



Special Features

Current Events Polity & Governance

International Issue

Society & Culture

Science & Tech

Ecology & Environment

Yojana Analysis

Internal Security

Geography

Editorials

Economics

MCQ'S

BURNING NEWS

1-3

India-Germany Relations

CURRENT EVENTS OF INTERNATIONAL IMPORTANCE

4-20

1. Qeshm Island
2. India's Recalibrated Trade and Investment Policy
3. Republic of Naoero
4. India-China Climate Cooperation
5. Makkah Joint Defence Agreement (MJDA)
6. India's Free Trade Agreements: Expanding Global Market Access
7. India-Japan Maritime Security Cooperation

EDITORIALS

Crux of The Hindu & Indian Express

International Issues

1. Iran to Join New Development Bank of BRICS
2. US Ambassador Sergio Gor Visits Thiksey Monastery in Ladakh

Indian Polity & Governance

21-75

1. Indian Statistical Institute (ISI) Bill, 2026
2. Supreme Court on Section 498A and Live-in Relationships
3. Taxation and Other Laws (Amendment) Bill, 2026
4. e-Courts Mission Mode Project
5. Tribunals Reforms Act, 2026
6. PM CARES Fund
7. Supreme Court Handbook on Gender Sensitivity
8. Delimitation of Lok Sabha Constituencies
9. Regional Parties in Indian Politics
10. Supreme Court Clarifies Police Custody Under BNSS
11. Mines and Minerals (Development and Regulation) Amendment Bill, 2026
12. Kerala to Be Renamed "Keralam"
13. Black Money in Elections: Supreme Court Directions
14. SHANTI Act, 2025 and Nuclear Liability
15. Citizenship (Third Amendment) Rules, 2026
16. Creamy Layer Principle and SC/ST Reservation
17. Supreme Court Revises Judicial Service Entry Rules: New Training-Based Transition Framework
18. Supreme Court on the Meaning of 'Industry' Under the Industrial Relations Code, 2020
19. Census 2027: Caste Enumeration to Begin in Ladakh



EDITORIALS

Crux of The Hindu & Indian Express

Indian Polity & Governance

1. Registration of Births and Deaths (Amendment) Bill, 2026
2. Prevention of Insults to National Honour (Amendment) Bill, 2026
3. Foreign Contribution (Regulation) Act (FCRA): Transparency, Sovereignty and Democratic Accountability
4. Cauvery Water Dispute and the Mekedatu Project
5. National Financial Reporting Authority (NFRA) Outreach Programme



Indian Society & Social Justice

75-97

1. Pradhan Mantri Surya Sarovar Yojana (PM-SSY)
2. PM-KISAN
3. Cholanaikkan Tribe
4. Geographical Indication (GI) Tags in India
5. National Handloom Day 2026
6. NCDC Amendment Bill, 2026: Expanding the Role of Cooperative Financing



EDITORIALS

Crux of The Hindu & Indian Express

Indian Society & Social Justice

1. Prime Minister's 80th Independence Day Address: Key Highlights
2. Gallantry Awards 2026
3. Alcohol Prohibition in India: Bihar's Experience and the Way Forward



Economics

97-135

1. Minimum Support Price (MSP) Regime
2. Pradhan Mantri Viksit Bharat Rojgar Yojana (PM-VBRY)
3. VISHWAS 2026
4. Telecom Manufacturing Zone (TMZ), Gwalior
5. Urban Cooperative Banks (UCBs)
6. Government e-Marketplace (GeM)
7. Ship Recycling in India
8. Container Manufacturing Assistance Scheme (CMAS)
9. India's Digital Transformation: Building a Citizen-Centric Digital Economy
10. Ease of Doing Business Reforms in India
11. Sovereign Green Bonds and Greenium
12. Makhana Sector in India: Production, Value Chain and Government Support
13. Sugar Price Surge in India: Supply Tightness and Structural Challenges



EDITORIALS

Crux of The Hindu & Indian Express

Economics

1. CAG Audit Flags Major Gaps in Green India Mission Implementation
2. SEBI Introduces IT Resilience Index for Market Infrastructure Institutions
3. UPI at 10: India's Digital Payments Revolution and Global Expansion
4. PM SVANidhi Scheme: Expanding from Credit to Comprehensive Livelihood Support
5. India's Forex Reserves Reach Record High: Role of FCNR(B) Swap Window



Science & Technology

136-173

1. Magellanic Bridge
2. Cholera
3. National Roll-out Plan for the Vessel Communication and Support System
4. PowerBank-50 Satellite Battery
5. Leptospirosis
6. Critical Minerals
7. Indigenous Live Attenuated Vaccine Against African Swine Fever
8. India's Electric Mobility Transition
9. Lab-Grown Diamonds (LGDs)
10. Spent Nuclear Fuel Antineutrinos
11. Epigenetic Inheritance
12. Light-Activated Nanobots for Breast Cancer Therapy
13. Glueball and X(2370)
14. India-US Cooperation in NASA's Moon Base Programme
15. EVEREST: India's First Privately Built 800 kN FFSC Rocket Engine
16. Deepak Dhar Wins 2026 Dirac Medal
17. Total Solar Eclipse: Studying the Sun's Corona



EDITORIALS

Crux of The Hindu & Indian Express

Science & Technology

1. E-Samudra: Digital Transformation of Maritime Governance
2. Indian Pharmacopoeia Commission Recognized as WHO-SEARN Regional Centre of Excellence
3. National Animal Disease Control Programme (NADCP)
4. West Nile Fever
5. Replicative Helicases and DNA Replication
6. AI-Designed Bacteriophages and the Rise of Generative Biology
7. 3.5-Billion-Year-Old Evidence of Microbial Life in India
8. India's First Indigenous Non-GMO High-Expansion Popcorn Maize Hybrid



1. Bagdara Wildlife Sanctuary
2. Pygmy Hog
3. Rakthamichthys anchi
4. Asiatic Wild Buffalo
5. Amboseli National Park
6. Clouded Leopard Conservation
7. Asiatic Lion Conservation
8. Agasthyamalai Biosphere Reserve and Forest Rights Act
9. India Donates Indian Peafowls to UN Geneva
10. World Elephant Day 2026: India's Elephant Conservation Efforts
11. Satkosia Tiger Reserve: Village Relocation and Conservation Challenges
12. Khijadiya Bird Sanctuary: Breeding Stronghold of the Black-necked Stork
13. UNCCD COP17: Global Action on Land Degradation and Drought



EDITORIALS

Crux of The Hindu & Indian Express

↓ Ecology & Environment ↓

1. Glaw Lake Becomes India's 101st Ramsar Site
2. GOBARdhan: National Circular Bioenergy Scheme



Geography

1. Heatwaves and Lightning Included as Notified Natural Calamities
2. Arunachal Pradesh: India's Cartographic Assertion
3. Colombia Earthquake and Pacific Ring of Fire
4. Zaskar Glaciers and Regional Water Security
5. Nepal Floods: Why Rescue Operations in Hydropower Tunnels Are So Challenging
6. India's First Guide to Grasslands and Other Open Natural Ecosystems
7. Oil Spill Threatens Hara Mangroves of Qeshm Island
8. Himalayan Disasters: Growing Vulnerability and the Need for Risk-Sensitive Development
9. Coconut Sector in India: Towards Sustainable Growth and Higher Value Addition
10. Ice-Rock Avalanche and Formation of Barrier Lakes in Nepal
11. Arctic Warming and Transformation of Tundra Ecosystems

EDITORIALS

Crux of The Hindu & Indian Express

Geography

1. Petermann Glacier Calving Creates New Ice Island
2. Maharashtra Earthquake Swarm: Causes and Significance
3. Shompen Tribe and the Great Nicobar Island Development Project
4. Climate Change and Western Ghats Forests
5. Rebuilding Farming Systems: Regenerative Agriculture for a Resilient India

Internal Security

228-240

1. Digital Arrest Scams
2. National Security Guidelines for Renewable Energy Projects Near Borders
3. India's Defence Transformation: Towards Self-Reliance and Global Capability
4. Exercise Udara Shakti 2026: India-Malaysia Air Force Cooperation

EDITORIALS

Crux of The Hindu & Indian Express

Internal Security

1. Agni-4 Medium-Range Ballistic Missile Test-Fired from Odisha
2. Indian Navy-US Navy Explosive Ordnance Disposal Exercise 2026
3. India-Thailand Joint Military Exercise MAITREE-XV 2026
4. 'Mangrol' Delivered to Indian Navy

History, Art & Culture

241-254

1. Tourism Sector in India
2. Dhimsa Dance
3. 12th-Century Veeragallu Inscription and Hoysala King Vishnuvardhana
4. Royal Indian Navy (RIN) Mutiny of 1946
5. Indian Independence Act, 1947

EDITORIALS

Crux of The Hindu & Indian Express

History, Art & Culture

1. Sri Aurobindo: Life, Freedom Struggle and Philosophy
2. 1,800-Year-Old Saraswati Idol Reveals India's Ancient Harp Tradition
3. Ancient Buddhist Site of Sarnath Added to UNESCO World Heritage List

Persons in News

255-256

India–Germany Relations



Why in News?

- India and Germany are expected to sign the **Project-75I submarine deal** worth about **€8 billion (over ₹90,000 crore)** for **six next-generation conventional submarines**.
- The submarines will be built in India through collaboration between **Germany's ThyssenKrupp Marine Systems (TKMS)** and **Mazagon Dock Shipbuilders Limited (MDL)**.
- The agreement marks a shift in **India–Germany relations** from traditional economic cooperation towards a **strategic-industrial partnership** centred on defence manufacturing, technology transfer and supply-chain resilience.

Evolution of India–Germany Relations

Phase I: Formative Years (1951–1970s)

- India was among the first countries to establish diplomatic relations with the **Federal Republic of Germany (FRG)** in **1951**.
- Relations were influenced by the **Hallstein Doctrine**, as India maintained relations with both **West Germany (FRG)** and **East Germany (GDR)**.

- **Jawaharlal Nehru's 1956 visit** to West Germany laid the foundation for industrial cooperation, including the **Rourkela Steel Plant**.

Phase II: Developmental & Technical Cooperation (1970s–1990)

- India recognised **East Germany (GDR)** in **1972**.
- Germany became one of India's largest development partners.
- **IIT Madras** was established with German technical and financial assistance.
- India welcomed the reunification of Germany in **1990**.

Phase III: Economic Liberalisation & Strategic Partnership (1991–2010)

- India's economic reforms strengthened German investments.
- German **Mittelstand (SMEs)** began viewing India as a manufacturing destination.
- Relations were elevated to a **Strategic Partnership** in **2000**.
- India and Germany became partners in the **G4 Group** along with **Japan** and **Brazil** to advocate **UN Security Council reforms**.

Phase IV: Institutional Partnership (2011–2021)

- **Inter-Governmental Consultations (IGC)** were launched in **2011**, enabling meetings between both Cabinets.
- Germany became an important partner in:
 - Renewable energy
 - Green Energy Corridors
 - Skill development
 - Make in India
 - Industry 4.0 initiatives.

Phase V: Strategic Convergence (2022–Present)

- Germany's **Indo-Pacific Guidelines (2020)** and **Focus on India Strategy (2024)** identify India as a key strategic partner.
- Defence cooperation has expanded through:
 - **Project-75I submarine programme**
 - **Defence Industrial Cooperation Roadmap (2026)**.

Significance of Germany for India

Defence Indigenisation

- Project-75I represents a transition from a buyer-seller relationship to **technology transfer and co-development**.
- Six **Type-214** submarines with **Air Independent Propulsion (AIP)** will be manufactured.
- Indigenous content is expected to increase from **45% in the first submarine** to **nearly 60% by the sixth**, supporting **Atmanirbhar Bharat**.

Economic and Supply Chain Cooperation

- Germany is India's **largest trading partner within the European Union**.
- Bilateral trade has crossed **USD 50 billion**, accounting for more than **25% of India's trade with the EU**.
- German **Mittelstand** investments strengthen India's manufacturing and exports.

Climate and Energy Partnership

- Germany supports India's low-carbon transition through the **Green and Sustainable Development Partnership (GSDP)**.
- Germany has committed **€10 billion by 2030**, with nearly **€5 billion** already earmarked by early 2026.
- Cooperation includes:
 - Green hydrogen
 - Green ammonia
 - Sustainable infrastructure.

Education and Skilled Mobility

- More than **60,000 Indian students** study in Germany.
- The **Migration and Mobility Partnership Agreement (MMPA)** facilitates skilled migration.
- Programmes like **SPARC-GIANT** promote joint research in healthcare, sustainability and semiconductors.

Technology and Semiconductors

- Cooperation has expanded through:
 - **Joint Declaration on Semiconductor Ecosystem Partnership**
 - **Innovation & Technology Roadmap (2024)**.
- Major investments include **Infineon's Global Capability Centre in GIFT City, Gujarat**.

Indo-Pacific Security

- Germany recognises India as an important democratic partner in maintaining a **rules-based Indo-Pacific**.
- Cooperation includes:
 - Naval exercises
 - Maritime consultations
 - Support for **India-Middle East-Europe Economic Corridor (IMEC)**.

Multilateral Cooperation

- India and Germany cooperate in:
 - **G4**
 - **G20**
- They advocate:
 - UNSC reforms
 - Global financial reforms
 - Digital Public Infrastructure
 - Multipolar global governance.

Major Challenges in India–Germany Relations

Defence Export Restrictions

- Germany's strict arms export regulations create uncertainty in defence technology transfer.

- Project-75I approvals experienced prolonged delays.

Differences in AI and Digital Regulations

- The **EU AI Act** and India's **Digital Personal Data Protection (DPDP) Act** create regulatory differences affecting:
 - AI collaboration
 - Data sharing
 - Digital infrastructure.

Trade Issues

- Although India and the EU concluded FTA negotiations in 2026, implementation remains pending.
- Challenges remain regarding:
 - Data governance
 - Sustainability standards
 - Market access
 - Carbon Border Adjustment Mechanism (CBAM).

Geopolitical Differences

- Germany has concerns over India's continued energy imports from Russia.
- India remains concerned about Germany's economic dependence on China.

Climate Technology and Intellectual Property

- High licensing costs for German green technologies limit technology transfer.
- Limited funds under GSDP reach IP-sharing projects.

Ease of Doing Business

- German companies cite:
 - Bureaucracy (64%)
 - Corruption (39%)
 - Tax complexity (27%) as major barriers to investment in India.

Labour Mobility Issues

- Challenges include:
 - Recognition of professional qualifications

- German language requirements
- Limited mutual recognition of engineering degrees.

Sanitary and Phytosanitary (SPS) Standards

- Strict EU SPS standards restrict Indian agricultural exports.
- Example: Rejection of Indian mango exports due to pesticide residue concerns.

Way Forward

- Establish an **Indo-German Defence Innovation Bridge** for co-development of defence technologies.
- Launch a **Digital Sovereignty Dialogue** to harmonise AI governance and digital standards.
- Develop a **Green Hydrogen Offtake Corridor** through long-term green ammonia agreements.
- Create a **Mutual Skills Recognition Framework** for easier mobility of skilled professionals.
- Launch a **Mittelstand–Startup Synergy Fund** to promote joint innovation.
- Expand maritime cooperation through a German liaison officer at **IFC-IOR**.
- Build a **Circular Economy Partnership** focusing on e-waste and plastic recycling.
- Harmonise agricultural standards through a **Mutual Equivalence Agreement** on SPS measures.

Conclusion

- India–Germany relations have evolved into a **strategic-industrial partnership** combining German technology with India's manufacturing capabilities.
- Deepening cooperation in defence, technology, climate action and supply chains can strengthen a resilient, rules-based and multipolar Indo-Pacific, provided regulatory and strategic challenges are effectively addressed.



CURRENT EVENTS OF INTERNATIONAL IMPORTANCE

Qeshm Island



Why in News?

- The US launched strikes on **Qeshm Island** in Iran.
- The strikes targeted **Islamic Revolutionary Guard Corps (IRGC) military infrastructure**.
- The stated objective was to counter perceived threats to:
 - American forces
 - Maritime security

Location

- **Qeshm Island** is the **largest island in the Persian Gulf**.
- It is located near the **mouth of the Strait of Hormuz**.
- It comes under **Hormozgan Province, Iran**.
- It is located near **Bandar Abbas**.
- Qeshm is separated from mainland Iran by the **Khuran Strait**, also called the **Clarence Strait**.

Ecological Features

Qeshm Geopark

- It is the **first UNESCO-recognized Geopark in the Middle East**.
- Important natural features include:
 - **Valley of Stars**
 - **Chahkuh Gorge**
 - **Namakdan Salt Cave**

Hara Mangrove Forest

- An important ecological area of Qeshm.
- It acts as a crucial **breeding ground for migratory birds**.

Namakdan Salt Cave

- Located on Qeshm Island.
- It is one of the **world's longest salt caves**.
- It stretches for more than **6 km**.

Strategic Significance of Qeshm Island

- Qeshm has major strategic importance because of its location near the **Strait of Hormuz**.
- It allows Iran to:
 - Monitor maritime traffic.
 - Strengthen coastal surveillance.
 - Control movement through nearby waters.
 - Project military power across the Strait.

IRGC Military Infrastructure

Qeshm Island serves as a key **IRGC military base**.

It hosts:

- Radar systems
- Drone facilities
- Missile batteries
- Naval assets

These facilities help Iran monitor shipping and strengthen its military presence in the region.

Strait of Hormuz

- The **Strait of Hormuz** is a major maritime chokepoint.
- It connects the **Persian Gulf** with the **Gulf of Oman**.
- Around **20% of global oil and LNG trade** passes through the Strait.
- Because of this, any military disruption around Qeshm or the Strait can have wider implications for:
 - Global energy supplies
 - Maritime trade
 - Shipping security
 - Regional security

India's Recalibrated Trade and Investment Policy



Why in News?

- India has gradually relaxed **Foreign Direct Investment (FDI) norms, anti-dumping measures and e-commerce regulations** while balancing its strategic relations with the **US and China**.
- The approach aims to attract investment, strengthen manufacturing, integrate with **Global Value Chains (GVCs)** and boost exports while preserving **Strategic Autonomy**.

Why is India Recalibrating its Trade and Investment Policy?

1. China Plus One – Capital Constraint

- Press Note 3 (2020)** was introduced to restrict opportunistic investments from countries sharing a land border with India.
- However, restricting Chinese equity did not significantly reduce India's dependence on Chinese supply chains.
- India's trade deficit with China crossed **USD 112 billion in FY 2025-26**.
- India realised that replacing Chinese supply chains is difficult without access to Chinese capital and intermediate goods.

2. PLI Competitiveness Paradox

- The success of the **Production-Linked Incentive (PLI)** scheme depends partly on access to low-cost intermediate inputs.
- Anti-dumping duties on Chinese:
 - Active Pharmaceutical Ingredients (APIs)
 - Electronic components
 - Specialty chemicals

- can increase raw material costs.
- This may make Indian products less competitive in **Global Value Chains (GVCs)**.

3. Bureaucratic Friction in Capital Formation

- Mandatory inter-ministerial screening under Press Note 3 created delays.
- It affected not only potentially sensitive Chinese investments but also legitimate global venture capital funds.
- Some such funds may have minor and passive Chinese **Limited Partners (LPs)**.
- Excessive screening can therefore discourage genuine international investment.

4. Mitigating US Trade Coercion

- India has eased certain e-commerce FDI rules for export-oriented activities.
- It is also enforcing domestic restrictions on imports linked to forced labour.
- These steps can help India secure greater access to the US market and negotiate over proposed US tariffs.
- This is important for India's growing export sector.

How is India Balancing Trade Liberalization with Strategic Interests?

1. "Small Yard, High Fence" Approach

- India's **March 2026 FDI relaxation** allows companies having up to **10% beneficial ownership from land-bordering countries** to invest through the automatic route.
- This remains subject to:
 - Sectoral regulations.
 - Reporting requirements.
 - Other prescribed conditions.
- The approach allows manufacturing-related capital inflows while retaining scrutiny over:
 - Controlling stakes.
 - Critical infrastructure.
 - Strategically sensitive sectors.
- At the same time, India continues to strengthen border infrastructure and strategic deterrence against China.

2. Prioritising Domestic Value Addition (DVA)

- The **Economic Survey 2023-24** argued that encouraging Chinese companies to manufacture in India and export to Western

markets can generate greater **Domestic Value Addition** than simply importing finished or intermediate products.

- Therefore, the focus is shifting from outright bans towards **conditional and localised production**.

3. Selective Use of Trade Defence Measures

- India is trying to distinguish between:
 - Essential raw materials and capital goods.
 - Finished consumer goods.
- Rejecting anti-dumping duties on important industrial inputs can keep production costs low for downstream industries.
- At the same time, anti-dumping measures on finished goods can protect domestic producers.
- The **Directorate General of Trade Remedies (DGTR)** continues to investigate cases and recommend anti-dumping duties.
- However, the **Ministry of Finance** has increasingly rejected such recommendations since 2020.
- Imports involving China accounted for nearly **72% of total rejections between 2000 and December 2025**.
- This reflects an attempt to maintain affordable industrial inputs and export competitiveness.

4. Multi-alignment in Digital Trade

- India has allowed **inventory-based e-commerce FDI specifically for exports**.
- This helps attract and accommodate global technology companies and US Big Tech interests.
- At the same time, restrictions on domestic retail operations are retained to protect India's internal retail market.
- Thus, India is trying to balance global integration with domestic economic security.

What are the Concerns Regarding India's Trade Strategy?

1. "Trojan Horse" Dilemma

- Dependence on cheap intermediate imports and conditional Chinese joint ventures may embed foreign supply chains deeply into India's industrial system.

- India could become mainly an **assembly hub** rather than a strong manufacturing economy.
- This creates the risk of the **"screwdriver technology" trap**, where products are assembled domestically but most of their value comes from imported components.

2. Institutional Opacity and Erosion of DGTR

- The Finance Ministry's rejection of detailed DGTR recommendations without clear reasons can weaken institutional credibility.
- It may create regulatory uncertainty.
- Domestic upstream industries such as **chemicals and steel** may become vulnerable to subsidised foreign imports.

3. Weaponisation of Bilateral Dependencies

- India increasingly depends on the **US for export markets** while depending on **China for intermediate goods**.
- This creates a potential geoeconomic vulnerability.
- Escalation of US-China trade restrictions or secondary tariffs could disrupt India's supply chains and macroeconomic stability.

4. Ideological and Domestic Friction

- Domestic industries may view the relaxation of trade-defence measures as excessive accommodation of foreign capital.
- This can create tension with the objective of **Atmanirbhar Bharat**.
- Domestic producers could face losses in:
 - Investment.
 - Capacity utilisation.
 - Employment.

Way Forward

1. Statutory "Public Interest Test"

- Strengthen the **Customs Tariff Act, 1975**.
- The Ministry of Finance should provide clear and reasoned economic justification when rejecting DGTR recommendations.
- Decisions should balance:
 - Benefits to downstream exporters.
 - Survival of upstream MSMEs.
 - Consumer interests.
 - National economic security.

2. Move towards Value-Addition Linked Incentives (VALI)

- Restructure the PLI framework to reward **verified growth in Domestic Value Addition (DVA)** rather than only gross production.
- Joint ventures with land-bordering countries could include **mandatory and time-bound technology transfer provisions**.

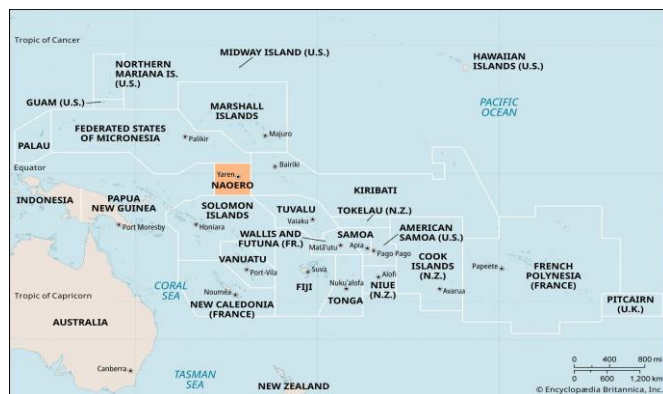
3. Strengthen Rules of Origin

- Implement stronger origin verification under **Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020 (CAROTAR, 2020)**.
- Technology-enabled and blockchain-based auditing can help track the actual origin of goods.
- This can prevent Chinese products from entering India through third countries or ASEAN FTA partners without genuine value addition.

