous leaf stalks help the plant float.



Environmental Impacts

- Blocks sunlight from reaching underwater plants.
- Reduces dissolved oxygen levels, threatening fish and other aquatic organisms.
- Alters aquatic habitats and reduces biodiversity.

Socio-economic Impacts

- Obstructs navigation and fishing activities.
- Interferes with irrigation and water supply.
- Increases the cost of maintaining water bodies and managing aquatic ecosystems.

About Vembanad Lake

- Location: Located in Kerala, extending across Alappuzha, Kottayam and Ernakulam districts.
- Significance: It is the longest lake in India and the largest lake in Kerala.
- Ramsar Site: Part of the Vembanad-Kol Wetland, designated a Ramsar Site in 2002.
- Kuttanad Region: Forms an important part of the Kuttanad wetland-agricultural system, known for paddy cultivation below sea level.
- Major Rivers: Pamba, Periyar, Meenachil, Manimala and Achankovil.
- Connectivity: Connected to the Arabian Sea through the Cochin estuary system.

Significance of the Removal Project

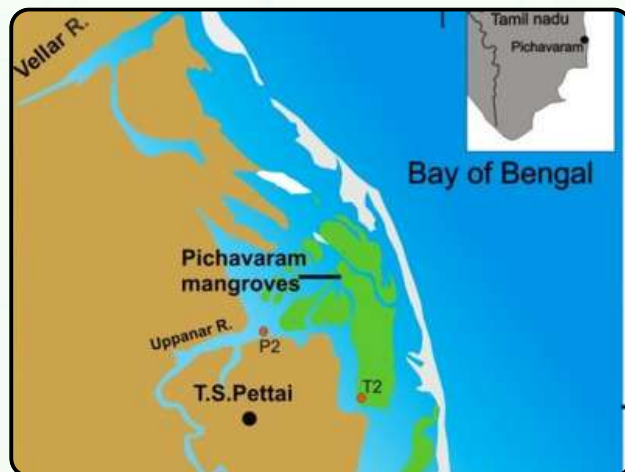
- Ecosystem Restoration: Removing dense mats of water hyacinth can improve sunlight penetration and water circulation.
- Biodiversity Conservation: Helps protect aquatic habitats and native species.
- Livelihood Protection: Supports fishing, navigation and other lake-dependent activities.
- Use of Technology: Robotic removal may improve efficiency and reduce the need for labour-intensive manual clearance.

Pichavaram Mangrove Ecosystem

Context: A recent study estimated the Total Economic Value (TEV) of Tamil Nadu's Pichavaram Mangrove Forest at ₹2,485.38 crore, highlighting the ecological, economic and social benefits of mangroves.

About Mangroves

- Definition: Mangroves are salt-tolerant trees and shrubs found mainly in intertidal coastal areas of tropical and subtropical regions.
- Habitat: They commonly grow in estuaries, tidal creeks, lagoons, deltas and sheltered coastlines.
- Ecological Role: They provide breeding and nursery grounds for aquatic species, protect coastlines and support biodiversity.



About Pichavaram Mangroves

- **Location:** Near Chidambaram, along the Bay of Bengal coast in Tamil Nadu.
- **Conservation Status:**
 - **Reserve Forest:** Declared in 1987 under the Tamil Nadu Forest Department.
 - **Ramsar Site:** Designated as a Wetland of International Importance in 2002.
 - It is neither a National Park nor a Wildlife Sanctuary.
- **Conservation Initiative:** Tamil Nadu has proposed a Mangrove Conservation Centre at Pichavaram to promote conservation and public awareness.
- **Ecological Importance:** The forest supports rich biodiversity, coastal ecosystems and local livelihoods.

Ecosystem Services of Mangroves

Ecosystem services are the benefits that humans obtain from nature. They are classified into four categories:

- **Provisioning:** Fish, other food resources and raw materials.
- **Regulating:** Coastal protection, flood mitigation and climate regulation.
- **Supporting:** Nutrient cycling and habitat provision for biodiversity.
- **Cultural:** Tourism, recreation and educational value.

Blue Carbon and Livelihoods

- **Blue Carbon:** Mangroves act as natural carbon sinks, storing substantial amounts of carbon in their vegetation and sediments. This helps mitigate climate change.
- **Coastal Protection:** Mangroves reduce the impact of waves, storm surges and coastal erosion.
- **Livelihood Support:** They sustain coastal communities through fisheries and other economic activities.

Mangrove Cover in India

According to the India State of Forest Report (ISFR) 2023:

- **Total Cover:** 4,991.68 sq. km, approximately 0.15% of India's geographical area.
- **Major Mangrove Areas:** West Bengal, Gujarat and the Andaman and Nicobar Islands have the largest mangrove cover.
- **Distribution:** Mangroves are found across nine coastal States and three Union Territories.

Coastal States: West Bengal, Gujarat, Andhra Pradesh, Maharashtra, Odisha, Tamil Nadu, Goa, Karnataka and Kerala.

Union Territories: Andaman and Nicobar Islands, Puducherry, and Dadra and Nagar Haveli and Daman and Diu.

Kaziranga National Park and Tiger Reserve

Context: The Assam Government plans to seek approval from the Ministry of Environment, Forest and Climate Change (MoEFCC) for a site-specific Eco-Sensitive Zone (ESZ) extending 1–3 km around Kaziranga National Park and Tiger Reserve. The proposal has sparked debate over balancing urban expansion and local livelihoods with wildlife conservation and habitat connectivity.

What is an Eco-Sensitive Zone (ESZ)?

An ESZ is a designated area around protected areas, such as National Parks and Wildlife Sanctuaries, intended to minimise the adverse impacts of human activities on sensitive ecosystems.

- **Legal Basis:** Environment (Protection) Act, 1986.
- **Purpose:** Acts as a transition zone between protected ecosystems and human-dominated landscapes.
- **Conservation Role:** Helps regulate industries, infrastructure development and other activities that may harm wildlife habitats.
- **Activities:** ESZs are not complete no-development zones. Activities are classified as prohibited, regulated or permitted.
- **Extent:** The 2011 guidelines envisaged ESZs extending up to 10 km around protected areas, where necessary. The actual boundary is determined by the government based on local ecological conditions.

About Kaziranga National Park and Tiger Reserve

- **Location:** Assam, extending across Golaghat, Nagaon, Sonitpur and Biswanath districts.
- **Brahmaputra Floodplain:** Located in the low-lying alluvial floodplain of the Brahmaputra River. Annual floods help maintain its ecological balance.
- **Landscape:** Features a diverse mosaic of tall grasslands, marshes, wetlands and tropical forests.
- **Wetlands:** Numerous beels (wetlands), oxbow lakes and interconnected water channels support aquatic biodiversity.
- **Karbi Anglong Connection:** The southern side connects with the Karbi Anglong hills, which provide elevated refuge for wildlife during floods.
- **Rich Biodiversity:** Known for the Great Indian One-Horned Rhinoceros, Asian elephant, Royal Bengal Tiger, wild water buffalo and eastern swamp deer.

Significance of the ESZ Proposal

- **Wildlife Conservation:** Helps reduce habitat disturbance and human-wildlife conflict.
- **Habitat Connectivity:** Supports wildlife movement between Kaziranga and the Karbi Anglong hills.
- **Flood Resilience:** Protects ecological linkages that become especially important during seasonal flooding.
- **Development-Conservation Balance:** A site-specific ESZ can help address local ecological needs while considering communities, livelihoods and infrastructure development.

Weaponisation of Space

Context: The United States (US) has acknowledged possessing on-orbit space-control weapons designed to protect its forces against hostile actions, highlighting growing concerns over the militarisation and weaponisation of outer space.

What is Weaponisation of Space?

Weaponisation of space refers to the deployment or use of weapons in outer space to attack, disrupt or destroy satellites, other space assets or targets on Earth.

Types of Space-Based Weapons

- **Earth-to-Space Weapons:** Ground-launched missiles designed to destroy satellites.
- **Space-to-Earth Weapons:** Weapons stationed in space to attack targets on Earth.
- **Space-to-Space Weapons:** Weapons deployed in space to target other satellites or space assets.
- **Non-Kinetic Weapons:** Capabilities such as electronic jamming, communication disruption and cyberattacks that can disable space systems without physically destroying them.

Anti-Satellite (ASAT) Weapons

ASAT weapons are designed to disable or destroy satellites in orbit.

- The US, Russia, China and India have demonstrated the capability to destroy satellites through ASAT tests.
- During the Russia-Ukraine conflict, Russia has also been accused of using cyber and electronic warfare capabilities against satellite-based systems.
- The growing use of counterspace capabilities threatens satellite communication, navigation, weather forecasting and other essential services.

Key Concerns

- **Space Debris:** Destruction of satellites can generate debris that threatens other spacecraft.
- **Critical Infrastructure:** Disruption of satellites can affect navigation, communications, weather forecasting and financial systems.
- **Strategic Competition:** Counterspace capabilities may intensify geopolitical tensions and trigger an arms race.
- **Regulatory Gaps:** Existing international agreements do not comprehensively regulate all space-based and ground-based counterspace weapons.

International Efforts to Regulate Space Weapons

1. Outer Space Treaty, 1967

- Serves as the principal international legal framework for the exploration and use of outer space.
- Prohibits placing nuclear weapons or other weapons of mass destruction (WMDs) in orbit around Earth or stationing them in outer space.
- Does not explicitly prohibit conventional weapons in outer space.
- Does not comprehensively address all Earth-to-space weapons and emerging counterspace capabilities, leaving regulatory gaps.