4. Leverage TRUST and Middle-Power Partnerships

- India can use the **US-India TRUST (Transforming the Relationship Utilizing Strategic Technology) Initiative** to deepen cooperation in strategic technologies.
- Partnerships with countries such as:
 - Japan
 - South Korea
- can strengthen cooperation in:
 - Semiconductors.
 - Deep technology.
 - Advanced manufacturing.
 - Supply-chain resilience.
- This can reduce excessive dependence on either the US or China.

Republic of Naoero



Why in News?

- The Pacific island nation of **Nauru** has officially changed its name to the **Republic of Naoero**.
- The move restores its **traditional designation**.
- The stated aim is to strengthen **national identity and cultural heritage**.

About Republic of Naoero

- **Location:** Southwestern Pacific Ocean.
- It is a **raised coral island** in southeastern Micronesia.
- Located about **40 km south of the Equator**.
- **Area:** Around **21 sq. km**.
- **Population:** Approximately **12,000**.
- It is the **world's smallest independent republic**.

Location & Neighbours

- About **1,300 km northeast of the Solomon Islands**.
- Its closest neighbour is **Banaba Island**, part of Kiribati, around **300 km east**.
- It has **no rivers or lakes**.

Capital and Language

- Naoero has **no official capital**.
- Government offices are located in **Yaren district**.
- **National language:** Nauruan.
- **Currency:** Australian Dollar.

Political System

- Independence: **1968**.
- Its Constitution established a **republic with a Westminster-style parliamentary system**.
- **President:**
 - Elected by the unicameral Parliament.
 - Responsible to Parliament.
 - Serves as both **Head of State and Head of Government**.
- There are **no political parties**.
- Members of Parliament generally contest as **independents**.

Economy

- Historically, Nauru was among the **wealthiest countries per capita** because of **phosphate mining**.
- Its phosphate reserves have largely been **depleted**.
- This created major economic challenges.

Other economic activities include:

- Agriculture
- Fishing
- Manufacturing
- Tourism

These sectors have relatively **minor importance** to the overall economy.

Exclusive Economic Zone

- Nauru has an **Exclusive Economic Zone (EEZ)** extending about **200 miles / 320 km offshore**.
- The sale of **commercial fishing licences** began providing steady government revenue during the **1990s**.

India-China Climate Cooperation



Why in News?

- Experts have highlighted that **shared climate vulnerabilities** can provide a practical and low-risk opportunity for **India-China climate cooperation**.
- Both countries are facing **extreme weather events, floods, heatwaves and changing Himalayan ecosystems**.
- The **April 2026 visit of China's Special Envoy for Climate Change to New Delhi** has further highlighted **climate resilience and disaster management** as possible areas of bilateral cooperation.

Shared Climate Vulnerabilities

- **Urban flooding:**
 - Rapid urbanisation has reduced **wetlands and natural floodplains**.
 - Heavy rainfall can overwhelm drainage systems, causing severe urban flooding.
 - Examples include **Mumbai** and China's **Guangxi region**.
- **Himalayan Ecosystem:**
 - The **Hindu Kush Himalayan (HKH) region** is witnessing rapid **glacial retreat**.
 - This increases the risk of **Glacial Lake Outburst Floods (GLOFs)**.
 - It also affects major transboundary rivers such as the **Brahmaputra and Sutlej**.
- **Heatwaves and Floods:**
 - Inland cities are facing prolonged **heatwaves and flash floods**.
 - Coastal cities face combined risks from:
 - Storm surges
 - Extreme rainfall
 - Rising sea levels
- **Economic and Health Impact:**
 - Extreme weather can damage infrastructure.
 - It can disrupt **supply chains and agriculture**.
 - It can also create serious **public health problems**.

India-China Climate Cooperation

- India and China have previously signed **Joint Statements, Joint Declarations and MoUs** on climate change and disaster management.
- The **2015 Joint Climate Statement** supported:
 - Renewable energy
 - Electric mobility
 - Low-carbon urbanisation
 - Climate adaptation
 - Joint research and development
 - Hydrological, oceanic and seismic data sharing
 - Disaster management

- Both countries are founding members of the **BASIC Group**:
 - Brazil
 - South Africa
 - India
 - China
- The **India-China Strategic Economic Dialogue** has supported cooperation in:
 - Sustainable urban planning
 - Waste management
 - Sewage treatment
 - Water-use efficiency
 - Capacity building
- **Sister City Agreements** were signed between:
 - Delhi–Beijing
 - Mumbai–Shanghai
 - Chennai–Chongqing

These aimed to promote cooperation in **urban governance, environmental management and climate resilience**.

Challenges

- **Strategic Mistrust**:
 - Border tensions after the **2020 clashes** have reduced mutual trust.
 - Climate cooperation and **transboundary hydrological data sharing** have also been affected.
- **Economic Competition**:
 - China dominates areas such as **solar manufacturing, batteries and critical minerals**.
 - India's **Atmanirbhar Bharat** approach aims to reduce excessive dependence.
 - The bilateral trade deficit reached **USD 112.6 billion in 2025–26**.
- **Regulatory Barriers**:
 - India's **Press Note 3 of 2020** placed restrictions on investments from neighbouring countries.
 - China's export controls on **critical minerals and processing technologies** have also affected cooperation.

- **Weak Implementation**:
 - Several initiatives, including sister-city agreements, saw limited implementation because of diplomatic tensions.
- **Different Climate Platforms**:
 - India has not joined China's **BRI International Green Development Coalition**.
 - China is not a member of India's **International Solar Alliance (ISA)** and **Global Biofuels Alliance (GBA)**.

India's Major Bilateral Climate Partnerships

- **US**: Clean energy, climate finance, hydrogen, electric mobility and clean technology.
- **UK**: Green Growth Equity Fund and Green Grids Initiative.
- **Japan**: Electric vehicles, hydrogen, ammonia, battery storage and carbon-credit mechanisms.
- **Germany**: Renewable energy, climate-resilient infrastructure, biodiversity and climate adaptation.
- **Denmark**: Offshore wind, renewable energy, circular economy and water management.
- **France**: Solar energy, blue economy and sustainable marine development.
- **European Union**: Clean energy transition, green finance, carbon markets and climate resilience.

Strategic Significance for India

- **Climate Finance**: International partnerships can help India access concessional finance, blended finance and green bonds.
- **Technology Transfer**: Cooperation can support access to technologies related to:
 - Offshore wind
 - Green hydrogen
 - Battery storage
- **Geopolitical Leverage**: Green partnerships strengthen India's position as a **global climate leader** and help it advocate for the **Global South** and the principle of **Common but Differentiated Responsibilities (CBDR)**.

Way Forward

- **Focus on low-politics areas:**
 - Keep climate and disaster management separate from border disputes.
 - Begin with areas such as:
 - Sustainable agriculture
 - Urban waste management
 - Early warning systems
- **Revive City-to-City Cooperation:**
 - India can learn from China's **Sponge Cities** model.
 - China can learn from India's **Heat Action Plans**, such as the Ahmedabad model.
- **Use Minilateral Platforms:**
 - Platforms such as **BRICS** and the **Asian Development Bank (ADB)** can provide a neutral space for technical and financial cooperation.
- **Blended Climate Finance:**
 - Develop frameworks for **blended finance and green municipal bonds**.
 - Common fiscal standards can help reduce investment risks.
- **Himalayan Monitoring:**
 - Establish continuous, year-round **joint glaciological monitoring** of the HKH region.
 - This can improve prediction of **GLOFs** and help manage transboundary river risks.

Makkah Joint Defence Agreement (MJDA)



Why in News?

- Saudi Arabia, Türkiye and Pakistan signed the **Makkah Joint Defence Agreement (MJDA)** at **Al-Safa Palace in Makkah, Saudi Arabia**.
- The agreement states that an **armed attack against one member will be regarded as an attack against all three**.
- The pact is being described as a new **“triple alliance”** or **“Sunni security triangle”**.
- It comes amid continuing **West Asian tensions** and reflects a shift towards a more **multipolar regional security architecture**.

What are the Key Features of the Makkah Joint Defence Agreement?

- **Background:**
 - The MJDA builds on the **Saudi-Pakistan Strategic Mutual Defence Agreement (SMDA)** signed in **September 2025**.
 - Türkiye joined the framework in **August 2026**, turning it into a **trilateral security arrangement**.
- **Collective Defence:**
 - An **armed attack against one member will be treated as an attack against all three**.
 - This principle resembles **NATO Article 5**, but the MJDA cannot yet be considered a NATO-style alliance because its detailed enforcement mechanisms remain unclear.
- **Joint Military Coordination:**
 - The three countries will conduct **regular joint training and combined military exercises**.
 - This aims to improve **military interoperability and operational readiness**.
- **Intelligence Sharing:**
 - The agreement creates mechanisms for sharing:
 - Strategic intelligence
 - Security data
 - Threat assessments

Why did the Three Countries Sign the Pact?

- **Saudi Arabia:**
 - Wants to reduce dependence on the **US security umbrella**.
 - Faces security concerns from **Houthi attacks**, risks around the **Red Sea, Strait of Hormuz and Bab-el-Mandeb**.
 - Greater security is important for protecting **oil exports, investment, tourism and Vision 2030**.
- **Türkiye:**
 - Sees **Israel's expanding military presence in Gaza and Syria** as a security challenge.
 - Seeks greater strategic influence in West Asia.
- **Pakistan:**
 - Gains greater **strategic relevance in West Asia**.
 - Seeks stronger **defence, economic and energy ties with Saudi Arabia**.

Strategic Strength of the Three Countries

- **Saudi Arabia:**
 - Strong financial resources
 - Major energy resources
 - Strategic Gulf location
 - High defence-spending capacity
- **Türkiye:**
 - NATO-standard military-industrial capabilities
 - Advanced drones
 - Aerospace technology
 - Growing defence industry
- **Pakistan:**
 - Nuclear and conventional military capabilities
 - Large military manpower
 - Longstanding defence ties with Saudi Arabia
- **Combined Strength:**
 - **Saudi financial strength + Turkish defence technology + Pakistani military capabilities**
 - This can improve collective defence and strategic autonomy.

History of Pan-Islamic/Pan-Arab Defence Pacts

- **Treaty of Joint Defense and Economic Cooperation of Arab League (1950):**
 - Created a **Pan-Arab collective security framework**.
 - Its effectiveness was limited by political divisions and weak military coordination.
- **Baghdad Pact (1955) / CENTO:**
 - Initially included **Iraq, Türkiye, Pakistan, Iran and the UK**.
 - Focused on containing **Soviet expansion** in the Middle East.
 - Later became **CENTO** and dissolved in **1979**.
- **Peninsula Shield Force (1984):**
 - Created by the **Gulf Cooperation Council (GCC)**.
 - Intended to establish a joint military force for protecting the Arabian Peninsula.
 - Was notably deployed in **Bahrain in 2011**.
- **Islamic Military Counter Terrorism Coalition (IMCTC), 2015:**
 - A **40+ country coalition** led by Saudi Arabia.
 - Focuses on military, financial, ideological and media cooperation against terrorism.
 - It has also been criticised as an **anti-Iran bloc**.

What are the Implications for India?

- **Pakistan–Türkiye–China Linkages:**
 - Stronger Saudi ties with Pakistan and Türkiye could strengthen a network of countries strategically close to China along India's western flank.
- **Defence Exports:**
 - Türkiye's growing presence in the Gulf defence market could increase competition for India's emerging **defence export ambitions**.

- **India–Saudi Relations:**

- Pakistan and Türkiye have historically taken positions against India on issues such as **Kashmir**.
- Greater Saudi dependence on Pakistan could provide Islamabad additional diplomatic leverage.
- However, India–Saudi relations are independently supported by cooperation in:
 - Energy
 - Trade
 - Investment
 - Defence
 - Technology

- **Western Indian Ocean:**

- Greater defence cooperation among the three countries could increase their strategic presence in the **western Indian Ocean**.
- This is important for India as it seeks to remain a **net security provider** in the region.

- **India–Pakistan Conflict:**

- The “**attack on one is an attack on all**” clause creates uncertainty about possible Saudi or Turkish support in a future India–Pakistan conflict.

- **Pakistan's Military Modernisation:**

- Saudi financing combined with **Turkish defence technology** and Pakistani military expertise could accelerate Pakistan's military modernisation.

- **Counter-Terrorism:**

- Stronger Saudi–Pakistan security ties could provide Islamabad greater diplomatic space and make India's efforts against **cross-border terrorism** more difficult.

- **Nuclear Dimension:**

- Pakistan's nuclear capability gives the pact additional strategic weight.
- However, there is **no publicly confirmed formal Pakistani nuclear guarantee to Saudi Arabia**.

Way Forward for India

- **Diversify Gulf Partnerships:**

- Strengthen defence, maritime security and technology cooperation with **UAE, Oman and Qatar**.
- Avoid excessive dependence on any single regional partner.

- **Strengthen IMEC and I2U2:**

- Continue building economic and strategic cooperation with Gulf partners.
- Strengthen digital, financial and diplomatic frameworks for long-term connectivity.

- **Develop Alternative Connectivity Routes:**

- Protect India's interests in **Chabahar Port** and the **INSTC**.
- At the same time, develop complementary routes such as the **Chennai–Vladivostok Eastern Maritime Corridor**.

- **Maintain Defence Autonomy:**

- Expand strategic defence cooperation with Gulf countries without entering automatic mutual-defence commitments.

- **Build Indigenous Defence Capabilities:**

- Under **Atmanirbhar Bharat**, accelerate development of:
 - AI
 - Drones
 - Counter-drone systems
 - Electronic warfare
 - Hypersonic weapons
 - Advanced air defence

- **Strengthen Indian Ocean Security:**
 - Use platforms such as **IORA** to promote maritime transparency and inclusive regional security.
- **Long-Term Strategy:**
 - Build India's military, economic and technological strength while treating **West Asia as a strategic hub for energy, trade and diaspora interests.**

India's Free Trade Agreements: Expanding Global Market Access



Why in News?

- The Government has highlighted the growing role of **Free Trade Agreements (FTAs)** in India's trade strategy.
- Recent agreements are showing positive results through **higher exports, greater use of preferential Certificates of Origin and wider product coverage** in partner markets.

How Are FTAs Creating New Opportunities for India?

- **Wider Global Reach:** India has expanded its FTA network over the past decade, allowing Indian businesses to access important international markets with fewer trade barriers.
- **More Export Opportunities:** Recent agreements are helping India:
 - Enter new overseas markets.
 - Reduce dependence on a limited number of trading partners.
 - Expand exports of both **goods and services.**
 - Attract greater investment.

- **Focus on FTA Utilisation:** The government is increasingly concerned with ensuring that the market access negotiated through FTAs actually results in **higher exports, investment and employment**, rather than remaining only on paper.
- **Balancing Trade Liberalisation:** India is opening its markets while using **phased tariff reductions and other safeguards** to protect sensitive domestic sectors.
- **Export Performance:**
 - India's combined exports of goods and services reached a record **USD 863.1 billion in FY 2025–26.**
 - Merchandise exports accounted for **USD 441.8 billion.**
 - During **April–June 2026**, total exports grew by **11.37%** compared with the same period of the previous year.

India-UAE CEPA: Early Benefits

- **Operational Since 2022:** The **India-UAE Comprehensive Economic Partnership Agreement (CEPA)** came into effect on **1 May 2022** after negotiations were completed in only **88 days.**
- **Major Export Destination:** India's merchandise exports to the UAE reached **USD 37.36 billion in FY 2025–26**, making the UAE India's **largest individual export market among FTA partners.**
- **Trade Crosses USD 100 Billion:** Bilateral trade reached **USD 100.06 billion in FY 2024–25**, registering **19.6% growth** within three years of CEPA implementation.
- **Future Goal:** India and the UAE aim to take bilateral trade to **USD 200 billion by 2032.**

India-Australia ECTA: Rising Trade

- **Implementation:** The **India-Australia Economic Cooperation and Trade Agreement (ECTA)** became effective on **29 December 2022.** It was India's first trade agreement with a developed economy in more than a decade.
- **Export Expansion:** India's exports to Australia rose from approximately **USD 4 billion in FY 2020–21** to **USD 7.28 billion in FY 2025–26**, representing growth of over **80%.**

- **Zero-Duty Access:**
 - Australia initially offered duty-free access for **98.3% of tariff lines**.
 - From **2026**, all Indian exports became eligible for zero-duty treatment.
- **Future CECA:** ECTA is also acting as the base for negotiations on a wider **India-Australia CECA**, covering goods, services, professional mobility, digital trade, rules of origin and newer areas of cooperation.

Certificate of Origin: Making FTA Benefits Accessible

- **Meaning:** A **preferential Certificate of Origin (CoO)** confirms that an exported product satisfies the agreed **rules of origin** under an FTA.
- **Why It Matters:** Once the origin requirements are fulfilled, the exporter can claim the **reduced or zero customs duty** available under the agreement.
- **Increasing Utilisation:** The **UAE CEPA** and **Australia ECTA** have generated significant origin certifications since 2022, showing greater use of the tariff benefits available under these agreements.

e-CoO 2.0

- The **e-CoO 2.0 system** provides digital processing for both preferential and non-preferential Certificates of Origin.
- It connects:
 - Exporters
 - Issuing agencies
 - Chambers of Commerce
- **Aadhaar-based electronic signatures** and **QR-code verification** strengthen authentication and make processing faster.

Simplifying Rules of Origin

- Newer FTAs are attempting to reduce paperwork for exporters.
- **India-EFTA TEPA** and **India-UK CETA** allow exporters to use **self-declaration of origin**.
- Under the UK agreement:
 - **Importer's knowledge** can also be used.
 - Origin documents are not required for consignments below **£1,000**.

Easier Certification under Australia ECTA

- A single CoO can cover **multiple qualifying products** under the India-Australia ECTA.
- This reduces the paperwork and administrative burden faced by exporters.

Trade Connect

The **Trade Connect platform** helps exporters, especially **MSMEs**, make better use of FTAs by providing:

- FTA opportunity identification.
- **Tariff Explorer**.
- Tariff schedules.
- Guidance for exporters.
- Assistance in resolving CoO-related issues.

Market Access for Indian Merchandise Exports

- **India-UK CETA:** Nearly **99% of Indian exports** can enter the UK duty-free.
- **India-Oman CEPA:** Around **98% of Oman's tariff lines** receive tariff concessions.
- **India-EFTA TEPA:** Preferential treatment covers **92.2% of tariff lines**, representing around **99.6% of India's exports** to EFTA markets.
- **India-Mauritius CECPA:** Provides preferential access for **310 Indian product lines**.
- **India-UAE CEPA:** Concessions cover approximately **97% of UAE tariff lines**, covering nearly **99% of India's exports** to the UAE.
- **India-Australia ECTA:** Indian exports now receive **duty-free access across 100% of Australian tariff lines**.

Agreements Awaiting Implementation

- **India-EU FTA:**
 - Preferential treatment is envisaged for around **97% of EU tariff lines**.
 - These would cover nearly **99.5% of bilateral trade value**.
- **India-New Zealand FTA:**
 - Provides for duty-free access to **100% of Indian exports** once the agreement enters into force.

Sectors Benefiting from Wider Market Access

Greater access to overseas markets can particularly support labour-intensive sectors such as:

- **Textiles**
- **Agriculture and processed food**

- **Leather and footwear**
- **Marine products**
- **Gems and jewellery**
- **Carpets**
- **Handicrafts**

This can provide more opportunities for **MSMEs, small producers and local enterprises** to participate in international trade.

Protection of Sensitive Sectors

- India continues to use **calibrated tariff liberalisation and transition arrangements**.
- This helps retain policy space for **farmers and sensitive domestic industries** while expanding international market access.

FTAs and India's Services & Professional Mobility

- Services are an important part of India's economy.
- They account for nearly **30% of India's employment**.
- India's services exports reached approximately **USD 421.3 billion in FY 2025–26**.
- Therefore, access for Indian professionals and service providers has become an important part of India's FTA negotiations.

India-New Zealand FTA

The agreement creates opportunities for skilled Indian professionals:

- Up to **5,000 skilled Indians** can stay for up to **three years**.
- Covered areas include:
 - IT
 - Engineering
 - Healthcare
 - Education
 - Construction
 - AYUSH
 - Yoga
 - Culinary arts
 - Music
- Commitments cover **118 services sectors**.
- MFN treatment is provided across **139 sectors**.

India-EU FTA

- Commitments cover **144 services sub-sectors**.
- These include:
 - IT/ITeS
 - Professional and business services
 - Education
 - Finance
 - Tourism
 - Construction

The agreement also provides for:

- Movement of business visitors.
- Intra-corporate transferees.
- Work rights for dependants.
- Social-security cooperation.
- Student mobility.

India-UK CETA

The agreement facilitates the movement of:

- Business visitors.
- Intra-corporate transferees.
- Contractual suppliers.
- Independent professionals.

Important sectors include **IT, healthcare, finance and education**.

Double Contribution Convention:

- It is expected to prevent workers from making duplicate social-security contributions.
- It could generate savings exceeding **₹4,000 crore**.

India-EFTA TEPA

Indian service providers receive access to:

- **128 sub-sectors in Switzerland**
- **114 in Norway**
- **110 in Iceland**
- **107 in Liechtenstein**

The covered areas include:

- IT
- Business services
- Professional services
- Education
- Media
- Cultural services

The agreement also provides for **Mutual Recognition Agreements (MRAs)** in:

- Nursing
- Chartered accountancy
- Architecture

India-Oman CEPA

The agreement facilitates temporary entry and stay for:

- Intra-corporate transferees.
- Contractual suppliers.
- Business visitors.
- Independent professionals.

India-Australia ECTA

- Australia has commitments covering around **135 services sub-sectors**.
- MFN treatment extends across **120 sub-sectors**.
- Major areas include:
 - IT
 - Business services
 - Healthcare
 - Education
 - Audio-visual services

India-UAE CEPA

Indian service providers have access to around **111 sub-sectors across 11 broad areas**, including:

- Business
- Communication
- Construction
- Education
- Finance
- Health
- Tourism
- Transport

India-Mauritius CECPA

The agreement provides access to around **115 services sub-sectors across 11 broad areas**, covering:

- Professional services
- Computer services
- Telecommunications
- Financial services
- Education
- Tourism
- Transport

- Audio-visual services
- Yoga

Overall Significance

India's FTA strategy is gradually shifting from simply **cutting import duties** towards a broader approach covering **goods, services, investment, digital trade, professional mobility and trade facilitation**.

The combination of wider market access, simpler origin procedures and digital platforms such as **e-CoO 2.0 and Trade Connect** can help Indian exporters make better use of FTAs.

For India, the larger objective is to turn trade agreements into **higher exports, stronger MSMEs, greater investment, more employment and deeper integration with global markets**, while continuing to protect sensitive domestic sectors.

India-Japan Maritime Security Cooperation



Why in News?

- Recently, **India and Japan signed a Memorandum of Arrangement (MoA) on Maritime Security Cooperation** during bilateral talks between their Defence Ministers in New Delhi.
- The agreement aims to **strengthen defence ties and deepen cooperation in maritime security**.

How Are India and Japan Strengthening Defence and Maritime Security Cooperation?