2. Prevention of the Placement of Weapons in Outer Space (PPWT)

- Proposed jointly by China and Russia around 2008.
- Sought to prohibit the placement of weapons in outer space.
- Did not cover all Earth-to-space weapons and has not resulted in a binding treaty.

3. Prevention of an Arms Race in Outer Space (PAROS)

- An international disarmament initiative discussed at the United Nations Conference on Disarmament.
- Aims to prevent an arms race in outer space.
- Discussions have not yet produced a binding international treaty.

4. Artemis Accords

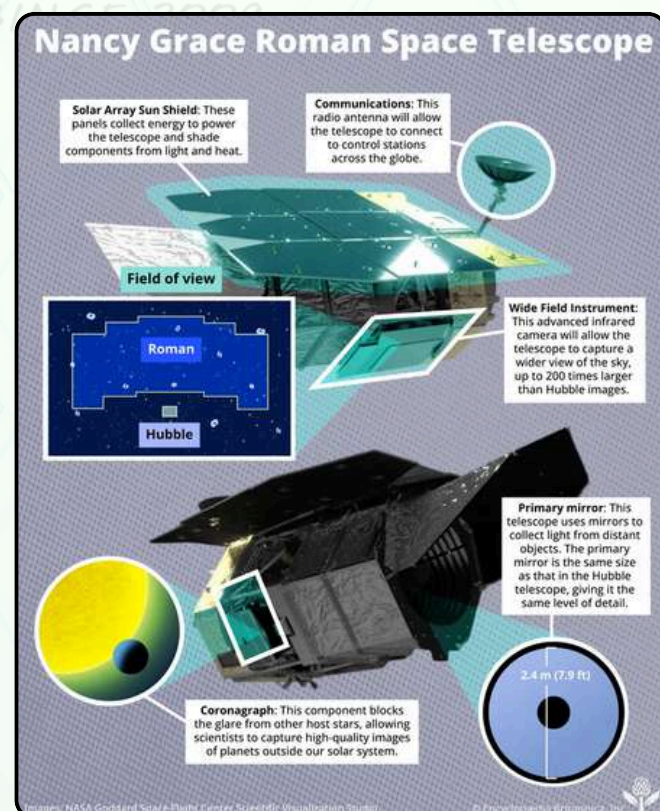
- A voluntary framework led by the US National Aeronautics and Space Administration (NASA) and the US Department of State.
- Promotes peaceful, transparent and cooperative space exploration.
- India is a signatory.
- It does not prohibit the deployment or use of weapons in space.

Nancy Grace Roman Space Telescope

Context: NASA reportedly launched the Nancy Grace Roman Space Telescope on 30 August 2026 to study dark matter, dark energy and exoplanets, expanding our understanding of the universe.

About the Roman Space Telescope

- **Agency:** National Aeronautics and Space Administration (NASA), USA.
- **Cost:** Approximately US\$4 billion.
- **Purpose:** Designed to investigate dark energy, map dark matter and discover and study exoplanets.
- **Named After:** Nancy Grace Roman, NASA's first Chief of Astronomy, who played a major role in establishing the agency's space astronomy programme.
- **Launch Vehicle:** SpaceX's Falcon Heavy rocket, from Kennedy Space Center, Florida.



Orbit and Key Features

- **Orbit:** Designed to operate around the Sun-Earth Lagrange Point 2 (L2), approximately 1.5 million km from Earth.
- **Observational Advantage:** Its position provides a favourable and relatively stable viewing geometry for space observations.
- **Wide Field of View:** Unlike telescopes that focus mainly on individual objects, Roman can capture large areas of the sky in a single observation.
- **Large-Scale Surveys:** It is expected to observe billions of galaxies, helping scientists study the structure and evolution of the universe.
- **Exoplanet Research:** Its surveys will help identify and investigate planets beyond our Solar System.

Scientific Significance

- **Dark Energy:** Will help study the expansion of the universe and the nature of dark energy.
- **Dark Matter:** Will map its distribution by observing its gravitational effects on light and galaxies.
- **Exoplanets:** Will use techniques such as gravitational microlensing to discover planets beyond our Solar System.
- **Cosmic Evolution:** Large-scale observations will help scientists understand how galaxies and cosmic structures have evolved.

Roman vs Hubble vs James Webb

- **Hubble Space Telescope:** Known for detailed observations across visible, ultraviolet and near-infrared wavelengths.
- **James Webb Space Telescope (JWST):** Primarily observes infrared light, enabling the study of distant galaxies and objects obscured by dust.
- **Roman Space Telescope:** Combines high-resolution imaging with a field of view much wider than Hubble's, making it suitable for large-scale surveys.