- **Maritime Security Framework:** The MoA creates a framework for closer cooperation between the **Indian Navy** and the **Japan Maritime Self-Defense Force (JMSDF)**.
 - Key areas include:
 - **Maritime Domain Awareness (MDA)**

- **Search and Rescue (SAR)**
 - **Humanitarian Assistance and Disaster Relief (HADR)**
- **Protection of Sea Routes:** Both countries agreed to improve the security of **Sea Lines of Communication (SLOCs)**, which are important for international trade and energy supplies.
 - Cooperation will include:
 - Reciprocal naval visits.
 - Joint military exercises.
 - Exchange of personnel and experts.
 - Port access.
 - Logistics support.
 - Maintenance and repair facilities.
- **Naval Shipbuilding and Repair:**
 - India and Japan will explore **joint work in naval shipbuilding and ship design**.
 - The cooperation aims to combine **Japan's technological capabilities with India's manufacturing and production capacity**.
 - Both sides will also work towards:
 - Reciprocal ship-repair arrangements.
 - Greater use of Indian shipyards.
 - Supporting **Make in India** in the defence sector.
- **Expansion of Military Exercises:**
 - India and Japan will further strengthen exercises such as **Dharma Guardian** and **JAIMEX**.
 - The planned **Veer Guardian 26** will be significant as Japanese fighter aircraft are expected to participate in an air exercise in India **for the first time**.
 - Future exercises are expected to involve:

- More complex operations.
 - Short-notice drills.
 - Unmanned systems.
- **Defence Technology Partnership:**
 - India's **DRDO** and Japan's **Acquisition, Technology & Logistics Agency (ATLA)** will expand cooperation in advanced defence technologies.
 - A **Defence Industry Forum** will provide a platform for greater cooperation between the two defence industries.
- **UNICORN Project:**
 - The **UNICORN integrated communications antenna system** has emerged as an important example of India-Japan defence-equipment cooperation.
 - It is being pursued as the **first defence equipment transfer project between India and Japan**.
- **Special Operations Cooperation:**
 - Both countries agreed to increase interaction between their **Special Operations Forces**.
 - They will also explore cooperation with India's **integrated theatre commands** after their establishment.
- **Free and Open Indo-Pacific:**
 - India and Japan reaffirmed their commitment to a **free and open Indo-Pacific**.
 - Both opposed unilateral actions that:
 - Threaten freedom of navigation.
 - Attempt to change the existing status quo through force.
 - They also agreed to expand cooperation with third countries through joint exercises and initiatives such as the **Indo-Pacific Logistics Network**.

- **Institutional Coordination:**
 - A **Director-General/Joint Secretary-level Working Group** will coordinate cooperation in several areas, including:
 - Operations.
 - Intelligence.
 - Defence equipment.
 - Technology.
 - Defence industry.
 - Both sides will also speed up preparations for the **fourth India-Japan 2+2 Foreign and Defence Ministerial Dialogue**, which is scheduled to be held in Tokyo.



EDITORIALS

Crux of The Hindu & Indian Express

International Issues

Iran to Join New Development Bank of BRICS



Why in News?

- Iran is expected to join the **New Development Bank (NDB)**, the development bank established by the **BRICS** grouping.
- Iran's central bank governor **Abdolnaser Hemmati** said that Iran would soon become a member of the NDB.
- His statement came ahead of the **BRICS Finance Ministers and Central Bank Governors meeting** hosted by India.

- However, the **NDB's corporate communications division** said it could not confirm Iran's membership.
- Therefore, Iran's membership should be understood as a **proposed/expected accession**, subject to the formal NDB process.

Why is Iran Seeking NDB Membership?

- Iran faces extensive **US and international sanctions**.
- These sanctions have increased Tehran's interest in developing **alternative financial channels** outside the US dollar-based financial system.
- Iran joined **BRICS as a full member on 1 January 2024**.
- Since joining BRICS, Iran has expressed its interest in becoming a **member and shareholder of the NDB**.

Reducing Dependence on the US Dollar

- BRICS countries have been exploring ways to reduce dependence on the **US dollar** in international trade and financial transactions.
- Iran has supported greater use of **national currencies** for trade among BRICS members.
- Iran is also seeking **bilateral and trilateral monetary cooperation** with other BRICS countries.

What is the New Development Bank (NDB)?

- The **New Development Bank (NDB)** is a multilateral development bank established by the five founding BRICS countries:
 - Brazil
 - Russia
 - India
 - China
 - South Africa

- It was established in **2015**.
- **Headquarters:** Shanghai, China.

Objective of NDB

The main purpose of NDB is to mobilise resources for:

- **Infrastructure development**
- **Sustainable development**
- **Clean energy**
- **Energy efficiency**
- **Transportation**
- **Environmental protection**

- **Water supply**
- Other development projects

It aims to support **BRICS countries, emerging market economies and developing countries** and complement existing multilateral and regional financial institutions.

Expansion of NDB Membership

- NDB began expanding its membership in **2021**.
- New members have included:
 - **Bangladesh**
 - **United Arab Emirates**
 - **Egypt**
 - **Algeria**
 - **Colombia**
 - **Uzbekistan**
- **Uzbekistan became the 10th member on 5 June.**
- The source also identifies **Uruguay, Colombia, Ethiopia, Angola and Zimbabwe** as prospective members.
- Prospective members become official members after completing the accession process and **depositing their instrument of accession**.

Iran's Position

- Iran has expressed its intention to join the NDB.
- It must complete the **formal accession process** before becoming an official member.
- Hence, the statement that Iran will "soon" join does not itself mean that membership has already been completed.

Capital Structure of NDB

- **Initial authorised capital: US\$100 billion**
- **Initial subscribed capital: US\$50 billion**
- **Initial paid-in capital: US\$10 billion**
- The initial subscribed capital was **equally distributed among the five founding members**.

NDB's Development Role

Since its establishment, NDB has approved **more than 120 investment projects worth around US\$40 billion**.

These projects cover areas such as:

- Clean energy

- Energy efficiency
- Transport
- Environmental protection
- Water supply
- Infrastructure

The bank increasingly presents itself as an institution supporting a **just and sovereign transition** in developing and emerging economies.

Governance Structure of NDB

Board of Governors

- The **Board of Governors** consists of:
 - One Governor at the **ministerial level** from each member country.
 - One alternate Governor appointed by each member country.
- It is the highest decision-making authority of the bank.

Board of Directors

- The **Board of Directors** is responsible for the **general operations** of NDB.

Significance of Iran Joining NDB

For Iran

- Provides access to another source of **development finance**.
- Could help Iran pursue infrastructure and sustainable development projects.
- Strengthens its economic engagement with **BRICS countries**.
- Provides an additional channel for financial cooperation amid sanctions.

For BRICS

- Expands the financial and economic reach of the **BRICS institutional framework**.
- Strengthens cooperation among emerging economies.
- Supports the group's broader efforts towards **greater use of national currencies**.

For Global Financial System

Iran's possible membership could contribute to the broader trend of developing **alternative financial institutions and payment channels** outside traditional Western-dominated financial structures.

India's Role

- India holds the **rotating BRICS chairmanship in 2026**.
- The first meeting of **BRICS Finance Ministers and Central Bank Governors** under India's

chairmanship is an important platform for discussions on:

- Financial cooperation
- Development finance
- Use of national currencies
- Strengthening BRICS financial institutions

US Ambassador Sergio Gor Visits Thiksey Monastery in Ladakh



Why in News?

- **US Ambassador to India Sergio Gor** visited the historic **Thiksey Monastery** in Ladakh.
- His visit came during his wider engagement in **Jammu & Kashmir and Ladakh**.
- The visit is significant in the context of **India-US strategic relations, regional security and counter-terrorism cooperation**.

Thiksey Monastery

- **Location:** Thiksey, Ladakh
- About **19 km from Leh**.
- One of the **largest and most important monastic complexes in central Ladakh**.
- Located on a hill and known for its resemblance to **Tibet's Potala Palace**.
- **Founded:** 1433

Important Features

- Houses:
 - Ancient images
 - Stupas
 - Scroll paintings
 - Wall paintings
- It has a **15-metre-high statue of Maitreya Buddha**.
- The statue was installed in the **1980s**.
- The monastery is known for its **daily morning prayers**.

- It provides panoramic views of nearby villages and the **Indus River**.

Sergio Gor's Visit to Jammu & Kashmir

- Before travelling to Ladakh, Sergio Gor visited the **Kashmir Valley**.
- He met various regional stakeholders.
- He also met **Jammu & Kashmir Chief Minister Omar Abdullah**.

Statement on Jammu & Kashmir

Gor reiterated the US position that:

- **Jammu & Kashmir is an important part of India**.
- He described the region as extremely beautiful during his first visit.

Meeting with Omar Abdullah

- The meeting was significant because it was the **first interaction between a serving US Ambassador and a sitting J&K Chief Minister in more than 15 years**.
- The previous such meeting was in **2011**.
- In 2011, then US Ambassador **Timothy Roemer** met Omar Abdullah.

Previous US Diplomatic Visits to Kashmir

- **Kenneth Juster** made a standalone visit to Kashmir in **2018**.
- He visited again in **2020** as part of a **multi-nation diplomatic delegation**.

Strategic Significance

Gor's visit comes against the background of:

- India's security concerns along its borders.
- India-US strategic partnership.
- Regional security cooperation.
- **Counter-terrorism cooperation** between India and the US.
- Recent discussions between **Sergio Gor and Union Home Minister Amit Shah** on counter-terrorism.

Background

- The visit comes **seven years after the Centre's 2019 decision to:**
 - Abrogate Jammu & Kashmir's special status.
 - Reorganise the erstwhile state into the Union Territories of **Jammu & Kashmir and Ladakh**.

□□□



Indian Statistical Institute (ISI) Bill, 2026



Why in News?

- The **Indian Statistical Institute (ISI) Bill, 2026** has been introduced in the **Lok Sabha**.
- The Bill seeks to reform the governance of ISI.
- It aims to:
 - Strengthen research
 - Promote interdisciplinary collaboration
 - Develop ISI as a global centre of excellence
- However, it has raised concerns about **greater Central Government control** and possible **erosion of institutional autonomy**.

Key Provisions of the ISI Bill, 2026

- **Repeal of Existing Act:**
 - Repeals the **Indian Statistical Institute Act, 1959**.
 - Converts ISI from a registered society into a **not-for-profit statutory body corporate**.
- **Visitor:**
 - The **President of India** will be the Visitor.
 - The Visitor can:
 - Review the functioning of ISI
 - Order inquiries
 - Issue binding directions based on such reviews
- **Board of Governors (BoG):**
 - The existing **33-member Council** will be replaced by an **11-member Board of Governors**.

- Composition:
 - 1 Chairperson nominated by the Visitor
 - 2 Central Government officials
 - 4 eminent persons
 - 4 ISI representatives

● Functions of BoG:

- Administration
- Budget approval
- Establishment of departments and centres
- Granting degrees
- Framing regulations
- Creation of posts
- Periodic performance reviews

● Academic Council:

- Will oversee academic matters of the Institute.

● Finance Committee:

- Will examine financial matters.

● Management Councils:

- Will handle administration of individual ISI centres.

● Director:

- Appointed by the Board with the **prior approval of the Visitor**.
- Will act as the **Chief Executive Officer**.
- Responsible for implementing Board decisions and managing day-to-day administration.

● Regulations:

- Under the 1959 Act, amendments to regulations required prior Central Government approval.
- Under the Bill, such approval is required only for the **first set of regulations**.

Criticisms

● Institutional Autonomy:

- Replacing the 33-member Council with an 11-member BoG may reduce faculty participation.

- **Greater Executive Oversight:**
 - The Visitor and Central Government would have an important role in appointing the Chairperson and Director.
 - The Visitor can also conduct reviews and issue directions.
- **Academic Authority:**
 - Though the Academic Council remains the principal academic body, the BoG has final decision-making authority.
- **Research Priorities:**
 - Greater focus on industry collaboration and revenue generation may shift attention away from **fundamental research**.

Historical Background of ISI

- **Established:** 1931
- **Founder:** Prasanta Chandra Mahalanobis
- It began as a statistical laboratory at **Presidency College**.
- It was registered as a society under the **Societies Registration Act, 1860**.
- Through the **Indian Statistical Institute Act, 1959**, it was declared an **Institution of National Importance**.
- The Act empowered ISI to grant degrees while retaining its society status.

Organisation and Governance

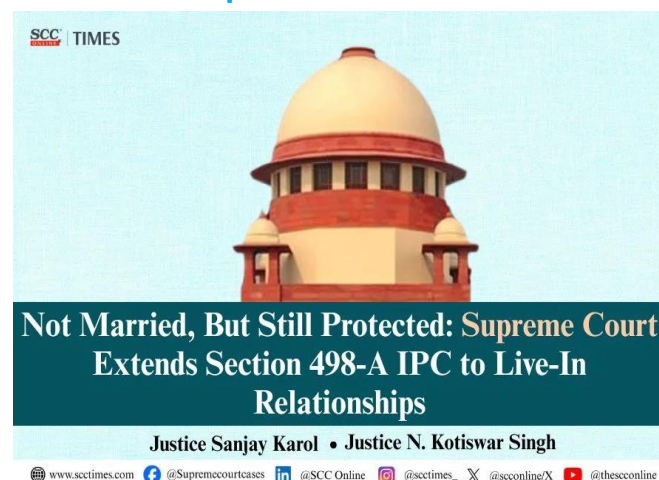
- **Headquarters:** Kolkata
- **Major centres:**
 - Delhi
 - Bengaluru
 - Chennai
 - Tezpur
- **Existing governance:**
 - A **33-member Council** is the apex decision-making body.
 - It includes:
 - Elected chairman
 - Independent scientists
 - Central representatives from **MoSPI**
 - Ministry of Finance
 - RBI

- Currently, the **Director** is appointed by the representative Council.

Measures Needed

- **Ensure Institutional Autonomy:**
 - Adopt a **hybrid governance model** with government nominees, elected faculty members and independent experts.
- **Protect Academic Freedom:**
 - Clearly define the Visitor's powers.
 - Protect research, academic curricula and publication of statistical findings from executive interference.
- **Merit-Based Leadership:**
 - Create an independent **Search-cum-Selection Committee** with eminent academicians and representatives of peer institutions.
- **Strengthen Research:**
 - Provide adequate public funding for **fundamental statistical and socio-economic research**.
 - Encourage industry collaboration without allowing commercial interests to dominate ISI's core research mandate.

Supreme Court on Section 498A and Live-in Relationships



Why in News?

- The **Supreme Court of India**, in **Dr. Lokesh B.H. & Ors. v. State of Karnataka & Anr. (2026)**, ruled on the applicability of **Section 498A of the IPC, 1860** to women in certain live-in relationships.

- Section 498A, now corresponding to **Section 85 of the Bharatiya Nyaya Sanhita (BNS)**, criminalises **cruelty by a husband or his relatives**.
- The Court held that protection under Section 498A can extend to women in live-in relationships that qualify as **“relationships in the nature of marriage”**, provided **intent to marry is established**.

Purposive Interpretation of Section 498A

- The Court adopted a **purposive interpretation** of Section 498A.
- The objective of the provision is to prevent **domestic cruelty**, which may occur even when a formal marriage has not taken place.
- Earlier:
 - Section 498A primarily protected **legally married women**.
 - Courts later extended protection to women who were deceived into **void or voidable marriages**.
- The Supreme Court observed that denying criminal protection to eligible women in live-in relationships while providing it to married women would violate **Article 14 – Right to Equality**.
- Such exclusion has no rational connection with the objective of preventing **domestic violence**.

“Relationship in the Nature of Marriage”

- The Court adopted the concept from the **Protection of Women from Domestic Violence Act, 2005**.
- Such relationships may involve:
 - Shared finances
 - Shared domestic life
 - Stable relationship
 - Public recognition of the couple as spouses

Intent to Marry

- The **initial burden of proof** lies on the female live-in partner seeking protection to establish **intent to marry**.

- The Court did **not prescribe fixed legal parameters** for proving such intent.
- However, a **higher standard of proof** would apply because Section 498A involves criminal liability.

Domestic Violence Act vs Criminal Law

- The Supreme Court clarified that the two legal frameworks serve different purposes.
- **Protection of Women from Domestic Violence Act, 2005:**
 - Primarily provides **civil remedies**.
 - Includes remedies such as:
 - Maintenance
 - Protection orders
- **Section 498A IPC / Section 85 BNS:**
 - Provides **criminal sanctions**.
 - Acts as a deterrent against cruelty.
- Therefore, both laws have **distinct legal purposes**.

Safeguard Against Arrest

- The Court directed strict compliance with the principles laid down in **Arnesh Kumar v. State of Bihar (2014)**.
- A **live-in partner or their relatives cannot be arrested without a mandatory preliminary inquiry**.
- This safeguard is intended to prevent unnecessary or automatic arrests in cases involving Section 498A.

Key Legal Provisions

- **Section 498A, IPC, 1860:** Cruelty by husband or relatives of husband.
- **Section 85, BNS:** Corresponding provision under the new criminal law.
- **Article 14:** Right to Equality.
- **Protection of Women from Domestic Violence Act, 2005:** Provides civil remedies for women facing domestic violence.
- **Arnesh Kumar v. State of Bihar (2014):** Important safeguards against unnecessary arrests in Section 498A-related cases.

Taxation and Other Laws (Amendment) Bill, 2026



Why in News?

- The Lok Sabha passed the **Taxation and Other Laws (Amendment) Bill, 2026**.
- The Bill replaces the **Income-tax (Amendment) Ordinance, 2026**.
- It amends:
 - **Income-tax Act, 2025**
 - **Finance Act, 2026**
 - **Payment and Settlement Systems Act, 2007**
- The Bill aims to:
 - Attract **foreign investment**
 - Promote **Make in India**
 - Improve **ease of doing business**
 - Strengthen India's **digital and financial ecosystem**

Key Provisions

Electronics Manufacturing

- The Bill extends the **tax holiday for eligible electronics manufacturing activities**.
- Eligible products include:
 - Mobile phones
 - Laptops
 - Servers
 - Wearables
- The tax holiday is extended by another **10 years, up to 2040–41**.

Electronics and Diamond Sectors

- Provides tax exemptions to eligible:
 - **Foreign diamond companies**
 - **Electronics manufacturers**

- Exemptions cover activities such as:
 - Income from **rough diamond sales**
 - Storage of electronic components in **customs bonded warehouses**

Foreign Institutional Investors and BIS

- Provides income-tax exemption to **Foreign Institutional Investors (FIIs)** and the **Bank for International Settlements (BIS)** on:
 - Interest from government securities
 - Capital gains from government securities

Foreign Fund Managers

- Simplifies tax rules to allow **foreign fund managers to relocate to India**.
- Their foreign funds would not automatically become taxable because of the relocation.
- Safeguards against **tax avoidance and round-tripping** will continue.

Data Centres

- Removes complex approval requirements for foreign cloud companies using **Indian data centres** to claim tax benefits.
- Indian data centres can also operate on a **leased basis**, instead of requiring direct ownership.

REITs and InvITs

- Restores **tax-free dividend income** for investors in:
 - **Real Estate Investment Trusts (REITs)**
 - **Infrastructure Investment Trusts (InvITs)**
- The surcharge on Special Purpose Vehicles (SPVs) of business trusts is increased from **10% to 25%**.

UPI Transactions

- The Bill amends the **Payment and Settlement Systems Act, 2007**.
- It empowers the Central Government to allow banks and payment service providers to **levy charges on UPI and other notified electronic payment modes**.
- This replaces the existing prohibition on such charges.
- It could allow the introduction of **Merchant Discount Rate (MDR)** on UPI.

Significance

- Encourages **FDI and global capital inflows**.
- Supports **electronics manufacturing** under Make in India.
- Promotes India as a **global data-centre and cloud infrastructure hub**.
- Makes India more attractive for **global fund managers**.
- Encourages investment in **real estate and infrastructure**.
- Reduces regulatory hurdles and improves **tax certainty**.

REITs and InvITs

REITs

- **REITs** are investment vehicles that own, operate or finance **income-generating real estate**.
- Examples include:
 - Office buildings
 - Malls
 - Hotels
- They allow investors to earn returns from real estate without directly buying or managing properties.

InvITs

- **InvITs** are collective investment vehicles similar to mutual funds.
- They pool money from investors and invest in **infrastructure projects** such as:
 - Toll roads
 - Power plants
 - Transmission lines
- InvITs are regulated by **SEBI** under the **SEBI (Infrastructure Investment Trusts) Regulations, 2014**.

Merchant Discount Rate (MDR)

- **MDR** is the fee paid by a merchant to a bank or payment service provider for accepting digital payments.
- It is generally calculated as a **percentage of the transaction value**.
- Since **2020**, **MDR has remained zero for UPI and RuPay debit card transactions** to encourage digital payments.

Round-Tripping

- **Round-tripping** refers to routing Indian capital through a foreign country and bringing it back into India as foreign investment.
- It can be used for **tax avoidance or disguising the actual source of funds**.

Concerns

- **Limited Parliamentary Scrutiny:**
 - The Bill was passed amid disruptions, with concerns about limited debate and legislative scrutiny.
- **Impact on Digital Payments:**
 - Removing the zero-MDR provision could allow charges on **UPI transactions**.
 - This could affect **small merchants and low-income users**.
 - At the same time, the zero-MDR system has raised concerns about the **financial sustainability of the UPI ecosystem**.
- **Revenue Impact:**
 - Long-term tax exemptions could reduce government tax revenues.
 - This may create challenges for **fiscal consolidation**.
- **Round-Tripping Risk:**
 - Relaxed rules for foreign fund managers could increase risks of **tax avoidance and round-tripping**.
- **Uneven Competition:**
 - Tax incentives for foreign companies could put some **domestic MSMEs** at a competitive disadvantage.

Way Forward

- **Performance-Based Tax Incentives:**
 - Link long-term tax benefits with:
 - Job creation
 - Exports
 - Technology transfer
 - Introduce periodic reviews and **sunset clauses**.

- **Data Security:**
 - Align incentives for cloud companies and data centres with the **Digital Personal Data Protection Act, 2023**.
 - Balance investment promotion with **data protection and cybersecurity**.
- **Strengthen Domestic Manufacturing:**
 - Combine tax incentives with **PLI schemes**.
 - Increase R&D support for **MSMEs**.
- **Prevent Tax Abuse:**
 - Strengthen **SEBI and CBDT** oversight.
 - Use **AI-based monitoring** and strict enforcement of **GAAR**.
 - This can help prevent **tax avoidance and round-tripping**.

e-Courts Mission Mode Project



Why in News?

- The Government has highlighted the progress of the **e-Courts Mission Mode Project**, which has transformed India's paper-based judiciary into a **digitally enabled, transparent and trackable justice delivery system**.
- It uses **e-filing, virtual courts, digitised records, e-Sewa Kendras, video conferencing, AI tools and integrated criminal justice platforms**.

What are the Key Features of e-Courts Mission Mode Project?

- **Launched:** The e-Courts Mission Mode Project was launched in **2007**.

- **Objective:**
 - Modernise India's judiciary through technology.
 - Reduce dependence on **paper records and physical court infrastructure**.
 - Make judicial processes **faster, affordable, accessible and transparent**.
 - Reduce the **time, travel and financial burden** on citizens.

Phases of the e-Courts Project

Phase I – Basic Computerisation (2011–2015)

- Computerised more than **14,000 courts**.
- Created the basic network infrastructure for technology-enabled judicial services.

Phase II – Citizen-Centric Digital Services (2015–2023)

- Introduced:
 - **National Judicial Data Grid (NJDG)**
 - **e-Filing**
 - **e-Sewa Kendras**
- Expanded **video-conferencing infrastructure** significantly.

Phase III – Digital and Intelligent Courts (2023–2027)

- Focuses on creating a **digital, paperless and technology-driven judiciary**.
- **4,519 courts** have implemented e-filing.
- **474 courts** have infrastructure for paperless functioning.
- **538 courts** are enabled for virtual hearings.
- **1,806 e-Sewa Kendras** are fully functional.
- Video-conferencing facilities are available across **7,553 courts, jails and hospitals**.
- Other developments include:
 - **NSTEP** facilities in 6,895 courts.
 - **ICJS** implementation across all High Courts.
 - 734 court websites migrated to the **S3WAAS platform**.
 - **SD-WAN** connectivity at 174 sites.
 - Use of **AI, OCR, analytics and digital training systems**.
 - Solar facilities across **1,626 court complexes**.

What are the Major Benefits of Court Digitisation?

1. Greater Transparency through NJDG

- **National Judicial Data Grid (NJDG)** provides real-time information on:
 - Court orders
 - Judgments
 - Case details
 - Case pendency
- It improves **transparency and accountability**.
- It also helps in judicial planning and monitoring.

2. Faster Filing and Payments

- **e-Filing** allows citizens and lawyers to submit court documents online.
- It supports **English and regional languages**.
- It provides services such as:
 - Online payments
 - E-signing
 - Application filing
 - Case-status dashboards
 - Case portfolio management
- More than **1.25 crore cases** had been filed electronically up to **30 June 2026**.
- e-Payments processed around **₹1,404 crore in court fees** and **₹75 crore in fines**.

3. Affordable Access through Remote Hearings

- Video conferencing allows **litigants, lawyers, witnesses and other stakeholders** to participate remotely.
- More than **4.18 crore remote hearings** have been conducted.
- Proceedings are livestreamed in **11 High Courts**.
- **31 Virtual Courts** handle online adjudication of traffic challans.
- **Nyaya Shruti**, launched in 2024 under ICJS, enables accused persons, witnesses, police officials, prosecutors, experts and prisoners to participate virtually.

4. Seamless Case Tracking

- Citizens and lawyers can track:
 - Case status
 - Cause lists
 - Judicial updates

- Information is available through the **e-Courts portal, mobile apps, SMS and email**.
- The e-Courts portal receives around **35 lakh hits per day**.
- The e-Courts Services App has around **3.84 crore downloads**.
- **NSTEP** enables GPS-based electronic service of summons and notices, making the process faster and trackable.

5. Citizen Assistance through e-Sewa Kendras

- e-Sewa Kendras help citizens with:
 - Case status
 - Hearing dates
 - Certified copies
 - e-Filing
 - e-Signatures
 - e-Payments
 - Digital judgments and orders
 - Video-conference hearings
 - Virtual Courts
- They also guide eligible people towards **free legal aid** and help with **eMulakat appointments** for prison visits.
- As of **30 June 2026**:
 - **49 e-Sewa Kendras** were functional across High Courts.
 - **2,535** were functional across District Courts.

AI-Assisted Judicial Processes

- Phase III has allocated **₹53.57 crore** from its **₹7,210 crore outlay** for AI and Machine Learning applications.
- AI is being used for:
 - Legal research
 - Case management
 - Transcription
 - Translation
 - Decision-support tools
- **LegRAA**: Helps judges with legal research and document analysis.
- **Digital Courts 2.1**: Provides a paperless platform for managing cases and judicial work.
- **ASR-SHRUTI**: Supports voice-to-text conversion.

- **PANINI:** Helps with translation and dictation of judicial orders and judgments.
- **eSCR:** Translates judgments into **18 Indian languages**.
- More than **83,000 translations**, including **36,344 in Hindi**, had been completed by March 2025.
- An AI tool developed with **IIT Madras** can identify defects in e-filed petitions and extract case metadata.

Conclusion

- The **e-Courts Mission Mode Project** has made India's judiciary more **accessible, transparent and technology-enabled**.
- Digitisation has improved **case tracking, online filing, remote hearings and citizen access**.
- **Phase III (2023–2027)** aims to further develop a **paperless, faster and more efficient justice delivery system**.

Tribunals Reforms Act, 2026



Why in News?

- The **Tribunals Reforms Act, 2026** received Presidential assent and has officially become law.
- The Act repeals the **Tribunals Reforms Act, 2021** and establishes a **National Tribunals Commission (NTC)** to improve appointments, oversight and administration of tribunals.

Key Provisions of the Tribunals Reforms Act, 2026

- **Repeal of 2021 Act:**
 - The Act repeals the **Tribunals Reforms Act, 2021**.

- It aligns tribunal appointments and service conditions with **Supreme Court directions on judicial independence and separation of powers**.

● **National Tribunals Commission (NTC):**

- A new **National Tribunals Commission** will oversee:
 - Appointments
 - Tribunal performance
 - Complaints against members
 - National Tribunals Data Grid
- It will have **5 members**:
 - 1 Chairperson
 - 2 Judicial Members
 - 2 Technical Members
- The Chairperson must have been a **Supreme Court Judge or Chief Justice of a High Court**.
- Technical members must have at least **25 years of relevant experience**.
- The maximum age is **70 years for the Chairperson** and **67 years for other members**.
- Members will have a **five-year term**, subject to the age limit.

● **Appointments:**

- Appointments will be made by the **Central Government**.
- The **Chief Justice of India (CJI)** will be consulted for the appointment of the Chairperson and Judicial Members.
- The NTC Secretariat will be headed by a **Central Government Secretary**.

● **Selection of Tribunal Members:**

- For each vacancy, the NTC's search-cum-selection committee will recommend:
 - **One name for appointment**
 - **One additional name in the waiting list**
- The Central Government must complete the appointment within **three months** of receiving the recommendation.

- **Reappointment:**
 - Members may be reappointed based on their **previous performance**.
 - The concerned Tribunal Chairperson will also be consulted.
- **Removal:**
 - Members can be removed for reasons such as:
 - Insolvency
 - Conviction for moral turpitude
 - Incapacity
 - Abuse of position
 - Conflict of interest
 - Tribunal members may additionally be removed for **incompetence, inefficiency or undertaking paid assignments**.
- **Service Conditions:**
 - The Central Government will prescribe rules relating to **qualifications, selection, salary, allowances, resignation, removal and other service conditions**.

Provisions of Tribunals Reforms Act, 2021 Struck Down by Supreme Court

- **50-Year Minimum Age:**
 - Struck down as **arbitrary**, as it excluded younger advocates and experts.
- **Four-Year Tenure:**
 - Invalidated for affecting **judicial independence and institutional continuity**.
 - The Court restored a **minimum five-year tenure**.
- **Two Names per Vacancy:**
 - Struck down because it increased **executive discretion**.
 - The Court directed the committee to recommend **only one name per post**.
- **Re-enactment of Struck-Down Provisions:**
 - Parliament cannot simply re-enact provisions already declared invalid without removing the defects.
 - **Judicial review is part of the Basic Structure**.

Background of Tribunals in India

- The tribunal system was created to **reduce the workload of regular courts** and provide specialised expertise.
- The first tribunal, the **Income Tax Appellate Tribunal (ITAT)**, was established in **1941**.

Constitutional Status

- Tribunals were not part of the original Constitution.
- The **Swaran Singh Committee (1976)** recommended specialised tribunals.
- The **42nd Constitutional Amendment Act, 1976** added **Part XIV-A** and **Articles 323A and 323B**.
- **Article 323A:**
 - Allows Parliament to establish **Administrative Tribunals** for recruitment and service-related disputes of public servants.
- **Article 323B:**
 - Allows Parliament and State Legislatures to establish tribunals for matters such as:
 - Taxation
 - Foreign exchange
 - Industrial and labour disputes
 - Land reforms
- **S.P. Sampath Kumar Case (1986):**
 - The Supreme Court held that Parliament can create alternatives to High Courts if they have **equal effectiveness**.
- **L. Chandra Kumar Case (1997):**
 - Tribunal decisions remain subject to **High Court and Supreme Court judicial review**.
 - Tribunals cannot completely replace constitutional courts.

Major Issues with Tribunals

- **Executive Dominance:**
 - Government control over appointments, salaries and service conditions can affect tribunal independence.

- **Vacancies and Pendency:**
 - Vacancies among judicial and technical members contribute to large backlogs.
- **Short Tenures:**
 - Short terms can limit experience and continuity.
 - Reappointment can also create concerns about executive dependence.
- **Administrative Dependence:**
 - Dependence on parent ministries for finances, infrastructure and staff can reduce autonomy.
- **Additional Litigation:**
 - Tribunal decisions can be challenged before High Courts, creating another layer of litigation.
- **Inadequate Infrastructure:**
 - Some tribunals face shortages of infrastructure, digital facilities and staff.

Reforms Needed

- **Independent Administration:**
 - Shift financial and administrative control away from parent ministries to an independent authority.
- **Better Appellate System:**
 - Create dedicated Tribunal Appellate Benches within High Courts.
 - A **UK-style two-tier tribunal system** could also be considered.
- **Judicial Impact Assessment:**
 - Conduct **Judicial Impact Assessments** before expanding tribunal jurisdiction.
- **Capacity Building:**
 - Provide legal training to technical members and technical training to judicial members.
- **Pre-Litigation Mediation:**
 - Use mediation in suitable cases to reduce unnecessary litigation.

- **Performance Audits:**
 - Conduct independent annual audits covering:
 - Disposal rates
 - Adjournments
 - Pendency
 - Judicial quality

Conclusion

The **Tribunals Reforms Act, 2026** aims to make India's tribunal system more organised and efficient. However, its success will depend on maintaining a proper balance between **executive oversight and judicial independence**. Financial autonomy, better infrastructure and transparent appointments are important for tribunals to deliver **specialised and speedy justice**.

PM CARES Fund



Why in News?

- Concerns have emerged over the **transparency of the PM CARES Fund** as publicly available audited financial statements have reportedly not been made available after **FY 2022–23**.
- This has led to calls for greater **financial disclosure, independent oversight and accountability**.

What is the PM CARES Fund?

- **Full Name:** Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund.
- **Nature:** It is a **Public Charitable Trust** established in **March 2020**.
- **Purpose:** To provide assistance during:
 - Public-health emergencies
 - Natural and man-made calamities
 - Other distress situations

- It can also support **healthcare infrastructure, pharmaceutical facilities, research and other forms of emergency assistance.**

Constitution of PM CARES Fund

- **Prime Minister of India** is the **ex-officio Chairperson.**
- **Union Ministers of Defence, Home Affairs and Finance** are ex-officio Trustees.
- The Prime Minister can nominate other Trustees.
- Trustees serve in a **pro bono capacity**, meaning without remuneration.

Funding

- The Fund is based entirely on **voluntary contributions** from individuals and organisations.
- It receives **no budgetary support** from the government.
- Companies and PSUs can contribute through **Corporate Social Responsibility (CSR)** funds.

Tax Benefits

- Donations qualify for **100% deduction under Section 133 of the Income-tax Act, 2025.**
- Earlier, this benefit was provided under **Section 80G of the Income-tax Act, 1961.**

Foreign Contributions

- PM CARES has been given exemption from the **Foreign Contribution (Regulation) Act, 2010 (FCRA).**
- This allows it to receive eligible foreign contributions through a separate foreign-contribution account.

Financial Position

According to the audited accounts for **FY 2022–23:**

- **Total receipts:** About ₹6,723 crore
- **Total payments:** About ₹439 crore
- **Closing balance:** About ₹6,284 crore as on **31 March 2023**

Concerns Associated with PM CARES Fund

1. Public Authority Status

- The government maintains that PM CARES is **not a government fund or a “public authority” under the RTI Act, 2005.**
- Its status under the RTI framework remains under judicial consideration.

2. Limited Parliamentary Scrutiny

- In 2026, the PMO informed the Lok Sabha Secretariat that questions concerning PM CARES were inadmissible under the **Rules of Procedure and Conduct of Business in Lok Sabha.**
- Critics argue that this could weaken parliamentary accountability.
- However, the final decision regarding admissibility rests with the **Lok Sabha Speaker.**

3. Absence of CAG Audit

- PM CARES is audited by an **independent chartered accountant** rather than the **Comptroller and Auditor General of India (CAG).**
- Critics argue that its public purpose and association with government institutions justify stronger public audit and disclosure mechanisms.

4. PSU Contributions

- Although PM CARES receives no direct budgetary allocation, **PSUs can contribute through CSR funds.**
- This has raised questions about whether significant PSU contributions should lead to stronger public accountability.

5. Overlap with Existing Funds

- Questions have been raised about the need for a separate PM CARES Fund when mechanisms such as:
 - **Prime Minister’s National Relief Fund (PMNRF)**
 - **National Disaster Response Fund (NDRF)**
- already exist.
- However, the Supreme Court held in **2020** that PM CARES and NDRF are **distinct funds with different objectives and purposes.**

Measures to Improve Accountability

- **Clarify Legal Status:**
 - Clearly define whether PM CARES falls under the **RTI Act, 2005.**
- **Strengthen Audit:**
 - Adopt stronger public-audit standards.

- Publish detailed auditor observations and utilisation certificates.
- **Timely Financial Disclosure:**
 - Publish audited accounts, receipts, expenditure, project-wise utilisation and closing balances **every year within a fixed timeline.**
- **Improve Parliamentary Accountability:**
 - PM CARES-related questions should be considered **case-by-case under Lok Sabha rules**, with the Speaker deciding their admissibility.
- **Disclose Allocation Details:**
 - Publish major donor categories, project-wise allocations, beneficiary criteria, implementing agencies and measurable outcomes while protecting genuine privacy concerns.

Conclusion

PM CARES has helped in the **rapid mobilisation of voluntary funds during emergencies**. However, concerns over **transparency, audit and parliamentary scrutiny** remain. Timely financial disclosure, stronger independent oversight and clearer accountability mechanisms can help **increase public trust while retaining the Fund's ability to respond quickly during emergencies**.

Supreme Court Handbook on Gender Sensitivity



Why in News?

The **Supreme Court of India** has released a new report titled '**Judgments and Gender: Sensitivity and Compassion in Writing Judgments**'.

- The handbook aims to make **judicial language and courtroom practices more trauma-informed and survivor-centric**, especially in cases involving sexual offences and vulnerable persons.

- It builds upon the **2023 Handbook on Combating Gender Stereotypes**, expanding the focus from problematic language to wider courtroom practices.

Evolution of Gender-Sensitive Jurisprudence in India

Case	Key Principle
Yusuf Abdul Aziz v. State of Bombay (1954)	Upheld protective discrimination under Article 15(3).
State of Punjab v. Gurmit Singh (1996)	Supported in-camera trials and cautioned against doubting survivor testimony merely due to lack of corroboration.
Vishaka v. State of Rajasthan (1997)	Established guidelines against workplace sexual harassment , leading to the POSH Act, 2013.
NALSA v. Union of India (2014)	Recognised transgender identity, dignity and constitutional rights .
Joseph Shine v. Union of India (2019)	Struck down Section 497 IPC on adultery as unconstitutional.
Aparna Bhat v. State of Madhya Pradesh (2021)	Prohibited gender stereotyping and suggestions of marriage or compromise in sexual-offence cases.
State of Jharkhand v. Shailendra Kumar Rai (2022)	Banned the unscientific two-finger test in rape examinations.
X v. Principal Secretary, Health, Delhi (2023)	Affirmed the reproductive autonomy of unmarried women .
Vaneeta Patnaik v. Nirmal Kanti Chakrabarti (2025)	Recognised that a hostile work environment can constitute continuing sexual harassment under the POSH Act.

Rule Against Gender Stereotyping

- Courts should avoid **gender stereotypes** and suggestions of marriage or compromise in rape cases.
- A survivor's:
 - Clothing
 - Marital status
 - Sexual history
 - Lifestyle
- should not be used to assess consent or credibility.
- This is consistent with **Section 146 of the Indian Evidence Act, 1872 and Section 48 of the Bharatiya Sakshya Adhiniyam, 2023**.

Gender-Sensitive Judicial Language

The handbook provides a glossary to replace gendered and stereotypical expressions with **neutral and rights-based language**.

Avoid	Prefer
Prosecutrix	Survivor
Modesty	Rights-based terminology
Lust	Sexual assault / appropriate neutral terminology
Chastity	Bodily autonomy and dignity-based terminology

- It also recommends inclusive terminology for **LGBTQIA+** persons.
- The term **SOGIESC** refers to **Sexual Orientation, Gender Identity, Expression and Sex Characteristics**.

Compassionate Court Practices

1. Victim and Witness Protection

- Strengthen the **Witness Protection Scheme, 2018**.
- Provide **mandatory legal aid from the FIR stage**.
- The Witness Protection Scheme was upheld in **Mahender Chawla v. Union of India (2018)**.

2. In-Camera Trials

- Rape and **POCSO-related trials** should be conducted in-camera under **Section 366(2) of the BNSS, 2023**.

3. Child-Sensitive Procedures

- Use **video-link and screen-based testimony**.
- Provide **support persons for children**.
- Ensure **time-bound POCSO trials**.

4. "Witness as Guest" Approach

- Witnesses should be treated with **dignity and respect**.
- Courts should avoid unnecessary adjournments and prolonged waiting.
- This approach was emphasised in **State of U.P. v. Shambhunath Singh (2001)**.

5. Pre-Trial Counselling

- Appropriate counselling can help **reduce anxiety and prevent secondary victimisation**.

Significance

Constitutional Significance

- Strengthens **Article 21**, particularly dignity and fair trial.

- Promotes substantive equality under **Articles 14 and 15**.
- Supports India's commitments under **CEDAW, 1979**.

Reducing Secondary Victimisation

- Insensitive language and hostile cross-examination can discourage survivors from reporting sexual offences.
- **Judicial language can influence social attitudes and constitutional morality**.
- Rights-based language can create a more supportive environment for survivors seeking justice.

Institutional Accountability

- Encourages a shift from a purely adversarial approach towards a **survivor-sensitive and trauma-informed justice process**.

Legal Consistency

The handbook complements existing safeguards under:

- **BNSS, 2023** — in-camera trials
- **Bharatiya Sakshya Adhiniyam, 2023** — rape-shield provisions
- **POCSO Act, 2012**
- **POSH Act, 2013**

Concerns

- The guidelines are currently **recommendatory rather than binding**.
- Their success depends heavily on **judicial training and implementation**.
- India's **linguistic diversity** can make a uniform glossary difficult to apply at trial-court level.
- Around **80.7% of respondents were unaware of the Witness Protection Scheme**, showing weak awareness of existing safeguards.
- Gender sensitisation is an **ongoing process**. A single handbook cannot permanently address changing language and social attitudes.
- Judicial sensitisation alone may not remove deep-rooted gender biases. Wider **social and behavioural changes** are also required.

Mains Value Addition: 5D Framework for a Gender-Just Judiciary

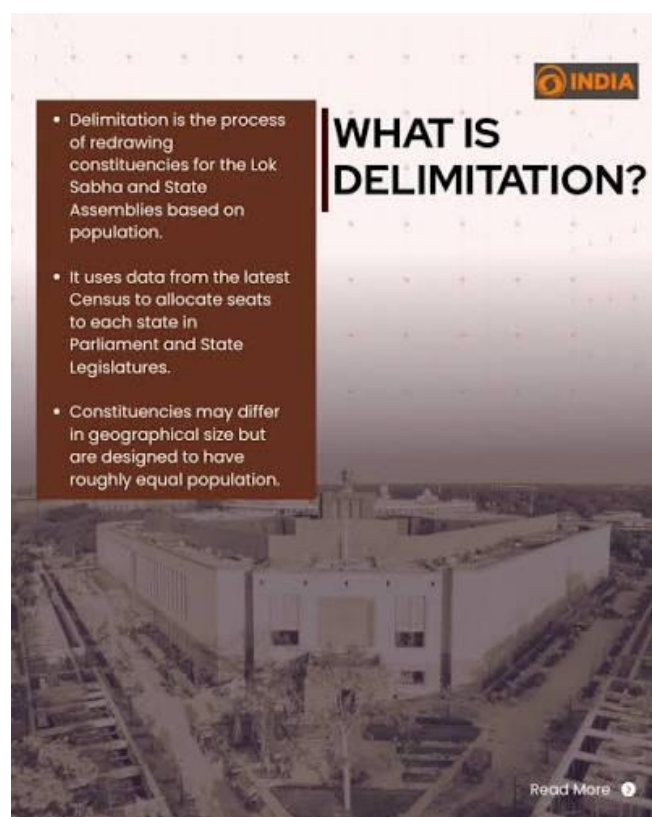
- **Dignity**: Use respectful, neutral and non-stereotypical judicial language.

- **Due Process:** Protect survivors while ensuring the accused receives a **fair trial**.
- **Diversity:** Consider differences of **gender, sexuality, disability, caste and language**.
- **Design:** Create vulnerable-witness centres, separate waiting areas, video testimony facilities and legal-aid systems.
- **Digital Safeguards:** Ensure that **AI and algorithmic systems do not reproduce or amplify gender stereotypes**.

Conclusion

The Supreme Court's handbook marks a shift towards a **more sensitive, inclusive and survivor-centric justice system**. Judicial language is not merely about words; it can influence dignity, trust and access to justice. However, its success will depend on **effective implementation, continuous judicial training and broader social change**.

Delimitation of Lok Sabha Constituencies



Why in News?

The **delimitation of Lok Sabha constituencies** has again become a major political issue as the Centre looks to revive electoral reforms ahead of the **2029 Lok Sabha elections**.

- The **2027 Census** is expected to trigger fresh delimitation under **Articles 81 and 82**.

- This may increase the representation of populous northern States while reducing the relative political weight of demographically stabilised southern States.

What is Delimitation?

- **About:** Delimitation means **fixing or redrawing the boundaries of electoral constituencies** for the Lok Sabha and State Legislative Assemblies.
- **Objective:** Its main aim is to follow the principle of **“One Person, One Vote, One Value”** by ensuring that each constituency has a roughly equal population.
- It also determines **reserved constituencies for Scheduled Castes (SCs) and Scheduled Tribes (STs)**.

Constitutional Provisions

- **Article 82:** Parliament provides for readjustment of Lok Sabha seats and territorial constituencies after a Census.
- **Article 170:** Provides for similar readjustment in State Legislative Assemblies.
- The process is carried out by an independent **Delimitation Commission** established under an Act of Parliament.
- The Commission consists of:
 - A serving or retired **Supreme Court Judge** as Chairperson.
 - The **Chief Election Commissioner** or an Election Commissioner nominated by them.
 - State Election Commissioners of the concerned States.
- The Commission has been constituted **four times — 1952, 1963, 1973 and 2002**.

Why was Delimitation Frozen?

- The **42nd Constitutional Amendment Act, 1976** froze the allocation of Lok Sabha seats based on the **1971 Census**.
- The main reason was to ensure that States which successfully controlled population growth were **not punished with fewer parliamentary seats**.
- The **84th Amendment Act, 2001** extended this freeze until the first Census after 2026.
- The 2002 Delimitation Commission redrew constituency boundaries within States using

the 2001 Census, but **inter-State allocation of seats continued to be based on the 1971 Census.**

What are the Major Challenges?

1. North-South Divide

- The biggest concern is the conflict between **demographic representation and federal balance.**
- Southern States such as **Kerala, Tamil Nadu, Karnataka and Andhra Pradesh** successfully reduced population growth through family planning.
- Northern States such as **Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan** have experienced higher population growth.
- A population-based delimitation could therefore give the northern States **many more Lok Sabha seats.**
- This may shift political power towards the North and reduce the South's influence over **national policies, constitutional amendments and resource allocation.**

2. Link with Women's Reservation

- The **Nari Shakti Vandan Adhiniyam, 2023** provides **33% reservation for women** in the Lok Sabha and State Assemblies.
- Its implementation is linked to the next delimitation exercise.
- Therefore, disagreement over delimitation could also **delay women's reservation.**

3. Delay in Census

- The **2021 Census was delayed** due to the COVID-19 pandemic.
- The previous delimitation process also took considerable time. The Commission constituted after the **2001 Census** submitted its recommendations, which were implemented in **2008 for the 2009 elections.**
- The **2027 Census is fully digitalised**, which may help speed up the process.

4. Larger Parliament

- The present Lok Sabha has **543 elected members.**
- **Article 81 permits up to 550 seats.**
- The defeated **Constitution (131st Amendment) Bill, 2026** proposed increasing the constitutional ceiling to **850 seats.**

- A much larger Lok Sabha could create challenges related to **administration, debate, speaking time and management of parliamentary proceedings.**

5. Risk of Gerrymandering

Delimitation also involves drawing constituency boundaries within States. This creates a risk of **gerrymandering**, where boundaries are manipulated for political advantage.

- **Cracking:** Dividing supporters of an opposing party across several constituencies so that they become a minority in each.
- **Packing:** Concentrating opposing voters into a small number of constituencies, reducing their influence elsewhere.

What Reforms Can Ensure Fair Delimitation?

1. Pro-Rata Seat Augmentation

- Increase the total number of Lok Sabha seats while **maintaining the existing State-wise proportion.**
- For example, a **50% increase** could take the House from 543 to around **815 seats.**
- Uttar Pradesh could increase from around 80 to 120 seats, while Tamil Nadu could increase from 39 to around 59.
- This would increase representation without drastically changing the relative political weight of States.
- The latest Census could then be used mainly to redraw **internal constituency boundaries** within each State.