India's 'Artificial Sun'

Context: India reportedly commissioned an 82.6 GHz, 400 kW gyrotron for the Steady-State Superconducting Tokamak-1 (SST-1) in Gujarat to advance research into heating and sustaining extremely hot plasma for nuclear fusion.

What is an Artificial Sun?

An "Artificial Sun" is an informal term for an experimental nuclear-fusion device that attempts to reproduce the energy-producing process of the Sun under controlled conditions on Earth.

What is a Tokamak?

- A tokamak is a doughnut-shaped device that uses powerful magnetic fields to confine extremely hot plasma for nuclear-fusion experiments.
- The term tokamak comes from a Russian acronym meaning "toroidal chamber with magnetic coils."

Key Components of a Tokamak

- **Vacuum Vessel:** Provides a low-pressure environment for generating and containing plasma.
- **Superconducting Magnetic Coils:** Produce toroidal and poloidal magnetic fields that confine charged plasma away from the reactor walls.
- **Auxiliary Heating Systems:** Gyrotrons and Neutral Beam Injection (NBI) heat plasma to the temperatures required for fusion.
- **Divertor:** Removes excess heat, impurities and helium ash from the plasma's edge.

Working Mechanism

1. Hydrogen isotopes are heated to extremely high temperatures, forming plasma.
2. Powerful magnetic fields confine the plasma.
3. Under suitable conditions, hydrogen nuclei fuse to form helium, releasing energy.

Potential Benefits of Nuclear Fusion

- **Low-Carbon Energy:** Fusion produces no carbon dioxide during the fusion reaction itself.
- **Fuel Potential:** Certain fusion fuels are relatively abundant, although some, such as tritium, require specialised production.
- **Reduced Long-Lived Waste:** Fusion is expected to produce less long-lived radioactive waste than conventional nuclear fission, although radioactive materials and activated reactor components remain concerns.
- **Energy Security:** Successful commercial fusion could provide a reliable source of electricity.

Key Features of India's SST-1

- **Full Form:** Steady-State Superconducting Tokamak-1.
- **Location:** Institute for Plasma Research (IPR), Gujarat.
- **Significance:** India's first superconducting tokamak, developed for magnetic-confinement fusion research and long-duration plasma experiments.
- **Magnetic System:** Uses superconducting toroidal and poloidal field magnets to confine plasma.
- **Plasma Heating:** Uses Electron Cyclotron Resonance Heating (ECRH) and Lower Hybrid Current Drive (LHCD).
- **Gyrotron System:** The reported 82.6 GHz, 400 kW ECRH gyrotron supplies high-frequency electromagnetic waves to heat plasma.
- **Research Focus:** Supports experiments on plasma stability, heating, current drive and technologies relevant to future fusion-energy systems.

What is a Gyrotron?

A gyrotron is a high-power vacuum electronic device that generates millimetre-wave or sub-millimetre-wave electromagnetic radiation. In fusion research, these waves are used to heat plasma through electron cyclotron resonance.

Major Global Fusion Experiments

- India — SST-1: Studies superconducting magnetic confinement, plasma heating and long-pulse operation.
- China — EAST: The Experimental Advanced Superconducting Tokamak investigates high-temperature plasma and sustained magnetic confinement.
- Europe — ITER: An international fusion project under development in France to demonstrate the scientific and technological feasibility of large-scale magnetic-confinement fusion.
- USA — National Ignition Facility (NIF): Uses powerful lasers for inertial-confinement fusion, unlike tokamaks, which use magnetic confinement.
- South Korea — KSTAR: Studies high-temperature plasma and long-duration confinement using superconducting tokamak technology.

Stem Cell Therapy Regulation

Context:

Context: The Union Ministry of Health and Family Welfare (MoHFW) has issued an advisory to States and Union Territories (UTs) to ensure compliance with the regulatory framework governing stem cell therapies.

More on the News

- The advisory follows the Supreme Court's January 2026 judgment in *Yash Charitable Trust & Ors. v. Union of India & Ors.*
- Violations may attract professional misconduct proceedings under Regulation 7.22 of the Indian Medical Council (IMC) Regulations, 2002.
- Action may also be taken under Sections 32 and 40 of the Clinical Establishments (Registration and Regulation) Act, 2010, including penalties and cancellation of registration, where applicable.

What Are Stem Cells?

Stem cells are undifferentiated cells capable of self-renewal and developing into specialised cell types under suitable conditions.

Types of Stem Cells

- Embryonic Stem Cells (ESCs): Derived from early-stage embryos; can develop into almost all types of body cells.
- Adult/Somatic Stem Cells: Found in tissues such as bone marrow, blood and adipose tissue; generally have a more limited ability to differentiate.
- Induced Pluripotent Stem Cells (iPSCs): Mature cells genetically reprogrammed to acquire stem-cell-like properties.