2. Weighted Representation

Instead of relying only on population, representation could consider:

- **Population:** 50%
- **Demographic performance/TFR:** 25%
- **Economic and development contribution:** 15%
- **Geographical area:** 10%

However, such a system would require a **major constitutional amendment**, because Article 81 is primarily population-based.

3. Decouple Women's Reservation

- Women's reservation could be implemented using the **existing 543-seat structure.**

- This would prevent women's reservation from becoming dependent on the politically sensitive delimitation debate.

4. Strengthen the Rajya Sabha

- Greater powers for the **Rajya Sabha** could provide a stronger federal balance.
- States could have more equal representation in the Upper House, similar to federal systems such as the US or Australia.
- Strengthening its role in financial legislation could provide a stronger **federal check on demographic majoritarianism**.

5. Increase Transparency

- The **Inter-State Council under Article 263** could be used to build consensus among the Union and States before deciding the methodology.
- Associate Members of the Delimitation Commission could be given stronger input in boundary-making.
- **Open-source GIS-based mapping** and public hearings could make the process more transparent and reduce allegations of political manipulation.

Way Forward

A fair delimitation should balance **“One Person, One Vote, One Value”** with India's federal structure.

The process should focus on:

- **Fair population representation**
- **Protection of federal balance**
- **Consensus between Centre and States**
- **Transparent and scientific boundary-making**
- **Protection against gerrymandering**
- **Timely implementation of women's reservation**

Conclusion

Delimitation is not simply about **counting population and distributing seats**. In a diverse federal country like India, it must balance the democratic rights of citizens with the **political and economic interests of States**. A consensus-based and transparent approach will be essential to ensure that the 2027 Census strengthens representation without creating a deeper **North-South political divide**.

Regional Parties in Indian Politics



Why in News?

- The relevance of **regional parties in Indian politics** has become a subject of intense debate following major political developments, including **electoral setbacks in recent Assembly elections and defections across several regional parties**.
- At the same time, debates around the proposed **One Nation, One Election (ONOE)** framework have raised concerns about whether regional parties can maintain their political influence against stronger national narratives.
- Regional parties are facing several challenges, including:
 - Declining number of States governed independently
 - Stronger national-party competition
 - Defections
 - Resource constraints
 - Leadership and organisational issues
- However, their relevance has **not disappeared**.
- Regional parties continue to receive around **one-third of Lok Sabha votes** and perform strongly in State elections.
- They remain important **coalition partners** and play a major role in **federalism, regional representation and political competition**.

What is the Classification of the Party System in India?

- A **political party** is an association or group of Indian citizens registered with the Election

Commission of India (ECI) under Section 29A of the Representation of the People Act, 1951.

- India follows a **multi-party political system**, with national and regional political forces competing at both Union and State levels.
- Under the ECI's formal classification, political parties are divided into:
 - **Recognised parties**
 - **Unrecognised parties**
- Recognised parties are further classified as:
 - **National Parties**
 - **State Parties**
- State Parties are often described as **regional parties** because their political influence is mainly concentrated in particular States.
- The term "**political party**" was not explicitly mentioned in the original Constitution.
- It entered the constitutional framework through the **52nd Constitutional Amendment Act, 1985**, which introduced the **Tenth Schedule** to deal with political defections.

Why is the Political Space for Regional Parties Shrinking?

1. Rise of Dominant National Parties

The growing electoral and organisational reach of major national parties has reduced the space available to regional parties.

- As of August 2026, regional parties independently head governments in **three States**:
 - Andhra Pradesh
 - Meghalaya
 - Nagaland
- They also head the government in the **Union Territory of Puducherry**.
- This is the **lowest number in nearly two and a half decades**, compared with nine States during 2015–2020.

2. Changing Role of Regional Parties

The evolution of India's party system can broadly be divided into three phases:

Phase	Period	Main Feature
One-Party Dominance	1952–1967	Dominance at the Centre and in States
Rise of Regional Aspirations	1967–1989	Growth of linguistic, cultural and regional identities
Coalition Politics	1989–2014	Regional parties became important coalition partners and kingmakers

With the return of stronger single-party dominance, regional parties have increasingly been pushed towards the margins of national policymaking.

3. First-Past-the-Post Effect

Under the **First-Past-the-Post (FPTP)** system:

- A regional party can lose many seats because of a relatively small decline in its vote share.
- On the other hand, a small increase in votes concentrated in important constituencies can result in a large increase in seats.

Therefore, **seat losses do not always indicate an equivalent decline in actual voter support**.

4. Organisational Decay and Parivarvad

Many regional parties are centred around a **dominant leader or political family**.

This can result in:

- Weak internal democracy
- Succession problems
- Factionalism
- Party splits
- Limited opportunities for emerging leaders

Talented leaders may therefore move towards parties with stronger organisational structures and greater political opportunities.

5. Resource Asymmetry

Election expenditure also creates an advantage for larger national parties.

The candidate expenditure limits are:

Election	Larger States	Smaller States
Lok Sabha	₹95 lakh	₹75 lakh
Assembly	₹40 lakh	₹28 lakh

However, political parties themselves currently have **no overall expenditure ceiling** during elections.

This allows larger parties with greater financial and organisational resources to enjoy a significant campaigning advantage.

6. Political and Organisational Challenges

The **Tenth Schedule and Anti-Defection Law** have also become important factors.

Concerns include:

- Misuse of the merger provision
- Defections
- Party splits
- Prolonged political disputes
- Judicial disputes

Allegations of selective use of central investigative agencies, corruption and the growing influence of money power can further put pressure on regional parties.

7. Shrinking Space Due to Federal Challenges

Regional parties derive much of their strength from issues such as:

- State autonomy
- Fiscal federalism
- State-specific welfare
- Regional development

However, concerns over the **Governor's discretionary role**, delays in assenting to State legislation, increasing dependence on **Centrally Sponsored Schemes (CSS)** and the growing use of **cesses and surcharges outside the divisible tax pool under Article 271** can reduce States' untied financial resources.

This can limit the ability of regional governments to design their own welfare and development policies.

8. Threat from One Nation, One Election

Simultaneous elections to the **Lok Sabha and State Assemblies** could make national issues more dominant during elections.

Issues such as:

- National security
- Macroeconomic policies
- National leadership

may overshadow State-specific issues where regional parties are traditionally stronger.

Experts also argue that simultaneous elections could increase the possibility of voters choosing the **same party at both levels**, benefiting well-resourced national parties.

9. Shift from Identity Politics to Aspirational Politics

Voters are increasingly giving importance to:

- Economic development
- Employment
- Infrastructure
- Governance
- National security

Regional parties that rely only on **caste, language or regional identity** may therefore struggle to retain their appeal.

They need to combine regional identity with a **credible development and governance agenda**.

Evidence of Resilience

- Despite these challenges, regional parties continue to remain politically important.

Stable Vote Share

The decline in the number of States independently governed by regional parties does not necessarily mean that their voter base has disappeared.

- Regional parties secured around **one-third of total Lok Sabha votes**.
- Their vote share stood at **33.52% in the 2024 Lok Sabha elections**.
- Their stronger performance in State Assembly elections further demonstrates the continuing importance of regional political preferences.

Assembly-Level Strength

- Voters often show a stronger preference for regional parties in **State Assembly elections**, where local issues and regional identities have greater importance.

Coalition Relevance

Regional parties continue to play an important role in coalition governments.

They are dominant coalition partners in:

- Andhra Pradesh
- Meghalaya
- Nagaland
- Puducherry

They also participate in coalition governments in:

- Bihar
- Uttar Pradesh
- Assam
- Goa
- Maharashtra
- Tripura

- Jharkhand
- Jammu and Kashmir
- Kerala

Thus, even when regional parties do not govern independently, they can still influence **government formation and policymaking**.

What is the Significance of Regional Parties in Indian Democracy?

1. Balancing Power

Regional parties act as a **counterweight to excessive centralisation**.

They demand greater devolution of:

- Administrative powers
- Financial powers
- Decision-making authority

to the States.

2. Electoral Federalism

During the coalition era of **1989–2014**, the Centre depended heavily on regional allies through governments such as:

- National Front
- UPA
- NDA

This helped **federalise India's party system** and increased attention to State aspirations.

3. Pioneering Welfare Models

- State governments have often developed welfare schemes that later influenced national programmes.
- A major example is the **Midday Meal Scheme**, which was pioneered and expanded in Tamil Nadu before becoming an important national programme.

4. Widening Democratic Choice

Regional parties:

- Challenge national-party dominance
- Increase electoral competition
- Encourage political participation
- Provide voters with more choices

Tamil Nadu recorded **84.69% voter turnout in the 2026 Assembly elections**, its highest ever, reflecting strong electoral participation.

5. Keeping State Issues on the National Agenda

Regional parties provide political representation to **linguistic, ethnic and cultural identities** that may receive less attention in national politics.

They can bring issues such as:

- Inter-State river disputes
- Special financial requirements
- Agricultural concerns
- Regional infrastructure
- State-specific development needs

into Parliament and national policymaking.

What Measures Can Strengthen Regional Parties?

1. State Funding of Elections

- Partial **State funding of elections**, as recommended by the **Indrajit Gupta Committee, 1998**, can reduce the financial gap between large national parties and regional parties.
- This can help political parties compete more on **policies and performance rather than financial resources**.

2. Curbing Wholesale Defections

- The Tenth Schedule currently permits a merger when **two-thirds of a party's legislators** agree to it.
- This provision can potentially be used to engineer splits and defections in regional parties.

Possible reforms include:

- Removing the merger exemption
- Making the merger criteria more stringent
- Preventing organised political poaching

The **Dinesh Goswami Committee (1990)** recommended that disqualification decisions should be taken by the **President/Governor on the advice of the Election Commission**, rather than by the Speaker/Chairman.

The **Law Commission's 170th Report (1999)** recommended transferring this power to an **independent tribunal**. The recommendation was reiterated by the **National Commission to Review the Working of the Constitution (2002)**.

3. Enhancing Intra-Party Democracy

Regional parties should develop:

- Transparent leadership processes

- Strong second-rung leadership
- Internal elections
- Institutional decision-making

This can reduce personality cults and prevent major party splits during leadership transitions.

4. Re-evaluating One Nation, One Election

ONOE may reduce election-related costs, but simultaneous elections could make **national issues overshadow State-level concerns**.

Therefore, any move towards ONOE should include safeguards to ensure that:

- State issues remain visible
- Regional narratives are protected
- State-level political choices are not diluted

5. Managing Delimitation Carefully

- The upcoming **delimitation exercise** needs careful handling.
- Southern States, where regional parties have historically been strong and demographic growth has been relatively controlled, should not become politically marginalised because of demographic changes in the Hindi-speaking belt.

6. Governance Innovations

Regional parties need to move towards "**developmental regionalism**".

Instead of relying mainly on primordial identities such as caste and language, they should focus on:

- Infrastructure
- Healthcare
- Employment
- Education
- Fiscal prudence
- State-specific development models

Conclusion

Regional parties may be facing **electoral, financial and organisational challenges**, but their political relevance has not disappeared. Their continued vote share, strong State-level performance and importance in coalition governments show that they remain an essential part of India's **federal and multi-party democracy**. The future of regional parties will depend on their ability to combine **regional identity with good governance, internal democracy and development-oriented politics**, while reforms such as electoral funding, anti-defection measures and carefully designed ONOE safeguards can help maintain a healthy balance between **national integration and regional representation**.

Supreme Court Clarifies Police Custody Under BNSS



Why in News?

The **Supreme Court**, in *State of Andhra Pradesh v. Suda Suresh Veera Venkata Naga Raju*, clarified how **Section 187(2) of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** should be applied.

The Court held that police custody can be requested **in separate parts during the initial 40 or 60 days of detention**, depending on the applicable statutory detention period.

- The **total police custody cannot exceed 15 days**.
- This is different from the earlier position under the **Code of Criminal Procedure (CrPC), 1973**.

What Did the Supreme Court Clarify?

- **Police custody in parts:**
 - Police can seek custody on more than one occasion.
 - The request can be made during the prescribed **40-day or 60-day window**.
 - The overall police custody remains limited to **15 days**.
- **No absolute 15-day cut-off:**
 - A Magistrate or court cannot treat the first 15 days as the only period during which police custody can ever be granted.
 - Remaining police custody may be sought later within the permitted statutory window.
- **Reason for the extended window:**
 - New facts may emerge during an investigation.

- Fresh evidence or discoveries may require further interrogation.
- Investigators may receive new leads after the initial period of custody.

BNSS Vs. CrPC

Feature	CrPC, 1973	BNSS, 2023
Police custody	Restricted to the first 15 days of remand	Can be sought in parts during the prescribed initial period
Maximum police custody	15 days	15 days overall
Main change	Early-stage police custody	Greater flexibility when fresh investigative needs arise

What is the Detention Period Under BNSS?

Under **Sections 58 and 187 of the BNSS**:

- A person cannot ordinarily be kept in police custody for more than **24 hours** without the authorisation of a Magistrate.
- If investigation cannot be completed within 24 hours, the Magistrate may authorise further detention.

Maximum Statutory Period

- **90 days** for offences punishable with:
 - Death
 - Life imprisonment
 - Imprisonment of **10 years or more**
- **60 days** for other offences.

Default Bail

After the applicable **60-day or 90-day period** expires:

- The accused becomes entitled to **default bail**.
- The accused must be ready to furnish bail and comply with the applicable legal requirements.

Right to an Advocate

Under **Section 38 of the BNSS**:

- An arrested person has the right to **meet an advocate of their choice during interrogation**.
- However, this does not mean that the lawyer must remain **continuously and physically present throughout the entire interrogation**.
- The advocate may be present **within sight**.

- The lawyer cannot interfere with the investigation process.

Audio-Visual Recording

The Court also clarified the scope of recording requirements.

- **Continuous videography of the accused's transit is not necessary.**
- Audio-visual recording should cover:
 - **Actual interrogation sessions**
 - **Discovery proceedings**
 - **Recovery proceedings**

This provides a record of important investigative activities without requiring uninterrupted recording of the accused's entire movement.

Why is the Judgment Important?

For Investigating Agencies

- Provides greater flexibility during investigation.
- Allows police to seek custody when **new evidence or leads emerge later**.
- Can be useful in complicated cases where investigation develops over time.

For Accused Persons

- The overall police custody limit remains **15 days**.
- Statutory detention periods remain subject to judicial oversight.
- The right to meet an advocate is protected.
- **Default bail** remains available after the applicable statutory period, subject to legal requirements.

For Magistrates

Magistrates must consider:

- The actual investigative requirement.
- The statutory custody limits.
- The rights and liberty of the accused.
- Whether further police custody is legally justified.

Mines and Minerals (Development and Regulation) Amendment Bill, 2026



Why in News?

- Parliament has passed the **Mines and Minerals (Development and Regulation) Amendment Bill, 2026** to create a more **uniform and predictable framework for mineral taxation** by restricting certain State-level taxes and levies on mineral rights and mineral-bearing lands.
- The move is aimed at reducing uncertainty in the mining sector, but it has also raised important questions about **fiscal federalism, State taxation powers and Centre-State relations**.

What are the Key Features of the MMDR Amendment Bill, 2026?

- **Union Control over Mineral-Bearing Lands**
 - The Bill amends **Section 2 of the MMDR Act, 1957**.
 - It explicitly brings **mineral-bearing lands under the regulatory control of the Union Government**.
- **Restrictions on State Levies**
 - A new **Section 9D** restricts States from imposing:
 - Tax
 - Cess
 - Other levies
 - These restrictions apply to **mineral rights and mineral-bearing lands**.
 - Exceptions may be allowed under conditions prescribed by the **Central Government**.

- **Relief from Past Dues**
 - Certain **unpaid or unrecovered levies imposed before the amendment** will become invalid.
 - However, **amounts already paid will not be refunded**.
- **Central Rule-Making Power**
 - The Bill amends **Section 13**.
 - The Central Government will have the power to prescribe the **conditions and parameters** under which States can impose future levies.

Why is the Amendment Significant?

- **Greater Tax Certainty**
 - Reduces uncertainty caused by multiple and unpredictable mineral-related levies.
- **Uniformity**
 - A more consistent taxation system across States can reduce disparities and compliance costs.
- **Investment**
 - Lower regulatory uncertainty can encourage **investment in mining and mineral production**.
- **Mineral Security**
 - A stable regulatory framework can support domestic production of minerals, particularly minerals important for strategic and emerging technologies.

Existing Legal Framework for Minerals in India

The **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)** is the main Central legislation governing mines and mineral development.

Constitutional Distribution of Powers

- **Entry 54, Union List**
 - Parliament can regulate mines and mineral development when it declares such regulation necessary in the **public interest**.

- **Entry 23, State List**
 - States have powers over mines and mineral development, subject to **Union legislation**.
- **Entry 50, State List**
 - States can impose taxes on **mineral rights**, subject to limitations imposed by Parliament.
- **Entry 49, State List**
 - Covers taxes on **lands and buildings**, including mineral-bearing land.

Present Arrangement

- **Central Government**
 - Regulates major minerals.
 - Fixes royalty rates.
- **State Governments**
 - Grant mining leases.
 - Collect royalty from mining lessees.
- **Minor Minerals**
 - Are largely regulated by State governments.

Royalty is Not a Tax

- The Supreme Court held in **2024** that royalty under the MMDR framework is a **contractual payment for enjoying mineral rights**, rather than a tax.

What are the Major Concerns?

1. Impact on Fiscal Federalism

The Bill restricts State taxation of **mineral rights and mineral-bearing lands**.

This raises questions about:

- State financial autonomy
- Constitutional division of taxation powers
- Centre-State relations

A major concern is whether Parliament can restrict taxation under **Entry 49**, which deals with taxes on land and buildings.

2. Possible Conflict with the Supreme Court's 2024 Judgment

In **July 2024**, an **8:1 majority of a 9-judge Constitution Bench** in *Mineral Area Development Authority v. Steel Authority of India* upheld the power of States to tax:

- **Mineral rights under Entry 50**

Mineral-bearing lands under Entry 49

The Court also allowed States to recover certain **past tax dues retrospectively from 1 April 2005**.

The new Bill seeks to invalidate some **unpaid or unrecovered past levies**, raising questions about legislative competence and the separation of powers.

3. Article 14 Concerns

The Bill proposes to:

- Cancel certain **unpaid past levies**
- But does not refund **levies already paid**

This difference in treatment could raise questions under **Article 14**, which guarantees equality before law.

4. Excessive Delegation

- The Bill gives the Central Government significant power to decide the **conditions under which States may impose future levies**.
- Critics argue that Parliament should establish clearer principles itself instead of leaving such an important aspect of State taxation largely to the executive.

5. Loss of State Revenue

Mineral-rich States may face a reduction in their:

- Tax revenues
- Fiscal autonomy
- Financial resources for regional development

This creates a difficult balance between **national mineral security and State financial interests**.

Evolution of the MMDR Act

The MMDR framework has been modified several times to improve transparency, investment and mineral security.

2015 Amendment

- Introduced **mandatory auction** for mineral concessions.
- Established the **District Mineral Foundation (DMF)** for mining-affected areas.
- Created the **National Mineral Exploration Trust (NMET)**.
- Strengthened penalties for illegal mining.

2016

- Defined **leased area**.
- Allowed transfer of certain captive mining leases under prescribed conditions.

- Facilitated mergers, acquisitions and resolution of stressed assets.

2020

- Allowed companies without prior coal-mining experience to participate in **coal and lignite auctions**.
- Expanded participation and supported investment, including **FDI**.

2021 Amendment

- Removed the traditional distinction between **captive and merchant mines**.
- Captive mines were allowed to sell up to **50% of annual production** in the open market after meeting the requirements of their linked end-use plant.

2023 Amendment

Six critical minerals were removed from the list of minerals reserved exclusively for State agencies:

- Lithium
- Titanium
- Beryllium
- Niobium
- Tantalum
- Zirconium-bearing minerals and ores

The amendment also:

- Opened these minerals to **private and foreign investment**.
- Gave the Central Government power to exclusively auction critical-mineral concessions.
- Introduced **Exploration Licences**.
- Supported India's efforts towards critical-mineral security and **net-zero emissions by 2070**.

2025

- Introduced the concept of a **Mineral Exchange**.
- Created a framework for electronic marketplaces for:
 - Minerals
 - Concentrates
 - Processed metals
- Aimed to reduce **market opacity, cartelisation and price manipulation**.

- Removed the **50% sale limit for captive mines**, allowing sale after meeting end-use requirements.

What Measures Can Strengthen India's Mineral Governance?

- **Centre-State Coordination**
 - Establish a permanent mechanism for cooperation between the Centre and States.
 - Coordinate taxation, mining leases, auctions and mineral development.
- **Improve DMF Outcomes**
 - Ensure transparent and outcome-based use of **District Mineral Foundation funds**.
 - Focus on:
 - Health
 - Education
 - Livelihoods
 - Local infrastructure
- **Promote Deep-Sea Mineral Exploration**
 - Expand exploration for **polymetallic nodules and polymetallic sulphides** in the Indian Ocean.
 - Develop indigenous deep-sea mining technologies with strong environmental safeguards.
- **Strengthen National Critical Mineral Mission**
 - Increase domestic exploration.
 - Acquire mineral assets abroad.
 - Promote recycling.
 - Build capacity in **beneficiation, processing and refining**.
- **Improve Mine Closure and Restoration**
 - Make **mine closure, land reclamation and ecological restoration** part of the entire mining lifecycle.
- **Use Technology Against Illegal Mining**
 - Strengthen:
 - Satellite monitoring
 - Drone surveillance
 - GPS-based mineral tracking
 - E-permits

Kerala to Be Renamed “Keralam”



Why in News?

Parliament has passed the **Kerala (Alteration of Name) Bill, 2026**, clearing the way for the State to be officially renamed “Keralam”.

The change follows a **unanimous resolution of the Kerala Legislative Assembly** and subsequent approval by Parliament.

- **Linguistic Identity:** “Keralam” is the name commonly used for the State in **Malayalam**.
- **Historical Link:** The name change is connected with the long-standing demand for a unified Malayalam-speaking State, particularly the **Aikya Kerala Movement of the 1920s**.
- **Constitutional Changes:** The Bill provides for changes in the **First and Fourth Schedules of the Constitution**, along with consequential changes to **Articles 31A and 290A**.

How Can the Name of a State Be Changed?

The procedure is governed mainly by **Article 3 of the Constitution**.

Parliament has the power to:

- Form a new State.
- Increase or decrease the area of a State.
- Alter the boundaries of a State.
- Change the name of a State.

Procedure

1. President's Recommendation

- A Bill for changing the name of a State can be introduced in Parliament only after the **prior recommendation of the President**.

2. Reference to State Legislature

- The President refers the Bill to the concerned **State Legislature**.
- The State Legislature is given an opportunity to express its views.

3. State's Views Are Not Binding

- The opinion of the State Legislature is **not binding on Parliament**.
- Parliament can proceed with the Bill even if the State Legislature disagrees.

4. Parliamentary Approval

- The Bill is passed by Parliament through a **simple majority**.

5. Presidential Assent

- After receiving **Presidential assent**, the law comes into effect.

6. Constitutional Schedules

- The **First Schedule** is amended to reflect the new name of the State.

Important Constitutional Point

- Under **Article 4**, a law made under Article 3 is **not treated as a constitutional amendment under Article 368**.
- Therefore, a **special majority is not required**.

History and Significance of the Name “Keralam”

The name **Keralam** has deep linguistic and historical roots.

- **Ashoka's Rock Edict II (257 BCE)** refers to the region as “**Keralaputra**”, which is often associated with the Chera region.
- According to scholar **Herman Gundert**, “Keralam” may have evolved from “**Cheram**” or “**Cheralam**”.
 - *Cher* means **to join**.
 - *Alam* means **land or region**.

Aikya Kerala Movement

The demand for a united Malayalam-speaking region gained momentum during the **1920s**.

The movement sought to bring together Malayalam-speaking areas under a single administrative unit.

- The **States Reorganisation Commission (1956)** played a major role in the linguistic reorganisation of India.
- The modern State of Kerala was formed on **1 November 1956** by bringing together Malayalam-speaking regions.
- This day is celebrated as **Kerala Piravi Day**.
- However, the Constitution adopted the anglicised name "**Kerala**" instead of the Malayalam form "**Keralam**".

Earlier Examples of State Name Changes

India has previously changed the names of several States.

- Uttaranchal → Uttarakhand: 2007
- Orissa → Odisha: 2011

These changes demonstrate that State names can be altered through the **Article 3 constitutional procedure**.

Key Constitutional Provisions

Provision	Significance
Article 3	Parliament's power to form States and alter their area, boundaries or names
Article 4	Laws under Article 3 are not constitutional amendments under Article 368
First Schedule	Lists the States and Union Territories
Fourth Schedule	Allocates seats in the Rajya Sabha
Article 31A	Provides protection for certain laws relating to property and related matters
Article 290A	Provides for certain payments to specified Devaswom Funds

Conclusion

The proposed change from **Kerala to Keralam** is more than an administrative change. It reflects the State's **Malayalam linguistic identity and historical roots** and connects with the legacy of the **Aikya Kerala Movement**. Constitutionally, the process also highlights Parliament's significant role under **Article 3** in altering the names of Indian States.

Black Money in Elections: Supreme Court Directions



Why in News?

The **Supreme Court** has emphasised that controlling the influence of **black money in elections** is an important responsibility of the **Election Commission of India (ECI)**.

- The Court observed that the use of **illicit money can influence the free choice of voters** and weaken:
 - Democracy
 - Rule of law
 - Electoral integrity
- It also issued directions for **time-bound investigations, reporting of seizures, regular monitoring and speedy trials** in election-related black money cases.

What are the Key Directives Issued by the Supreme Court?

- **Reporting of Seized Cash and Assets:**
 - Seized cash or other assets must be reported within **24 hours** to the **District Magistrate, Additional District Magistrate or competent court**.
 - Authorities must also provide reasons showing a **prima facie connection with the suspected electoral offence**.
- **Time-Bound Investigation:**
 - Investigating Officers should complete investigations relating to election-related FIRs within **one year**.
 - Any delay must be properly explained and reported to the **ECI**.
 - **Quarterly status reports** must also be submitted to the **ECI**.

- **Income Tax Coordination:**
 - **Static Surveillance Teams (SSTs)** detecting cash above ₹10 lakh must forward the information to the **Income Tax authorities.**
- **Speedy Trials:**
 - High Courts must ensure **expeditious disposal of election-related black money cases.**
 - Designated courts may be used wherever necessary.
- **Withdrawal of Criminal Cases:**
 - Withdrawal of criminal cases against candidates related to an election cycle requires the **approval of the concerned High Court.**
- **Compliance with Directions:**
 - The **ECI and State Governments** have been directed to submit compliance reports by **18 November 2026.**

Why is Black Money a Threat to Electoral Democracy?

- **Affects Voter Choice:**
 - Democracy depends on the **free and informed choice of voters.**
 - Cash, gifts and other inducements can influence voters and weaken their independent decision-making.
 - This goes against the spirit of **Universal Adult Suffrage under Article 326.**
- **Weakens Equality in Elections:**
 - Unaccounted wealth can give financially powerful candidates an unfair advantage.
 - It creates barriers for **grassroots and resource-poor candidates.**
 - In **Kanwar Lal Gupta v. Amar Nath Chawla (1974)**, the Supreme Court recognised that financial inequality can distort electoral competition.
 - In **Indira Nehru Gandhi v. Raj Narain (1975)**, the Court held that **free and fair elections are part of the Basic Structure of the Constitution.**

- **Encourages Policy Capture:**
 - Illicit political funding can create a **quid pro quo relationship** between financiers and political actors.
 - This may result in:
 - Favourable government policies
 - Biased public procurement
 - Regulatory concessions
 - In the **Electoral Bonds Case (ADR v. Union of India, 2024)**, the Supreme Court struck down the Electoral Bonds Scheme and held that anonymous political funding affected citizens' **Right to Information under Article 19(1)(a).**
- **Strengthens Criminal-Political Nexus:**
 - Large-scale cash distribution can involve **criminal networks and local strongmen.**
 - The **Vohra Committee (1993)** highlighted the nexus between criminals, politicians and bureaucracy.
 - In **Public Interest Foundation v. Union of India (2018)**, the Supreme Court stressed the need to address the **criminalisation of politics.**

What is Black Money in the Electoral Context?

- **Black money in elections** refers to **unaccounted and untaxed money** entering the electoral process outside formal and transparent financial channels.
- It may take the form of:
 - **Cash-for-vote payments**
 - Liquor and gifts
 - Under-reporting of election expenditure
 - **Hawala transactions**
 - Use of shell or letterhead political parties to route funds

What is the Legal and Institutional Framework to Control Electoral Black Money?

- **Representation of the People Act, 1951:**
 - **Section 123(1)** treats bribery as a **corrupt practice** in elections.

- **Candidate Expenditure Limits:**
 - The **Conduct of Election Rules, 1961** provide the framework for prescribed expenditure limits for candidates.
- **Political Party Financial Disclosure:**
 - Following **Common Cause v. Union of India (1996)**, political parties are required to maintain and submit **election-related financial statements**.
- **Candidate Disclosure:**
 - In **Union of India v. Association for Democratic Reforms (2002)**, the Supreme Court recognised voters' right to know about a candidate's:
 - Criminal records
 - Assets
 - Liabilities
 - Qualifications
- **Election Monitoring:**
 - The ECI uses several mechanisms to monitor election expenditure, including:
 - **Expenditure Observers**
 - **Static Surveillance Teams**
 - **Flying Squads**
 - **Video Surveillance Teams**
- **Citizen Participation:**
 - The ECI's **cVIGIL app** allows citizens to report **Model Code of Conduct violations and voter inducements** in real time.
- **Financial Investigation:**
 - The **Income Tax Act, 2025** and **Prevention of Money Laundering Act (PMLA), 2002** provide mechanisms to investigate **unaccounted money and proceeds of crime**.

What Challenges Remain in Controlling Black Money?

- **Inadequate Expenditure Framework:**
 - Section 77 of the RPA, 1951 places limits on candidate expenditure.
 - However, the existing ceiling may not fully reflect the actual cost of election campaigning.

- There is also **no equivalent overall expenditure ceiling for political parties**, creating scope for indirect spending.
- **Anonymous Small Donations:**
 - Under **Section 29C of the RPA, 1951**, political parties are not required to disclose donor identities for contributions below **₹20,000**.
 - This can allow larger contributions to be divided into smaller amounts to hide their actual source.
- **Limited Financial Investigation Capacity:**
 - Although **Article 324** provides the ECI with broad supervisory powers, field-level enforcement depends heavily on State police and district authorities.
 - The ECI also lacks an independent **financial-forensics wing**.
- **Inter-Agency Coordination:**
 - Tracking **hawala networks, shell companies and complex financial transactions** requires coordination among multiple agencies.
 - This can slow down investigations.
- **Weak MCC Enforcement:**
 - The **Model Code of Conduct (MCC)** is largely non-statutory.
 - This limits the ECI's ability to impose direct statutory penalties for some financial violations.
- **Cash-Based Transactions:**
 - Heavy dependence on cash, especially in **informal and rural economies**, makes it difficult to establish the source of seized money.
- **Last-Minute Distribution:**
 - Cash, liquor and gifts may be distributed only **24–48 hours before polling**, making detection difficult.
- **Detection–Conviction Gap:**
 - Seizures and FIRs do not always result in convictions.
 - This weakens the **deterrent effect** of electoral and financial laws.

What Measures Can Strengthen Electoral Integrity?

- **Cap Political Party Expenditure:**
 - Introduce a rational and enforceable ceiling on the **overall election expenditure of political parties**.
- **Digitise Political Funding:**
 - Gradually eliminate cash donations to political parties.
 - Ensure that contributions are routed through **traceable digital banking channels** for better auditability.
- **Strengthen the ECI:**
 - Create an **autonomous financial enforcement wing** within the Election Commission.
 - Integrate real-time information from agencies such as **FIU-IND and CBDT** to identify unusual financial flows during elections.
- **Partial State Funding:**
 - Consider **state funding of elections in kind**, as suggested by the **Indrajit Gupta Committee (1998)**.
 - Support could include:
 - Logistics
 - Digital infrastructure
 - Designated media airtime
- **Fast-Track Electoral Offences:**
 - Establish **specialised fast-track courts** for electoral financial offences.
 - Ensure effective implementation of the Supreme Court's **one-year investigation timeline**.
- **Decriminalise Politics:**
 - Strengthen disqualification provisions for candidates convicted of serious **electoral and organised-crime offences**.

Important Committees and Reports on Electoral Reform

- **Dinesh Goswami Committee, 1990**
 - Focused on **money power** in elections.

- Recommended state support to candidates **in kind**, such as fuel and voter slips.

- **Vohra Committee, 1993**
 - Highlighted the deep nexus between **crime syndicates, politicians and bureaucracy**.
- **Law Commission, 170th Report, 1999**
 - Recommended reforms related to **internal party democracy and financial transparency**.
- **Law Commission, 255th Report, 2015**
 - Examined **electoral reforms and financial irregularities**.
 - Recommended stronger **financial audits of political parties**.

SHANTI Act, 2025 and Nuclear Liability



Why in News?

- The **Supreme Court of India** has begun examining whether the liability limits under the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act, 2025** can restrict constitutional courts from awarding **fair and adequate compensation** to victims of a nuclear disaster.
- The Court is also examining whether **Section 17(4)** of the Act, dealing with appointments to the **Atomic Energy Regulatory Board (AERB)**, may create a **conflict of interest**.
- A **three-judge Bench** headed by the **Chief Justice of India** has sought responses from the **Union Government and AERB**.

What is the SHANTI Act, 2025?

- The **SHANTI Act, 2025** replaced the **Civil Liability for Nuclear Damage (CLND) Act, 2010**.

- Its main objective is to encourage **private-sector participation in India's civil nuclear sector** by creating a more predictable liability framework.
- The Act gives **statutory status to the AERB**, strengthening its role in nuclear safety regulation.
- Certain sensitive activities remain reserved for the **Central Government or its wholly owned institutions**, including:
 - Uranium enrichment
 - Spent-fuel reprocessing
 - High-level radioactive waste management
 - Heavy-water production
- It establishes an **Atomic Energy Redressal Advisory Council**, with the **Appellate Tribunal for Electricity** as the appellate authority.

How Has Nuclear Liability Changed Under SHANTI?

Earlier Framework: CLND Act, 2010

- Followed a **no-fault liability regime**.
- Victims did not have to prove negligence to claim compensation.
- Operator liability for large reactors was capped at **₹1,500 crore**.
- The overall liability for a nuclear incident was capped at **300 million SDR**.
- Operators had a statutory **right of recourse against suppliers** where an accident resulted from defective equipment or certain other specified causes.

SHANTI Act, 2025

The new law introduces **different liability limits based on the size and risk profile of nuclear installations**.

Nuclear Installation	Operator Liability
Thermal power above 3,600 MW	₹3,000 crore
Above 1,500 MW up to 3,600 MW	₹1,500 crore
Above 750 MW up to 1,500 MW	₹750 crore
Above 150 MW up to 750 MW	₹300 crore
Up to 150 MW, certain fuel-cycle facilities and nuclear-material transport	₹100 crore

What Happens After the Operator's Liability Limit is Exhausted?

- Once the operator's statutory limit is exhausted, the **Central Government bears the remaining compensation liability**.
- The total liability for a single nuclear incident is capped at **300 million SDR**, or a higher amount if notified by the Central Government.
- If compensation exceeds this amount, the government may seek additional support through the **Convention on Supplementary Compensation (CSC)**.
- The Act also significantly reduces **statutory supplier liability**.
 - Suppliers are generally protected unless liability is specifically provided in the contract or the incident was caused intentionally.

What are the Other Important Provisions?

Claims and Compensation

- Special mechanisms such as a **Claims Commissioner** or **Nuclear Damage Claims Commission** can handle compensation claims.
- Ordinary civil courts are excluded from these matters.
- Claims must generally be filed within:
 - **10 years** for property damage
 - **20 years** for personal injury

Restricted Nuclear Information

- The Union Government can classify certain nuclear operational information as **restricted**.
- This can limit its disclosure under the **Right to Information framework**.

What is Nuclear Liability?

- **Nuclear liability** is the legal system that determines responsibility and compensation for damage caused by a nuclear incident.
- It decides:
 - What types of damage can be compensated
 - Who can claim compensation
 - Who is legally responsible
 - How compensation will be financed
 - Which authority will decide claims

- A clear liability framework helps reduce **delays, disputes and uncertainty** for victims while giving operators and suppliers greater legal clarity.

Major International Nuclear Liability Conventions

Paris Convention, 1960

- A regional framework under the **OECD Nuclear Energy Agency**.
- Provides for **strict and channelled liability** for nuclear damage.

Vienna Convention, 1963

- Developed under the **IAEA** framework.
- Establishes minimum standards for **financial protection and compensation**.

Brussels Supplementary Convention, 1963

- Supplements the Paris Convention.
- Provides **additional compensation from public funds** when operator liability is insufficient.

Convention on Supplementary Compensation (CSC), 1997

- Provides additional compensation through an **international public fund**.
- It is open to countries regardless of whether they belong to the Paris or Vienna systems.

India's Position

- India is **not a party to the Paris or Vienna Conventions**.
- India **ratified the CSC in 2016** and is a State Party.
- However, India is not currently a party to the **2026 amendment** to the CSC.

What are the Major Concerns with the SHANTI Act?

1. Low Liability Ceiling

- The overall ceiling of **300 million SDR** may be inadequate in the event of a catastrophic nuclear accident.
- Nuclear disasters can create **long-term and multi-generational damage**, including:
 - Radiation-related health impacts
 - Environmental contamination
 - Displacement
 - Loss of livelihoods
 - Restrictions on land use

2. Restrictive Time Limits

- Compensation claims are subject to **10-year and 20-year limits**.
- This raises concerns because some radiation-related diseases and genetic effects may become visible **decades after exposure**.

3. Weaker Safety Incentives

- Liability caps can reduce the financial consequences faced by operators after an accident.
- This may weaken incentives to invest in:
 - Advanced safety systems
 - Maintenance
 - Emergency systems
 - Operational redundancy

4. Constitutional Concerns

- **Article 21:** The Supreme Court's **M.C. Mehta (1987)** judgment established the principle of **absolute liability** for enterprises involved in inherently hazardous activities.
- **Polluter Pays Principle:** The **Indian Council for Enviro-Legal Action (1996)** case recognised the principle that the polluter should bear the cost of environmental damage.
- Critics argue that shifting residual liability to the government could place the burden on **taxpayers**.

5. Article 14 Concerns

- Liability is divided according to reactor size.
- Critics question whether very low liability limits for smaller installations are reasonable because even a smaller nuclear accident can potentially create serious radiation risks.

6. Transparency Concerns

- Restrictions on nuclear information may affect the public's **right to access information** under Article 19(1)(a).
- Limited access to safety information could also make it harder for affected people to establish their claims.

7. AERB Independence

- Government control over appointments to the **AERB** raises concerns about regulatory independence.
- A nuclear safety regulator needs sufficient **institutional, financial and technical**

autonomy to function without political or commercial pressure.

What Measures Can Strengthen India's Nuclear Liability Framework?

- **Independent Nuclear Safety Regulator**
 - Establish a stronger and more autonomous nuclear safety regulator.
 - The proposed **Nuclear Safety Regulatory Authority (NSRA)** framework can be revisited.
 - The **Raja Ramanna Committee (1997)** had recommended strengthening India's nuclear regulatory system.
 - The **NSRA Bill, 2011** proposed a dedicated nuclear safety regulator but eventually lapsed.
- **Use the CSC Mechanism**
 - India can develop stronger mechanisms to access the **international supplementary compensation pool**.
 - This can reduce the financial burden on the Indian exchequer after a major accident.
- **Strengthen the India Nuclear Insurance Pool**
 - Expand the **India Nuclear Insurance Pool (INIP)**.
 - International reinsurance and **Sovereign Catastrophe Bonds** can provide additional financial protection.
- **Strengthen Supplier Accountability**
 - Since statutory supplier recourse has been reduced, **NPCIL and private operators** should include strong contractual supplier-liability provisions.
 - Contracts should clearly address liability for **latent design defects and other serious deficiencies**.

Way Forward

India needs to expand nuclear energy while ensuring that **public safety and victim compensation remain central to the regulatory framework**.

A balanced nuclear liability system should ensure:

- **Independent regulation**
- **Strong safety incentives**
- **Fair compensation**
- **Supplier accountability**
- **Transparency**
- **International financial support**

The Supreme Court's review is therefore significant because it examines how India's nuclear expansion can be balanced with **constitutional rights, public safety and accountability**.

Citizenship (Third Amendment) Rules, 2026



Why in News?

- The **Union Ministry of Home Affairs (MHA)** has amended the citizenship-processing framework under the **Citizenship (Amendment) Act (CAA), 2019**.
- The amendment transfers **pending applications** from the earlier **Empowered Committees and District-Level Committees** to **District Collectors** in specified border States and Union Territories.
- The changes aim to make the processing of citizenship applications **more direct and efficient**.

What are the Citizenship (Third Amendment) Rules, 2026?

- The **Citizenship (Third Amendment) Rules, 2026** empower **District Collectors** to:
 - Receive citizenship applications.
 - Scrutinise applications and documents.
 - Conduct necessary enquiries.
 - Assess eligibility.

- Dispose of applications for **registration or naturalisation** under **Section 6B of the Citizenship Act, 1955.**

CAA Eligibility

The **Citizenship (Amendment) Act, 2019** covers persons belonging to the following communities:

- Hindu
- Sikh
- Buddhist
- Jain
- Parsi
- Christian

They must be from:

- Afghanistan
- Bangladesh
- Pakistan

They must have entered India **on or before 31 December 2014** and satisfy the prescribed statutory conditions.

Areas Covered

The new Collector-based arrangement applies to:

- Gujarat
- Rajasthan
- Punjab
- West Bengal
- Assam
- Tripura

Union Territories

- Jammu and Kashmir
- Ladakh

Exclusion of Protected Areas

- **Section 6B does not apply to:**
 - Sixth Schedule tribal areas of **Assam**
 - Sixth Schedule tribal areas of **Meghalaya**
 - Sixth Schedule tribal areas of **Mizoram**
 - Sixth Schedule tribal areas of **Tripura**
 - Areas covered under the **Inner Line**
- Therefore, the 2026 Collector-based arrangement **expressly excludes the tribal areas of Assam and Tripura.**

Replacement of Earlier Mechanism

- Earlier, CAA applications in these jurisdictions were processed through:
 - **Empowered Committees**
 - **District-Level Committees headed by Designated Officers**
- Under the new arrangement:
 - **District Collectors** will replace these mechanisms.
 - **Pending applications** will be transferred to the concerned District Collector.

Powers of the District Collector

The District Collector can:

- **Receive applications electronically.**
- **Verify documents** submitted by applicants.
- Conduct necessary **enquiries.**
- Assess whether the applicant satisfies the eligibility requirements under **Section 6B** of the Citizenship Act.

Oath of Allegiance and Grant of Citizenship

- The Collector can administer the **Oath of Allegiance** to the applicant.
- If satisfied that the applicant:
 - Meets the eligibility requirements, and
 - Is a **“fit and proper person”,**
- the Collector can grant citizenship through:
 - **Registration,** or
 - **Naturalisation.**

Grounds for Rejection

An application may be rejected if the applicant:

- Fails to **appear personally.**
- Fails to **subscribe to the application.**
- Fails to take the **Oath of Allegiance.**

This applies where the applicant has been given **reasonable opportunities** to complete these requirements.

Significance of the Amendment

- The amendment makes the **District Collector the key competent authority** for CAA applications in the notified regions.
- It replaces the earlier **multi-agency processing mechanism.**
- It is intended to make citizenship processing:
 - **More direct**
 - **More streamlined**
 - **More efficient**

Creamy Layer Principle and SC/ST Reservation



Why in News?

The **Union Government** has opposed extending the “**creamy layer**” principle to **Scheduled Castes (SCs)** and **Scheduled Tribes (STs)** before the Supreme Court.

- The issue gained importance after the **seven-judge Constitution Bench judgment in *State of Punjab v. Davinder Singh (2024)***.
- The judgment allowed **sub-classification within SC/ST reservation** and also suggested considering a creamy layer mechanism to prevent “**elite capture**” of reservation benefits.
- In response, the Centre filed a **counter-affidavit opposing the application of the creamy layer principle to SC/STs**.

What is the Creamy Layer Concept?

- The **creamy layer** refers to relatively advanced individuals within a reserved category who are excluded from certain reservation benefits.
- The concept was formally established by the Supreme Court in ***Indra Sawhney v. Union of India (1992)***.
 - The judgment upheld **27% reservation for OBCs** in government jobs.
 - It directed the exclusion of the **creamy layer** from OBC reservation benefits.
- The principle is based on the idea of “**Relative Equality**”.
 - Treating a relatively wealthy and socially advanced person the same as

a poor and disadvantaged person within the same category may not achieve substantive equality.

Present Application

- **OBCs**
 - The creamy layer principle is currently applied.
 - Only **Non-Creamy Layer (NCL) OBCs** can claim the 27% reservation in public employment and educational institutions.
- **SCs and STs**
 - The creamy layer principle has historically **not been applied**.
 - Their backwardness is understood in terms of **historical caste oppression, untouchability, social stigma and geographical isolation**, rather than economic deprivation alone.

Sub-Categorisation vs Creamy Layer

These two concepts are different.

Sub-Categorisation

- It divides an existing reservation quota into **smaller shares for different groups within the same category**.
- The purpose is to ensure that relatively more disadvantaged groups receive a fair share of reservation benefits.
- States such as **Telangana, Haryana, Punjab and Andhra Pradesh** have a history of SC sub-classification.
- **Mizoram** is an example of ST sub-categorisation.
- At the national level, ST sub-categorisation is used in **Eklavya Model Residential School admissions** to ensure representation for **Particularly Vulnerable Tribal Groups (PVTGs)**.

Creamy Layer Exclusion

- It identifies relatively advanced individuals within a reserved category.
- Such individuals are **excluded from reservation benefits**.

Key Difference

Basis	Sub-Categorisation	Creamy Layer
What it does	Divides the quota among groups	Excludes certain individuals
Main focus	Intra-group distribution	Individual advancement
Objective	Benefit the most disadvantaged groups	Prevent advanced sections from taking reservation benefits
Effect	Redistributes the existing quota	Removes eligible individuals from the quota

EWS Reservation and Exclusion

- The **Economically Weaker Sections (EWS)** reservation, introduced in **2019**, also follows an exclusion principle.
- It is available to individuals who:
 - Are **not covered under SC, ST or OBC reservations**, and
 - Meet the prescribed **family income and asset criteria**.

Why has the Centre Opposed Creamy Layer for SC/STs?

1. Historical and Structural Backwardness

- The Centre argues that SC/ST backwardness is rooted in:
 - **Centuries of historical oppression**
 - **Untouchability**
 - **Social stigma**
 - **Geographical isolation**

- Therefore, SC/ST disadvantage cannot be treated as ordinary **economic backwardness**.

2. Caste Stigma Does Not Automatically Disappear with Economic Mobility

- Economic progress does not necessarily remove **caste-based discrimination**.
- A first-generation SC/ST Class-I officer may achieve financial equality but may still face a lack of:
 - **Social capital**
 - **Cultural capital**
- Financial advancement therefore may not completely protect individuals from social exclusion in institutions such as **academia, corporate boards or the higher judiciary**.

3. Economic Determinism May Be Inadequate

- OBC identification under **Article 340** is based on **social and educational backwardness**,

where economic factors can sometimes act as a proxy.

- SC/ST backwardness, according to the Centre, has a different constitutional basis.
- Treating historical and institutionalised discrimination as merely **economic deprivation** could therefore weaken the original purpose of affirmative action.