About Stem Cell Therapy

Stem cell therapy uses stem cells to replace, repair or regenerate damaged cells and tissues.

Established Application: Hematopoietic Stem Cell Transplantation (HSCT) is an established treatment for several blood-related diseases, including leukaemia, lymphoma, multiple myeloma and aplastic anaemia.

Key Provisions of the Advisory

- **Applicability:** Applies to States and UTs that have adopted the Clinical Establishments (Registration and Regulation) Act, 2010.
- **Approved Uses:** Stem cell therapy may be provided as routine standard care only for indications approved by the Ministry of Health.
- **Autism Spectrum Disorder (ASD):** Stem cell therapies for ASD are restricted to duly approved clinical trials; they cannot be offered as routine treatment.
- **Clinical Trial Requirements:** Trials must comply with the National Guidelines for Stem Cell Research, 2017, issued jointly by the Indian Council of Medical Research (ICMR) and the Department of Biotechnology (DBT).
- **Ban on Unproven Commercial Treatments:** Unproven interventions cannot be marketed or provided as routine clinical services outside the approved regulatory framework.
- **Regulatory Oversight:** States and UTs have been asked to communicate the Supreme Court's directions to regulatory authorities and government and private clinical establishments involved in stem cell research or treatment.

Major Concerns

- **Safety Risks:** Unproven therapies may cause infections, immune reactions and abnormal tissue growth.
- **Lack of Scientific Evidence:** Many proposed applications lack sufficient evidence of safety and effectiveness, particularly treatments for ASD.
- **Commercial Misuse:** Misleading claims about unapproved therapies may exploit vulnerable patients and create false hopes.
- **Ethical Concerns:** Stem cell research raises issues relating to embryo use, informed consent and responsible clinical practice.

Bhutan Eliminates Dog-Mediated Rabies

Context: Bhutan has become the first country in the WHO South-East Asia Region to eliminate dog-mediated rabies as a public health problem.

Rabies Control in Bhutan

Bhutan adopted a One Health approach, integrating human healthcare, veterinary services, local governments and communities to control rabies.

Key measures included:

- **Mass Dog Vaccination:** Vaccinating dogs to interrupt virus transmission.
- **Dog Population Management:** Managing dog populations to reduce the risk of transmission.
- **Post-Exposure Prophylaxis (PEP):** Providing preventive treatment to people exposed to suspected rabies.
- **Public Awareness:** Educating communities about animal bites and rabies prevention.
- **Surveillance:** Strengthening disease monitoring and reporting.

Criteria for Elimination

- WHO validation requires no human deaths from dog-mediated rabies for at least two years.
- The country must also demonstrate the capacity to prevent the disease from re-emerging.

About Rabies

- **Nature:** A viral zoonotic disease caused by viruses belonging to the Lyssavirus genus.
- **Impact:** Attacks the central nervous system and is almost invariably fatal once clinical symptoms appear.
- **Transmission:** Primarily spreads through the saliva of infected animals, usually through bites or when saliva enters broken skin or mucous membranes.
- **Major Source:** Dogs account for approximately 99% of human rabies transmission globally.
- **Other Animals:** Cats, monkeys, mongooses, jackals and other susceptible mammals can also transmit the virus.

Significance

- **Public Health:** Demonstrates the effectiveness of coordinated vaccination, surveillance and healthcare measures.
- **One Health Approach:** Highlights the importance of integrating human, animal and environmental health efforts.
- **Regional Example:** Provides a model for other countries seeking to eliminate dog-mediated rabies.

Bio-Nivesh

Context: Union Minister Jitendra Singh recently launched Bio-Nivesh, an initiative aimed at connecting biotechnology startups with investors and encouraging private investment in the biotechnology sector.

About Bio-Nivesh

- **Objective:** Bridge the gap between biotechnology innovation, investment, industry and markets.
- **Focus:** Facilitate private investment in promising biotechnology and deep-tech startups.
- **Key Functions:**
 - Connect startups with potential investors.
 - Improve access to patient, long-term capital.
 - Support technology translation, scaling up and commercialisation.
 - Help startups understand investor expectations and market requirements.
- **Selection Criteria:** Innovation, stage of development, market potential, scalability and regulatory readiness.
- **Approach:** Goes beyond conventional pitching by encouraging direct interactions between startups and investors and fostering strategic partnerships.

GISAT-1A (Geo Imaging Satellite-1A)

Context: ISRO is set to resume satellite launches after a seven-month pause, with GISAT-1A planned as an Earth-observation mission.



About GISAT-1A

- **Developed by:** Indian Space Research Organisation (ISRO).
- **Other Name:** Also referred to as EOS-05 under ISRO's revised satellite nomenclature.
- **Mission Background:** Intended to replace GISAT-1 (EOS-03), whose launch failed in August 2021.
- **Mission Life:** Approximately 10 years.
- **Primary Objective:** To provide frequent imagery of large geographical areas for monitoring changes on Earth.