4. Parliamentary Role in SC/ST Lists

- The Centre also relies on **Articles 341(2) and 342(2)**.
- These provisions provide that changes to the Presidential lists of SCs and STs can be made by **Parliament through law**.
- The government argues that judicially imposing a creamy layer could effectively alter the operation of these lists.
- This raises concerns regarding the **separation of powers**.
- In **State of Maharashtra v. Milind (2001)**, the Court held that courts cannot alter the SC/ST lists.
- However, **Jarnail Singh (2018)** held that excluding a creamy layer from reservation benefits does not itself alter the Presidential Lists.

5. Constitutional Protection

- SC/ST reservation, particularly reservation in promotions, has special constitutional protection under **Article 16(4A)**.
- Article 16(4A) was inserted through the **77th Constitutional Amendment Act, 1995**.
- The Centre argues that directly applying an OBC-specific doctrine to SC/ST reservation ignores their **different constitutional and legislative history**.

6. Lack of Adequate Empirical Data

- The government has highlighted the need for contemporary **socio-economic data** before introducing any exclusionary mechanism.
- Without detailed data on **intra-group socio-economic mobility**, identifying relatively advanced sections within SC/ST communities could become arbitrary.
- **Census 2027** will include caste enumeration, but its results are not yet available.

- Therefore, the existing data gap continues to limit evidence-based policymaking in this area.

What Measures are Needed for Equitable SC/ST Reservation?

1. Prefer Sub-Categorisation over Economic Exclusion

- States can use the *Davinder Singh* judgment to undertake **evidence-based sub-classification**.
- Dedicated sub-quotas can be provided to the “**weakest of the weak**” within SC/ST communities.
- This can improve intra-category equity without removing the historical basis of SC/ST reservation.

2. Conduct Socio-Economic Audits

- Any major change in affirmative-action policy should be preceded by a **comprehensive socio-economic census**.
- Policy decisions should rely on **empirical evidence** regarding intra-group disparities rather than isolated examples or anecdotal evidence.

3. Recognise the Importance of Social Capital

- Reservation is not simply a tool for **poverty alleviation**.
- It also seeks to promote:
 - **Representation**
 - **Dignity**
 - **Social inclusion**
- Capacity-building measures can help address barriers that are not captured by income alone.

4. Use Targeted Welfare Measures Outside Reservation

- Instead of restricting constitutional reservations, financial criteria can be used in other welfare programmes.
- Such measures could include:
 - **Academic scholarships**
 - **Housing assistance**
 - **Financial grants**

- This would allow government resources to be directed towards the **poorest sections of marginalised communities** without changing the constitutional reservation framework.

Conclusion

The debate over the **SC/ST creamy layer** reflects a larger tension between **substantive equality and historical justice**.

- SC/ST reservation is primarily connected with **adequate representation, social justice and dignity**, rather than poverty reduction alone.
- Applying an income-based exclusion mechanism may therefore fail to capture the continuing impact of **social discrimination and historical disadvantage**.
- **Evidence-based sub-categorisation**, supported by reliable socio-economic data, may provide a more balanced approach to ensuring that reservation benefits reach the **most marginalised sections** without weakening the constitutional purpose of SC/ST reservation.

Supreme Court Revises Judicial Service Entry Rules: New Training-Based Transition Framework



Why in News?

- The **Supreme Court** has modified the implementation of its May 2025 decision that restored the requirement of **prior legal practice for entry-level judicial service**.
- To reduce hardship for law graduates affected by the sudden change, the Court has introduced a **structured two-year training and clerkship mechanism** that will be treated as equivalent to the required period of Bar practice.

Background

- In **May 2025**, the Supreme Court brought back the requirement of **three years of legal practice** for candidates seeking entry into the judicial service.
- This reversed the position adopted in **2002 in the All India Judges' Association case**, under which fresh law graduates could directly take judicial service examinations.
- The Court recognised that many aspirants had prepared their careers assuming the earlier rules would continue.
- Hence, a **transitional arrangement** has been introduced.

Transitional Arrangement: 20 May 2025 – 31 March 2027

During this period:

- Fresh law graduates can **appear for judicial service examinations without prior Bar practice**.
- Such candidates will be **treated as having completed one year of practice**.
- No separate practice certificate will be required for this deemed period.

New Trainee Judicial Officer Model

Selected candidates will not immediately receive full judicial-service status.

Stage	Arrangement
Initial appointment	Trainee Judicial Officer
Remuneration during training	50% of the pay of a Judicial Magistrate First Class (JMFC)
Judicial Academy training	1 year
Supervised clerkship	1 year
Completion	Regular judicial appointment after satisfactory assessment

1. State Judicial Academy Training

- Candidates undergo **one year of intensive institutional training**.
- This period will be considered equivalent to **one year of Bar practice**.

2. Supervised Judicial Clerkship

The second year will consist of practical exposure:

- **6 months** with a **District/Sessions Judge**
- **6 months** with a **sitting High Court Judge**
- This period will also be treated as equivalent to **one year of legal practice**.

Thus, the two-year programme provides a structured substitute for **two years of the practice requirement**.

Regular Judicial Appointment

- Trainees will receive **full judicial rank, regular salary and service benefits** only after successfully completing the training and clerkship.
- Performance will be assessed before confirmation into regular judicial service.

Rule From 1 April 2027

From **1 April 2027**:

- Candidates appearing for the **Civil Judge (Junior Division)** examination must possess at least **one year of actual and certified legal practice**.
- The practice must involve participation in **effective court proceedings**.
- After selection, candidates will undergo the prescribed **two-year training programme**, consisting of judicial academy training and supervised clerkship.
- This structured training will count towards the remaining practice requirement.

Implementation and Review

- **High Courts and State Governments** have been directed to modify their subordinate judicial service rules within **three months**.
- The framework will initially operate for **five years**.
- Its continuation will be assessed through **empirical data and review of its outcomes**.

Why Did the Supreme Court Restore Practice Requirement?

The Court's reasoning is based on the nature of a Civil Judge's responsibilities:

- Civil Judges deal with matters involving **life, liberty, property and individual rights** from the beginning of their judicial careers.
- Prior courtroom exposure can provide familiarity with:

- Court procedures
- Legal practice
- Case handling
- Interaction between the **Bench and Bar**

- The training model therefore seeks to combine **professional legal exposure with institutional judicial training.**

Constitutional Framework of the Subordinate Judiciary

Article	Provision
Article 233	Deals with appointment, posting and promotion of District Judges by the Governor in consultation with the High Court.
Article 234	Governs recruitment to the State judicial service other than District Judges . Appointments are made by the Governor according to rules framed after consultation with the State Public Service Commission and High Court.
Article 235	Places administrative and disciplinary control over subordinate courts with the respective High Court.

Article 233 — District Judges

- The **Governor** appoints, posts and promotes District Judges in consultation with the High Court.
- A person from outside government service must have **at least 7 years of experience as an advocate or pleader.**
- Such appointment also requires a **High Court recommendation.**

Significance

- Creates a **phased transition** between fresh-graduate recruitment and mandatory prior practice.
- Combines **courtroom exposure, judicial training and supervised practical learning.**
- Seeks to improve the **professional readiness of entry-level judges.**
- Reduces disruption for aspirants affected by the sudden restoration of the practice requirement.
- Strengthens the connection between **legal practice and judicial competence.**

Supreme Court on the Meaning of 'Industry' Under the Industrial Relations Code, 2020



Why in News?

- A **nine-judge Constitution Bench of the Supreme Court** has delivered a fractured verdict in the **State of Uttar Pradesh v. Jai Bir Singh** reference concerning the interpretation of “**industry**” under Indian labour law.
- The Court held that the broad interpretation developed in the **1978 Bangalore Water Supply judgment** will continue for cases under the old law, but **cannot automatically be carried forward to the Industrial Relations Code (IRC), 2020.**

Background: The Bangalore Water Supply Case

- The dispute originated from the meaning of “**industry**” under **Section 2(j) of the Industrial Disputes Act, 1947.**
- In **Bangalore Water Supply and Sewerage Board v. A. Rajappa (1978)**, a seven-judge Bench adopted a broad interpretation through the **Triple Test.**

An activity was treated as an industry when it involved:

1. **Organised and systematic activity**
2. **Cooperation between employer and employees**
3. **Production or distribution of goods or services to meet human needs**

Key Features of the 1978 Approach

- **Profit-making was not essential** for an activity to qualify as an industry.

- The interpretation brought several **non-profit and welfare-oriented institutions** within labour-law protection.
- Examples included **hospitals, educational institutions, charitable bodies and municipalities**.
- Only core **sovereign functions**, such as defence, law and order and the judiciary, were kept outside its scope.

State of U.P. v. Jai Bir Singh: 2026 Judgment

The nine-judge Bench has now separated the interpretation of the old law from that of the **Industrial Relations Code, 2020**.

Supreme Court's Position

- The **Triple Test** remains applicable to **pending disputes** arising under the repealed Industrial Disputes Act, 1947.
- It will **not automatically govern future disputes under the IRC, 2020**.
- The new Code will therefore be interpreted on its **own statutory framework**.
- The 1978 judgment will no longer function as the primary precedent for deciding what constitutes an industry under the new Code.

Why a Larger Bench Was Needed?

Year	Development
1978	Seven-judge Bench laid down the broad Triple Test
2005	<i>State of U.P. v. Jai Bir Singh</i> referred the issue for reconsideration
2017	Seven-judge Bench directed reference to a nine-judge Bench
2026	Nine-judge Constitution Bench delivered the present verdict

Divergent Views in the Bench

Majority View

- The 1978 framework may require **modification to suit contemporary industrial conditions**.
- However, the existing test continues to govern disputes arising under the old legislation.

Dissenting View

- Reopening the 1978 ruling was considered unnecessary.

- A broad concept of industry remains important in an era of **privatisation and globalisation**.
- Major changes could generate uncertainty and disturb **industrial relations**.

Other Observations

- The **IRC must be interpreted independently**.
- Lack of a **profit motive alone** does not necessarily remove an organisation from the scope of "industry."

Industrial Relations Code, 2020

The IRC, 2020 consolidates three earlier labour laws:

- **Industrial Disputes Act, 1947**
- **Trade Unions Act, 1926**
- **Industrial Employment (Standing Orders) Act, 1946**

Major Provisions

Area	Provision
Worker Definition	Includes sales promotion employees, working journalists and certain supervisory personnel
Industry	Covers systematic employer-worker activities, irrespective of profit motive or capital investment
Negotiating Union	A union securing 51% membership can become the Negotiating Union
Fixed-Term Employment	Fixed-term workers receive benefits comparable to permanent employees, including gratuity after one year
Strike	14 days' prior notice required
Retrenchment/Lay-off/Closure	Prior government approval required for establishments employing 300 or more workers
Dispute Resolution	Workers can approach Industrial Tribunals directly if conciliation does not resolve the dispute within 90 days

Concerns Raised by Trade Unions

1. Reduced Coverage

The new Code excludes **charitable, philanthropic and social institutions** from the definition of industry.

Trade unions fear that workers in such organisations could lose access to important labour protections and collective bargaining mechanisms.

2. Possibility of Misclassification

With increasing **outsourcing, contractual employment and public-private partnerships**, unions fear that organisations may classify activities as

“charitable” or “governmental” to avoid labour-law obligations.

3. Impact on Collective Bargaining

A narrower definition could reduce the ability of some workers to:

- Form or join unions
- Raise industrial disputes
- Negotiate collectively
- Seek statutory remedies

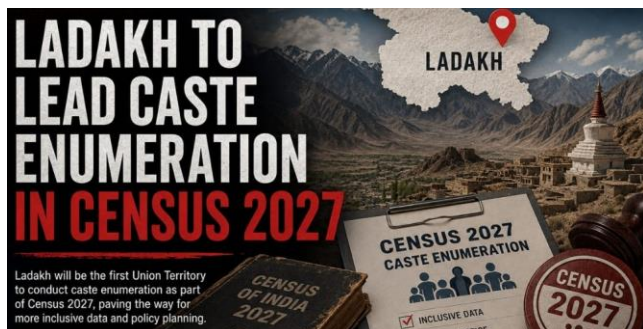
4. Worker–Employer Imbalance

Critics argue that determining status primarily from the **nature of the organisation**, rather than the actual work performed, could make some categories of workers more vulnerable.

Way Forward

- **Strictly interpret exemptions:** Non-sovereign commercial activities undertaken by governments or charitable bodies should not receive blanket exemption.
- **Follow substance over form:** The actual nature of work and employer-worker relationship should matter more than the organisation's formal label.
- **Create alternative grievance mechanisms:** Workers excluded from the definition of industry should still have accessible forums for resolving employment disputes.
- **Protect constitutional objectives:** Labour-law interpretation should remain consistent with the **Directive Principles of State Policy**, particularly:
 - **Article 43:** Living wage and decent conditions of work
 - **Article 43A:** Workers' participation in management of industries

Census 2027: Caste Enumeration to Begin in Ladakh



Why in News?

- **Ladakh** is set to become the first region to implement the **caste enumeration methodology** during the second phase of **Census 2027 — Population Enumeration (PE)**.
- The exercise will test the operationalisation of caste data collection within the **statutory Census framework**.

Caste Enumeration Methodology

- For respondents belonging to communities **other than Scheduled Castes (SCs) and Scheduled Tribes (STs)**, caste details are expected to be collected through an **open-ended response column**.
- The methodology was tested during the **Population Enumeration pre-test conducted from 1–20 July 2026** across **16 States and Union Territories**.
- The same approach is likely to be incorporated into the final Census questionnaire.
- The Population Enumeration schedule is expected to contain around **40 questions** covering:
 - Caste
 - Demographic characteristics
 - Other population-related information

Early Population Enumeration in Snow-Bound Areas

Due to difficult winter conditions, enumeration will begin earlier in Ladakh and selected snow-bound regions.

Region	Population Enumeration	Revisional Round
Ladakh	1–30 September 2026	1–5 October 2026
Designated snow-bound areas of J&K, Himachal Pradesh & Uttarakhand	1–30 September 2026	1–5 October 2026

Census 2027: Key Features

- **First digital Census of India**
- Caste information will be collected as part of the **statutory Census exercise**.
- However, sensitive **defence establishments along the LAC in Ladakh** will be recorded through **paper schedules**.

- Such locations will be classified as “special charges” to prevent geo-tagging and disclosure of strategically sensitive sites.

Census 2027 vs SECC 2011

Aspect	SECC 2011	Census 2027
Nature	Socio-economic survey conducted separately	Part of statutory Census
Legal framework	Outside the Census Act, 1948	Within the Census exercise
Caste collection	Open-response format	Open-ended caste column
Caste names generated	Over 46 lakh	Methodology intended to be standardised within Census framework
Purpose	Socio-economic identification and welfare targeting	Population enumeration including caste and demographic information

Significance

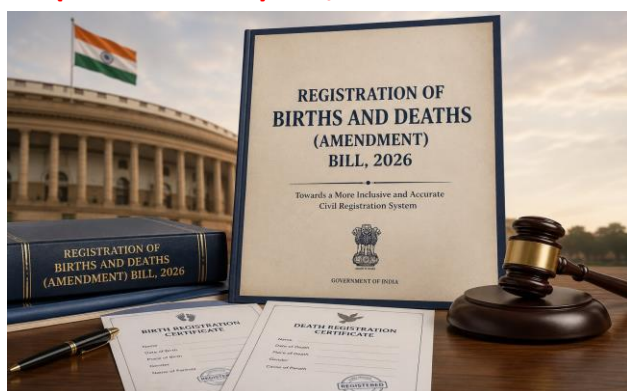
- Makes caste enumeration a formal component of the Census process.
- Provides a structured institutional framework for collecting caste-related population data.
- The experience from Ladakh and other snow-bound areas will be important for managing difficult geographical conditions.
- The use of digital enumeration alongside paper-based recording for sensitive defence locations reflects the need to balance technological modernisation with national security and data confidentiality.



Crux of The Hindu & Indian Express

Indian Polity & Governance

Registration of Births and Deaths (Amendment) Bill, 2026



Why in News?

- Parliament passed the Registration of Births and Deaths (Amendment) Bill, 2026, strengthening provisions related to delayed registration of births and deaths.
- The amendment changes the authority responsible for registrations delayed by more than two years, transferring approval from an Executive Magistrate to a Judicial Magistrate First Class (JMFC).
- This is the second major amendment to the Registration of Births and Deaths Act within three years, following the Registration of Births and Deaths (Amendment) Act, 2023.

Why is the Registration of Births and Deaths Act Important?

- The Registration of Births and Deaths Act, 1969 forms the foundation of India's civil identity system.
- A birth certificate is the primary document from which several identity documents are derived, including:
 - Aadhaar
 - Passport
 - Electoral Roll
 - Ration Card
 - School Admission
- The 2023 amendment made this role legally explicit by recognising the birth certificate as the primary proof of date and place of birth.

What are the Key Provisions of the Registration of Births and Deaths (Amendment) Bill, 2026?

Stricter Delayed Registration Framework

The amendment revises Section 13(3) of the Registration of Births and Deaths Act, 1969.

Registration Between One and Two Years

- Births or deaths reported after one year but within two years can be registered only with approval of:
 - District Magistrate (DM)
 - Sub-Divisional Magistrate (SDM)
 - Executive Magistrate authorised by the DM.

Registration After More Than Two Years

- Births or deaths reported **after two years** can now be registered **only on the order of a Judicial Magistrate First Class (JMFC)**.
- This replaces the earlier provision where Executive Magistrates handled all registrations delayed beyond one year.

Mandatory Verification

- The designated authority must verify the authenticity of the reported birth or death before granting permission for delayed registration.

Legal Harmonisation

- References to the **Code of Criminal Procedure (CrPC), 1973** are replaced with the **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**.
- Executive Magistrates function under **Section 14 of BNSS**.
- Judicial Magistrates First Class function under **Section 9 of BNSS**.

Objective

- Make delayed registration more stringent.
- Encourage timely reporting of births and deaths.
- Improve the reliability and authenticity of civil registration records.

Financial Implication

- According to the **Financial Memorandum**, the amendment has **no additional financial burden** on the government.

Legislative Timeline

- Introduced in the **Lok Sabha** by the **Union Home Minister** on **24 July 2026**.
- Passed by both Houses of Parliament.
- Will come into force on a date notified by the Central Government after receiving Presidential assent.

Registration of Births and Deaths Act, 1969

About

- Makes registration of all:
 - Births

- Deaths
 - Stillbirths
- mandatory at the place of occurrence.

Civil Registration System (CRS)

- India records births, deaths and stillbirths through the **Civil Registration System (CRS)**.
- Operates under the **Office of the Registrar General and Census Commissioner of India** under the **Ministry of Home Affairs**.
- Since **October 2023**, registrations are maintained digitally through CRS.

Registration Authorities

- Registrar General of India (RGI)
- Chief Registrars
- District Registrars
- Local Registrars

Reporting Timeline

- Births, deaths and stillbirths must ordinarily be reported within **21 days**.
- Delayed registration attracts prescribed procedures and late fees.

Responsibility for Reporting

- **Hospitals:** Medical Officer or authorised official.
- **Home births/deaths:** Head of the household or prescribed informant.

Background: Registration of Births and Deaths (Amendment) Act, 2023

Digital Civil Registration

- Established a statutory digital Civil Registration System.
- Introduced electronic registration and digital certificates.

Birth Certificate as a Single Identity Document

For persons born on or after **1 October 2023**, the birth certificate serves as proof for:

- School admission
- Aadhaar
- Passport
- Electoral roll preparation
- Driving licence
- Marriage registration
- Government employment

- Other purposes notified by the Central Government.

Data Sharing

The CRS database may be shared, with government approval, for:

- Population Register
- Electoral Rolls
- Aadhaar
- Ration Cards
- Passports
- Driving Licences
- Property Registration

Earlier Delayed Registration Framework

- **30 days to one year:** Written permission of District Registrar with documents and fee.
- **More than one year:** Executive Magistrate approval.
- **2026 amendment:** Splits this category by requiring JMFC approval for delays beyond two years.

Penalty

- Ordinary informants: Penalty increased from ₹50 to ₹250.
- Institutional authorities (hospital heads, jail authorities, adoption agencies etc.): Up to ₹1,000 per event.

Status of Civil Registration in India

Coverage

Until 2000

- Birth registration: **56%**
- Death registration: **48%**

2014

- Birth registration: **86.6%**
- Death registration: **72.5%**

2024

- Birth registration: **99.1%**
- Death registration: **99.4%**
- **18 States/UTs** achieved **100% birth registration**.
- **21 States/UTs** achieved **100% death registration**.

Reasons for Improvement in Registration

Birth Registration

- Increase in institutional deliveries.
- Birth certificates required for:
 - School admission
 - Identity documents
 - Welfare benefits
 - Other official purposes.

Death Registration

- Expansion of formal healthcare.
- Wider health insurance coverage.
- Need for death certificates for:
 - Pension
 - Insurance
 - Inheritance
 - Property transfer
 - Bank accounts
 - Administrative purposes.

Legal Reforms

- The **Registration of Births and Deaths (Amendment) Act, 2023** improved completeness, accessibility and timeliness of registration.

How Late is Late? (CRS Report, 2024)

Births

- **25.47 million births** registered.
- Around **70%** registered within the prescribed **21-day period**.
- Around **5.87 million births** (nearly one-fourth of registrations) were registered **more than one year** after birth.

Deaths

- **8.94 million deaths** registered.
- Around **6.27 lakh deaths** were registered **more than one year** after occurrence.

States with Highest Delayed Birth Registrations

- Bihar
- Uttar Pradesh
- Rajasthan
- Madhya Pradesh
- Jharkhand
- Jammu & Kashmir

Regional Pattern

- North-Eastern States and Himalayan regions recorded very high proportions of delayed birth registrations.
- The CRS report does **not distinguish** between registrations delayed **1–2 years** and **more than 2 years**.
- Therefore, the exact number of cases that will now require JMFC approval cannot be determined from available data.

Significance of Civil Registration

Administrative Importance

- Supports population estimation.
- Helps estimate:
 - Fertility
 - Mortality
 - Sex ratio at birth.
- Assists in evaluating health and social policies.

Real-Time Information

- Enables monitoring of demographic changes.
- Helps study seasonal mortality due to heat and pollution.

Local Planning

- District-level and sub-district-level data improve programme planning and decentralised governance.

Legal Identity

- Provides legally recognised proof of identity and civil status.

Concerns

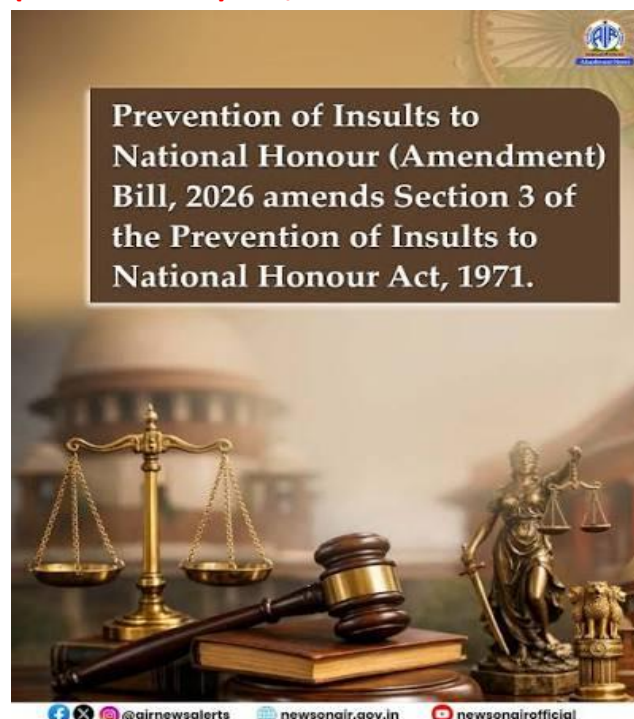
- Regional disparities in CRS implementation.
- Delayed registration beyond the prescribed 21-day period.
- Incomplete medical certification of causes of death.
- Need for better data quality, governance and secure digital records.
- Lack of systematic recording of internal migration.

Way Forward

- Improve awareness and simplify registration procedures.
- Expand Medical Certification of Cause of Death (MCCD).

- Strengthen digital infrastructure and monitoring in low-performing regions.
- Ensure secure use of CRS data while improving inter-agency coordination.
- Integrate internal migration records for better administrative planning.