Applications

- **Disaster Management:** Monitoring floods, cyclones and other natural disasters.
- **Agriculture:** Assessing crop conditions and monitoring agricultural activity.
- **Forestry:** Tracking forest cover and changes in vegetation.
- **Resource Monitoring:** Supporting land-use planning and environmental management.

Significance

GISAT-1A is intended to strengthen India's Earth-observation capabilities by providing timely satellite imagery for disaster response, agriculture, forestry and resource management.

Indian Standard Time (IST) Rules, 2026

The Union Government notified the Legal Metrology (Indian Standard Time) Rules, 2026 to establish a uniform time standard across India.



Key Provisions

- **Common Time Standard:** Mandates the use of IST for legal, administrative, commercial and official purposes, with a 180-day transition period.
- **One Nation, One Time Initiative:** Aims to ensure uniform time synchronisation across critical infrastructure and services.
- **Digital Synchronisation:** Uniform time-stamping will improve coordination in banking, digital payments, telecommunications, transport, power grids and digital governance.
- **Reliable Records:** A common time reference will enhance the accuracy of official records and time-sensitive legal processes.

White Rabbit Technology (WRT)

- **Purpose:** Enables highly precise and reliable time synchronisation across geographically distributed systems.
- **Precision:** Supports sub-nanosecond-level time synchronisation.
- **Recent Development:** In July 2026, the government commissioned a WRT-based IST Dissemination Demonstration Network at the Regional Reference Standard Laboratory (RRSL), Bengaluru.

Digital India Land Records Modernisation Programme (DILRMP) 3.0

The Union Government launched DILRMP 3.0 with an outlay of ₹565.50 crore to develop an integrated, GIS-based digital land-record ecosystem.

Key Features of DILRMP 3.0

- **Objective:** Move beyond digitising individual land records to create an interoperable Land Stack integrating land records, cadastral maps, registration data and court information.
- **Implementation Period:** 2026-2031.
- **Financial Outlay:** ₹565.50 crore.
- **Expected Benefit:** Improve transparency, accessibility and coordination in land administration.

About DILRMP

- **Objective:** Establish a comprehensive and transparent land-record management system through digitisation and integration of land-related information.
- **Nodal Ministry:** Department of Land Resources, Ministry of Rural Development.
- **Funding:** 100% Central Government funding under the Central Sector Scheme.

Evolution of the Programme

Phase	Key Features
NLRMP (2008)	Launched as a Centrally Sponsored Scheme to digitise textual and spatial land records.
DILRMP (2016–2026)	Restructured as a fully centrally funded scheme, focusing on digitisation of Records of Rights (RoRs).
DILRMP 3.0 (2026–2031)	Shifts towards an integrated, GIS-based <i>Land Stack</i> connecting multiple land-related databases.

Tulu Language

The Karnataka Cabinet decided to grant additional official (administrative) language status to Tulu in Dakshina Kannada and Udupi districts.

About Tulu

- **Language Family:** Tulu is a Dravidian language spoken mainly in Dakshina Kannada, southern Udupi and parts of Kasaragod district in Kerala.
- **Recognition:** It is recognised as an independent language by the Registrar General and Census Commissioner of India, and its speakers are recorded separately in Census data.
- **Historical References:** Tulu has links to references in Tamil Sangam literature and the ancient Greek papyrus Charition, dated to around the 2nd century BCE.
- **Script:** The traditional script is Tigalari, although the Kannada script is widely used today.

Official Language Status in India

- An official language is a language recognised for use in government administration and official communication.
- Article 345: Empowers a State Legislature to adopt one or more languages in use in the state, or Hindi, as the official language for all or any official purposes of the state.



Asian-Pacific Postal Union (APPU)

Dr. Vinaya Prakash Singh, a senior Indian Postal Service officer, was re-elected unopposed as Secretary-General of APPU for a second four-year term (2027-2030).

About APPU

- **Nature:** An intergovernmental organisation comprising 32 Asia-Pacific countries and functioning as a Regional Union of the Universal Postal Union (UPU).
- **Established:** 1961.
- **Headquarters:** Bangkok, Thailand.

Objectives of APPU

- **Postal Cooperation:** Strengthen cooperation and relations among member countries.
- **Harmonisation:** Promote uniformity in postal regulations, rates and customs procedures.
- **Cross-border Trade:** Facilitate international logistics and e-commerce.
- **UPU Initiatives:** Implement Universal Postal Union initiatives at the regional level.
- **Modernisation:** Promote technical cooperation and modernise postal networks across the region.



South Asia Wildlife Enforcement Network (SAWEN)

South Asian countries adopted the Kathmandu Declaration at SAWEN's first General Assembly in Kathmandu, Nepal, to strengthen regional cooperation against illegal wildlife trade and transnational wildlife crime.



About SAWEN

- **Nature:** A regional intergovernmental mechanism to combat illegal wildlife trade and wildlife-related organised crime.
- **Origin:**
 - 2008: Environment Ministers of eight South Asian countries agreed at Jaipur, India, to establish a regional mechanism against wildlife trafficking.
 - January 2011: SAWEN was formally launched at Paro, Bhutan.
- **Members (8):** Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
- **Secretariat:** Kathmandu, Nepal.
- **Governing Structure:** General Assembly (apex body), Executive Committee and Secretariat.

Key Components of the Kathmandu Declaration

- **Intelligence Sharing:** Strengthen cross-border intelligence exchange and coordinated investigations.
- **Financial Investigations:** Use anti-money laundering (AML) measures, financial investigations and asset recovery to disrupt trafficking networks.
- **Criminal Justice:** Improve law enforcement and prosecution of organised wildlife crime.
- **Global Cooperation:** Promote recognition of serious wildlife crime as a form of transnational organised crime.

V4+India Foreign Ministers' Meeting

India held its first V4+India Foreign Ministers' Meeting on the sidelines of the 81st United Nations General Assembly (UNGA) session in New York. The meeting was held under the Slovak Presidency of the Visegrád Group.

About the Visegrád Group (V4)

- **Nature:** A regional cooperation grouping of four Central European countries — Poland, Hungary, Slovakia and the Czech Republic.
- **Established:** 1991.
- **Origin of Name:** Named after Visegrád, a town in Hungary.
- **Areas of Cooperation:** Political, economic, cultural, energy and security affairs.
- **Common Memberships:** All four countries are members of the European Union (EU), the North Atlantic Treaty Organization (NATO) and the Three Seas Initiative.
- **Institutional Mechanism:** The International Visegrad Fund promotes cooperation through grants, cultural exchanges and cross-border initiatives.



Mission Rangeen Machhli 2031

Vice-President
C. P.
Radhakrishnan
released the
Mission
Rangeen
Machhli 2031
Strategic
Action Plan at
Agatti Island,
Lakshadweep.

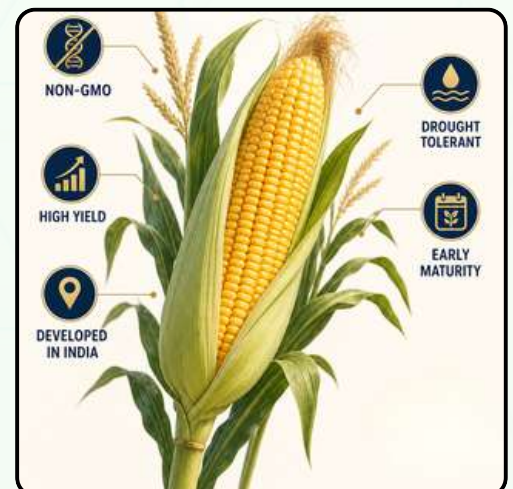


About Mission Rangeen Machhli 2031

- Objective: Transform India's ornamental fisheries sector into an organised, sustainable and globally competitive industry.
- Key Focus Areas: Promote breeding, rearing, trade and value addition of ornamental fish.
- Livelihood Generation: Support sustainable livelihoods and strengthen the Blue Economy.
- Nodal Ministry: Ministry of Fisheries, Animal Husbandry and Dairying.
- Implementing Department: Department of Fisheries.
- Launch Location: Agatti Island, Lakshadweep.

India's First Non-GMO High-Expansion Popcorn Maize Hybrid

India introduced its first non-genetically modified (non-GMO), high-expansion popcorn maize hybrid seed at Musunuru, Eluru district, Andhra Pradesh.



About Popcorn Maize

- **Scientific Name:** *Zea mays everta*, a specialised variety of maize used to make popcorn.
- **Kernel Structure:** It has a thick, moisture-resistant outer layer called the pericarp and a starch-rich interior.
- **Popping Mechanism:** When heated, moisture inside the kernel turns into steam, increasing internal pressure until the kernel bursts.
- **Commercial Importance:** High-expansion varieties produce a greater volume of popped corn, making them suitable for commercial use.

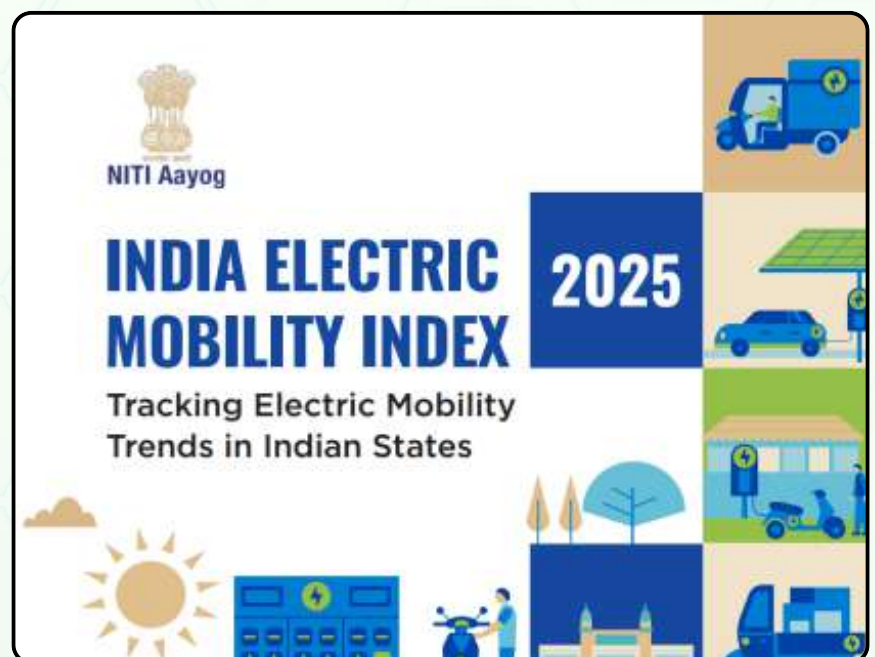
Key Features of the Hybrid

- **Indigenous Development:** Developed for Indian soil and climatic conditions, reducing dependence on imported popcorn hybrid technology.
- **Non-GMO:** Developed through conventional breeding methods, including cross-pollination and selective breeding, without genetic modification.
- **Hybrid Vigor:** Created by crossing selected parent lines to produce an F1 hybrid with desirable traits.
- **High Expansion:** Produces a larger volume of popped corn, improving its commercial value.
- **Farmer Reach:** India's popcorn value chain covers over 17,500 farming families across eight states and nearly 40,000 acres of farmland.

India Electric Mobility Index (IEMI) 2025

Delhi topped the second edition of the India Electric Mobility Index (IEMI) 2025, released by NITI Aayog to assess the progress of electric mobility across Indian States and Union Territories.

Assessment Parameters	
Indicator	Weightage
Transport Electrification Progress	50%
Charging Infrastructure Readiness	30%
EV Research and Innovation	20%
State and UT Performance	
Top Performers	
State/UT	Score
Delhi	84
Maharashtra	78
Karnataka	73
Chandigarh	71
Goa	65



About IEMI

- Developed by: NITI Aayog in collaboration with World Resources Institute (WRI) India.
- Objective: Evaluate state-level policy frameworks and implementation outcomes for electric mobility.
- Coverage: All 36 States and Union Territories.
- Frontrunners among large states (50–64): Tamil Nadu, Madhya Pradesh, Odisha, Andhra Pradesh, Telangana, Haryana, Rajasthan and Uttar Pradesh.
- Emerging Performers (35–49): Chhattisgarh, West Bengal, Bihar, Kerala, Jharkhand, Punjab and Gujarat.
- Madhya Pradesh: Improved its rank from 23rd to 7th.

Theme-wise Performance

- Transport Electrification: Delhi, Chandigarh and Maharashtra were the only top performers.
- Charging Infrastructure: Karnataka (97), Goa (92) and Maharashtra (91) led.
- EV Research and Innovation: Delhi topped the category with a score of 94.

India's First Soil Carbon Payments

India's agricultural carbon market reached a milestone when over 2,550 small farmers in Punjab and Haryana received more than ₹2.9 crore through Direct Benefit Transfer (DBT) for adopting verified regenerative farming practices.

About India's First Soil Carbon Payments

- Objective: Link soil carbon sequestration and greenhouse gas (GHG) emission reduction with farmers' income by providing financial incentives for sustainable agriculture.
- Implementing Entity: Grow Indigo, a joint venture of Mahyco and Indigo Ag, implements the Aadi farmer-carbon programme.
- Launched: 2019 to address stubble burning, groundwater depletion and climate vulnerability in northwestern India.
- First Payment Cycle: Covered farming practices during 2019–2022. The initial tranche covered around 30,000 acres and generated over 50,000 carbon credits.

How the Carbon Payment System Works

1. Adoption of Practices: Farmers adopt Direct Seeded Rice (DSR), reduced tillage, cover crops and crop-residue management.
2. Measurement, Reporting and Verification (MRV): Soil sampling, satellite monitoring and digital models assess changes in soil carbon and GHG emissions, followed by independent verification.
3. Carbon Monetisation: Verified carbon credits are sold in the voluntary carbon market, generating revenue.
4. Farmer Payments: Farmers receive a share of the revenue and can choose between an assured upfront payment or 75% of net carbon revenue after credit sales.