Prevention of Insults to National Honour (Amendment) Bill, 2026



Why in News?

- The **Prevention of Insults to National Honour (Amendment) Bill, 2026** was introduced to amend **Section 3** of the **Prevention of Insults to National Honour Act, 1971**.
- The Bill extends the same legal protection available to the **National Anthem (Jana Gana Mana)** to the **National Song (Vande Mataram)**.
- It makes it an offence to **intentionally prevent the singing of Vande Mataram or disturb an assembly engaged in its singing**.

Why Was the Amendment Proposed?

- The **1971 Act** already provides legal protection to the **National Anthem** by criminalising intentional obstruction or disturbance during its singing.
- During the **Constituent Assembly meeting on 24 January 1950**, **Dr. Rajendra Prasad** stated

that **Vande Mataram** should be honoured equally with **Jana Gana Mana**.

- However, no specific legal provision existed to provide similar statutory protection to the **National Song**.
- The amendment seeks to remove this legal gap.

Key Provisions of the Amendment Bill

Amendment to Section 3

- Expands Section 3 to cover both:
 - **National Anthem (Jana Gana Mana)**
 - **National Song (Vande Mataram)**

Prohibited Acts

A person commits an offence if he/she intentionally:

- Prevents the singing of:
 - National Anthem, or
 - National Song
- Causes disturbance to an assembly engaged in singing either of them.

Short Title

- The amended law shall be known as the **Prevention of Insults to National Honour (Amendment) Act, 2026**.

Key Changes Introduced

Provision	1971 Act	2026 Amendment
Scope of Protection	Applied only to the National Anthem.	Extends protection to both the National Anthem and the National Song.
Prohibited Conduct	Preventing or disturbing the singing of the National Anthem.	Preventing or disturbing the singing of the National Anthem or the National Song.
Punishment	Imprisonment up to 3 years , or fine, or both.	No change in punishment.
Repeat Offenders	Minimum 1-year imprisonment for second or subsequent offences under Sections 2 or 3 (Section 3A).	Same enhanced punishment now also applies to offences involving Vande Mataram .

Vande Mataram

About

- **Vande Mataram** means "**Mother, I Bow to Thee**."
- Composed by **Bankim Chandra Chatterjee**.

Publication

- First published in **Bangadarshan** on **7 November 1875**.

- Later included in the novel **Anandamath (1882)**.

Musical Adaptation

- Set to music by **Rabindranath Tagore**.
- First sung at the **1896 Indian National Congress Session** in Calcutta.

Role in Freedom Movement

- Became a powerful symbol of India's freedom struggle.
- First used as a political slogan during the **Swadeshi Movement** on **7 August 1905**.

Constituent Assembly Recognition

- On **24 January 1950**, **Dr. Rajendra Prasad** stated that **Vande Mataram** should be honoured equally with **Jana Gana Mana**.

Prevention of Insults to National Honour Act, 1971

About

- Enacted on **23 December 1971**.
- Extends to the whole of India.
- Provides statutory protection to:
 - National Flag
 - Constitution of India
 - National Anthem

Section 2 – National Flag and Constitution

- Punishes anyone who publicly:
 - Burns
 - Defaces
 - Defiles
 - Destroys
 - Mutilates
 - Tramples upon
 - Shows disrespect to the National Flag or Constitution.
- Punishment:
 - Imprisonment up to **3 years**, or
 - Fine, or
 - Both.

Lawful Criticism

- Legitimate criticism aimed at securing lawful amendment of the Constitution, National Flag, or government measures **does not constitute an offence**.

Section 3 – National Anthem

- Punishes intentional prevention of the singing of the **National Anthem** or causing disturbance during its singing.
- Punishment:
 - Imprisonment up to **3 years**, or
 - Fine, or
 - Both.

Section 3A – Repeat Offences

- Inserted through the **2003 Amendment**.
- Provides **minimum one-year imprisonment** for second and subsequent convictions under Sections **2 or 3**.
- Following the **2026 Amendment**, the same enhanced punishment also applies to repeat offences involving the **National Song (Vande Mataram)**.

Foreign Contribution (Regulation) Act (FCRA): Transparency, Sovereignty and Democratic Accountability



Why in News?

- The **Foreign Contribution (Regulation) Amendment Bill, 2026** was introduced in the Lok Sabha on **25 March 2026**, while the **Foreign Contribution (Regulation) Amendment Rules, 2026** were notified on **22 June 2026**.
- These reforms seek to strengthen **transparency, accountability, governance and regulatory clarity** in the administration of foreign contributions while addressing operational gaps observed over the years.
- The amendments build upon the existing framework of the **Foreign Contribution (Regulation) Act, 2010**, rather than introducing an entirely new regulatory regime.

Background

- Globalisation has significantly increased the movement of **people, capital, ideas, technology and financial resources** across national borders.
- International philanthropy, charitable foundations, development agencies and research institutions now routinely support activities in education, healthcare, scientific research, environmental conservation, disaster management and community development across countries.
- India has also benefited from these international partnerships.
- Thousands of educational institutions, hospitals, research organisations, charitable trusts and non-governmental organisations receive foreign contributions for developmental activities.

However, increasing global financial integration has also created concerns regarding:

- Transparency of cross-border financial flows
 - Foreign influence on domestic institutions
 - Protection of democratic processes
 - National security
 - Accountability in utilisation of foreign funds
- Consequently, many democratic countries have strengthened legal frameworks regulating foreign funding.
 - The **Foreign Contribution (Regulation) Act (FCRA)** should therefore be viewed within this broader international context.
 - The Act seeks to facilitate **legitimate international cooperation** while ensuring that foreign contributions are received, utilised and reported in accordance with Indian law.

What is the Foreign Contribution (Regulation) Act (FCRA)?

The **Foreign Contribution (Regulation) Act (FCRA)** is India's principal legislation governing the receipt and utilisation of foreign contributions by:

- Individuals
- Associations

- Non-Governmental Organisations (NGOs)
- Trusts
- Societies
- Companies

It is administered by the **Ministry of Home Affairs (MHA)**.

The Act regulates foreign contributions received in the form of:

- Money
- Securities
- Articles

from sources located outside India.

Three Core Functions of FCRA

- The Act performs three fundamental functions.

1. Determines Eligibility

It specifies:

- who may receive foreign contributions,
- under what conditions they may receive them.

2. Regulates Receipt and Utilisation

The Act prescribes:

- the manner of receiving foreign funds,
- accounting procedures,
- reporting requirements,
- utilisation norms.

3. Restricts Sensitive Activities

The Act regulates only a **limited category of foreign-funded activities** that may adversely affect:

- Sovereignty
- National security
- Public order

rather than restricting all foreign-funded activities.

Does FCRA Ban Foreign Funding?

- **No**
- The Act explicitly states that **FCRA does not prohibit Indians from receiving foreign donations**.
- Thousands of registered organisations continue to receive foreign contributions for:
 - Healthcare
 - Education
 - Scientific research
 - Humanitarian assistance

- Disaster relief
- Community development

The Act functions as a **registration and disclosure regime**, comparable to similar frameworks operating in countries such as:

- United States
- United Kingdom
- Australia
- Canada

rather than a "permission-to-exist" regime for civil society organisations.

Core Objectives of FCRA

- The framework identifies five guiding principles that have remained substantially unchanged since the original enactment of the law.

1. Transparency

Every organisation receiving foreign contribution must:

- Register with the Government.
- Receive funds through a designated banking channel.
- Maintain proper accounts.
- Disclose:
 - donors,
 - amount received,
 - utilisation of funds.

This creates complete visibility regarding the movement of foreign funds.

2. Accountability

Recipient organisations are required to:

- Maintain audited accounts.
- File annual returns.
- Record donor details.
- Record utilisation of every contribution.

The objective is to establish a fully traceable chain from the foreign donor to the final activity carried out in India.

3. Protection of Sovereignty

Foreign contributions likely to adversely affect:

- India's sovereignty,
- democratic institutions,
- electoral processes,

- public order,
- national security,

are subject to regulation.

This should not be interpreted as opposition to legitimate charitable activities but as an exercise of sovereign governance.

4. Facilitating Genuine Development Work

The Act is intended to enable legitimate international cooperation.

Foreign funding continues to support activities such as:

- Education
- Healthcare
- Poverty alleviation
- Disaster management
- Environmental protection
- Cultural exchange
- Scientific research

within the prescribed regulatory framework.

5. Public Confidence

Transparency in foreign funding strengthens public trust because citizens know that foreign contributions are:

- registered,
- disclosed,
- audited,
- publicly reported.

This protects both beneficiaries and donor intent.

Evolution of FCRA

- India's foreign contribution framework has gradually evolved over nearly five decades with the objective of strengthening transparency rather than imposing new prohibitions.

Year	Major Development
1976	Original FCRA enacted to regulate foreign contributions and foreign hospitality in a sovereign democratic republic.
1984	Registration made compulsory for NGOs receiving foreign funds; judges brought within the Act; definitions expanded; audit powers strengthened.
2010	FCRA, 2010 replaced the 1976 Act. Introduced mandatory renewal every five years, stricter registration, suspension, cancellation, vesting of assets and compounding of offences.
2011	Operational Rules notified for registration, designated bank accounts and reporting formats.

2020	Aadhaar/Passport verification, single SBI account, prohibition on sub-granting, administrative expense ceiling reduced from 50% to 20%, government inquiry before renewal.
2022	Limit for contributions from relatives abroad increased from ₹1 lakh to ₹10 lakh; compounding provisions introduced.
2024–25	Carry forward of unspent administrative expenses, clarification regarding TDS refunds, stronger application documentation.
2026 (Proposed)	Designated Authority, activity-specific registration, State-specific approval, exclusion of proselytisation from permitted religious activity.

How FCRA Works in Practice

- The FCRA operational framework can be understood step by step.

Registration and Prior Permission

Organisations may receive foreign contribution through:

- regular registration (minimum three years of operation), or
- prior permission for a specific project.

Identity verification, organisational details and proposed activities are mandatory.

Release of Large Contributions

- Large foreign contributions are released in installments.

Before the next instalment is released:

- at least **75%** of the previous instalment must be utilised and verified.

Single Entry Point

- All foreign contributions must first reach the designated **State Bank of India, New Delhi Main Branch**, ensuring a single auditable entry point.

Purpose-Based Utilisation

- Funds must be spent only for declared purposes.
- Administrative expenditure cannot exceed **20%** of annual foreign contribution.

Annual Disclosure

Every organisation files **Form FC-4**, containing:

- donor details,
- audited accounts,
- utilisation statements.

Five-Year Renewal

- Registration is valid for **five years**.

- Renewal depends upon compliance review and verification that the organisation remains active.

Restricted Categories

- Certain categories remain permanently ineligible to receive foreign contribution, including election candidates, legislators, judges, government servants, political parties and specified media persons.

Vesting of Assets

- Upon cancellation, surrender or cessation of registration, assets created through foreign contribution vest in the prescribed authority under **Section 15 of the FCRA, 2010**. Permitted Uses of Foreign Contributions under FCRA
- The FCRA permits foreign contributions to be utilised across a wide range of developmental sectors. The Act does not prohibit foreign funding for welfare activities; rather, it regulates the manner in which such funds are received and used.

Sector	Illustrative Activities
Education	Schools, colleges, vocational training, scholarships, educational research, libraries, adult literacy programmes
Healthcare	Hospitals, clinics, mobile medical units, maternal and child healthcare, disability support, community health education
Rural Development	Watershed management, livelihood generation, agricultural extension, sanitation, housing and drinking water projects
Social Welfare	Welfare of persons with disabilities, elderly care, child welfare, women empowerment and rehabilitation programmes
Environment	Afforestation, biodiversity conservation, clean energy, pollution control, wildlife protection and environmental research
Culture & Heritage	Preservation of cultural heritage, folk arts, indigenous knowledge, museums and archives
Relief & Rehabilitation	Disaster relief, emergency response, rehabilitation and resettlement activities
Faith-Based Welfare	Maintenance of places of worship, religious education, meditation programmes and preservation of faith traditions
Scientific Research	Research institutions, laboratories, academic collaboration, publications and dissemination of knowledge

Thus, the Act recognises that foreign contributions continue to play an important role in India's social and developmental sectors while ensuring proper regulatory oversight.

FCRA Amendment Bill, 2026: Major Changes

- The **Foreign Contribution (Regulation) Amendment Bill, 2026**, introduced in the Lok Sabha on **25 March 2026**, seeks to address operational gaps identified during the implementation of the FCRA, 2010.
- the proposed amendments are primarily **administrative and governance-oriented** and build upon the existing legal framework.

1. Introduction of a Designated Authority

Background

Section 15 of the **FCRA, 2010** already provided for vesting of assets created out of foreign contributions after cancellation of registration. However, the Act did not prescribe a detailed mechanism regarding:

- Taking custody of such assets.
- Managing and maintaining them.
- Returning them if registration was restored.
- Disposing of them where restoration did not occur.

The absence of detailed procedures created administrative difficulties, especially when thousands of registrations were cancelled or ceased over the past decade. The 2026 Bill seeks to establish a structured framework by introducing a **Designated Authority**.

2. Provisional Vesting of Assets

When an organisation's FCRA registration ends because of cancellation, surrender or cessation:

- Assets created from foreign contributions will initially vest **provisionally** in the Designated Authority.
- The authority merely acts as a custodian during this period.

If the organisation subsequently succeeds in restoring its registration within the prescribed time, **all assets and unused foreign contributions are returned in full**.

This principle is broadly similar to the arrangement that has existed under Section 15 of the FCRA, 2010, where vesting has effectively been provisional in practice.

3. Permanent Vesting

Permanent vesting occurs only if the organisation **fails to restore its registration within the prescribed period**.

In such cases:

- Assets vest permanently in the Designated Authority.
- Assets are utilised for **public purposes**.
- If direct public use is not feasible, sale proceeds are credited to the **Consolidated Fund of India**.
- The framework explicitly states that **no public official derives any personal benefit** from such assets.

This provision is intended to provide legal finality because indefinite provisional custody is administratively impractical.

4. Protection of Religious Institutions

The Bill specifically safeguards the religious character of places of worship.

Accordingly, the Designated Authority:

- cannot convert,
- repurpose,
- secularise,

any place of worship while administering vested assets. This provision seeks to ensure that religious institutions retain their original character irrespective of changes in the administrative status of the organisation.

5. Revision and Judicial Appeal

The proposed Amendment strengthens procedural safeguards by introducing a two-tier remedy.

Any organisation aggrieved by an order of the Designated Authority may:

Step 1: Revision

- Seek revision within **90 days**.

Step 2: Judicial Appeal

- Appeal before the **Court of the District Judge**.

Judicial oversight is expressly incorporated into the proposed framework.

6. Automatic Cessation of Registration

- The Bill proposes insertion of **Section 14B**, under which FCRA registration would automatically cease if it is not renewed before expiry.
- The objective is not to introduce a new substantive rule but to remove ambiguity regarding the legal status of organisations

whose registration certificates have expired without renewal.

7. Rationalisation of Punishment

The proposed Amendment reduces the maximum imprisonment for FCRA violations:

- **Earlier:** Five years
- **Proposed:** One year

This is described as a move towards a more proportionate and calibrated enforcement framework.

8. Coordinated Investigations

- The Bill proposes that State Governments and their agencies obtain prior approval from the **Central Government** before initiating investigations under the FCRA.

this aims to:

- prevent parallel investigations,
- ensure consistency,
- avoid contradictory proceedings under a central law.

FCRA Amendment Rules, 2026

- Unlike the Amendment Bill, which is pending before Parliament, the **FCRA (Amendment) Rules, 2026** have already been notified and are in force.

1. Activity-Specific Registration

Registration certificates will no longer contain broad descriptions of activities.

Instead, each certificate must specify:

- exact approved purpose(s),
- approved State(s) or Union Territory(ies).

Existing organisations have one year to intimate the purposes and geographical areas they intend to retain.

The objective is to replace broad permissions with **precise, monitorable approvals**.

2. Clarification of Faith-Based Activities

- The Rules explicitly list permissible religious activities eligible for foreign funding.
- this is intended to provide greater regulatory clarity for faith-based organisations across all communities.

3. Minimum Utilisation Requirement

- For renewal of registration, an NGO must demonstrate utilisation of at least **₹10 lakh** in foreign contributions during the previous two years.

Background of the Cauvery Water Dispute

Historical Background

- Historically, **Tamil Nadu** utilised nearly **602 TMC** of the Cauvery's water, leaving only about **138 TMC** for Karnataka.
- In **1924**, Tamil Nadu constructed the **Mettur Dam**, and Karnataka (then Mysore) and Madras Presidency signed a **50-year agreement**.
- The agreement permitted:
 - Tamil Nadu to expand irrigation from **16 lakh acres to 27 lakh acres**.
 - Karnataka to increase irrigation from **3 lakh acres to 10 lakh acres**.
- After the agreement expired in **1974**, Karnataka claimed that it restricted its irrigation development and began constructing reservoirs, leading to disputes with Tamil Nadu.
- On Tamil Nadu's demand, the **Cauvery Water Disputes Tribunal (CWDT)** was constituted by the Union Government in **1990**.

Cauvery Water Disputes Tribunal (CWDT) Award, 2007

Water Allocation

Out of **740 TMC** of utilisable water, the Tribunal allocated:

- Tamil Nadu: 419 TMC**
- Karnataka: 270 TMC**
- Kerala: 30 TMC**
- Puducherry: 7 TMC**
- Environmental Protection: 14 TMC**

Monthly Water Release by Karnataka

During a normal water year (**June–May**), Karnataka was directed to release **192 TMC** annually at **Biligundlu** according to the following schedule:

Month	Water Release
June	10 TMC
July	34 TMC
August	50 TMC
September	40 TMC
October	22 TMC
November	15 TMC
December	8 TMC

January	3 TMC
February	2.5 TMC
March	2.5 TMC
April	2.5 TMC
May	2.5 TMC

- In **distress years**, water allocation was to be **reduced proportionately** among Karnataka, Tamil Nadu, Kerala and Puducherry.
- Karnataka challenged the award seeking **312 TMC**, while Tamil Nadu also approached the Supreme Court.

Supreme Court Judgment (2018)

Revised Water Allocation

The Supreme Court modified the Tribunal's award:

- Karnataka:** Increased from **270 TMC** to **284.75 TMC**
- Tamil Nadu:** Reduced from **419 TMC** to **404.25 TMC**
- Tamil Nadu was permitted to extract an additional **10 TMC of groundwater**.
- Kerala:** 30 TMC (unchanged)
- Puducherry:** 7 TMC (unchanged)

Key Observation

- The Court held that **Karnataka's drinking water requirements**, particularly for **Bengaluru**, deserve higher priority.

Mekedatu Project

About

- Proposed **48 TMC balancing reservoir** on the **Cauvery River**.
- Located at **Mekedatu** in **Ramanagara district**, Karnataka, about **100 km south of Bengaluru**, close to the Tamil Nadu border.
- Estimated project cost is around **₹6,000 crore**.

Objectives

According to Karnataka, the project aims to:

- Supply **drinking water to Bengaluru**.
- Recharge **groundwater**.
- Generate **hydropower**.
- It is **not intended for additional irrigation** and therefore would not alter the water allocation fixed by the **CWDT** or the **Supreme Court**.

Why Does Tamil Nadu Oppose the Project?

- Tamil Nadu argues that increased **upstream storage** would allow Karnataka to regulate water releases during **dry and distress years**.
- This could reduce water availability for **farmers in the Cauvery Delta**.
- Tamil Nadu cites **Clause XI of the CWDT Award**, which states:
 - An **upper riparian State** should not undertake any activity affecting scheduled water deliveries to downstream States.
 - Any modification in delivery schedules requires **mutual agreement** and consultation with the **Regulatory Authority**.
- Hence, Tamil Nadu contends that the Mokedatu project cannot be treated merely as an engineering project but must comply with the legal framework governing interstate river sharing.

Immediate Background

- Between **1 June and 23 July**, Tamil Nadu was entitled to receive about **32 TMC** under the Tribunal Award as modified by the Supreme Court.
- However, it received only around **3.5 TMC**.
- Even after accounting for deficient southwest monsoon rainfall and distress-year reductions, Tamil Nadu argues that at least **3 TMC more** should have been released.
- Delayed or reduced releases threaten agriculture in the **Cauvery Delta**.
- The **Cauvery Water Regulation Committee (CWRC)** subsequently directed Karnataka to release **4 TMC** at a rate of **3,500 cusecs per day for 15 days**.
- The Tamil Nadu Chief Minister has also sought a meeting with the Karnataka Deputy Chief Minister to discuss the issue through dialogue.

Key Facts About the Cauvery (Kaveri) River

About

- Known as the "**Ganga of the South**".

- One of India's major **east-flowing peninsular rivers** and the subject of one of the country's longest-running interstate water disputes.

Origin and Course

- Originates at **Talakaveri** in the **Brahmagiri Hills, Kodagu (Karnataka)**.
- Flows through **Karnataka** and **Tamil Nadu** before emptying into the **Bay of Bengal** near **Poompuhar**.

Drainage Basin

- Covers about **81,155 sq. km** across:
 - Karnataka
 - Tamil Nadu
 - Kerala
 - Puducherry

Unique Feature

- A **perennial river** because:
 - Upper basin receives the **Southwest Monsoon**.
 - Lower basin receives the **Northeast Monsoon**.

Major Tributaries

Left-bank Tributaries

- Harangi
- Hemavati
- Shimsha
- Arkavati

Right-bank Tributaries

- Lakshmana Tirtha
- Kabini
- Suvarnavathi
- Bhavani
- Noyyal
- Amaravati

Major Dams

- **Krishna Raja Sagara (Karnataka)**
- **Mettur Dam (Tamil Nadu)**

Protected Areas in the Basin

- **Nagarhole National Park (Karnataka)**
- **Wayanad Wildlife Sanctuary (Kerala)**
- **Sathyamangalam Tiger Reserve (Tamil Nadu)**

National Financial Reporting Authority (NFRA) Outreach Programme



राष्ट्रीय वित्तीय रिपोर्टिंग प्राधिकरण
National Financial Reporting
Authority

Why in News?

- The **National Financial Reporting Authority (NFRA)** conducted its **sixth outreach programme** in **Ahmedabad**.
- Theme: **“Creating a Better Financial Reporting Ecosystem”**
- The programme focused mainly on **small and medium auditors**.
- Main aims:
 - Improve professional capacity
 - Strengthen audit quality
 - Improve the quality of financial reporting

Key Highlights

- The outreach programme series began in **2025**.
- It was the **second programme organised with the Institute of Chartered Accountants of India (ICAI)**.
- The first NFRA-ICAI outreach programme was held at **Pune in June 2026**.
- It was inaugurated by:
 - **Nitin Gupta**, Chairperson, NFRA
 - **CA Prasanna Kumar D**, President, ICAI

Technical Sessions

- The expert sessions focused on practical aspects of improving audit quality.

Major topics included:

- **Audit Strategy Documentation**
- **Risk of Material Misstatements**
- **Case studies based on NFRA's oversight and findings**

Participation

- Since the programme began in 2025, NFRA's outreach programmes have received participation from representatives of **more than 450 small and medium audit firms**.

National Financial Reporting Authority (NFRA)

About NFRA

- NFRA is an **independent regulatory body**.
- Established by the Government of India under **Section 132(1) of the Companies Act, 2013**.
- **Headquarters:** New Delhi

Main Objective

NFRA works to improve:

- Credibility of financial reporting
- Quality of financial reporting
- Transparency in financial reporting
- Compliance with accounting and auditing standards

It also aims to protect the interests of:

- Investors
- Stakeholders
- The public

Functions of NFRA

1. Recommendation

- Recommends **accounting and auditing policies and standards** for adoption by companies.
- These are recommended for approval by the **Central Government**.

2. Monitoring

- Monitors compliance with:
 - Accounting standards
 - Auditing standards

3. Other Functions

- Performs other functions and duties necessary or incidental to its responsibilities.

Composition of NFRA

- The Companies Act provides for:
 - **1 Chairperson**
 - **Maximum 15 members**
- Chairperson is appointed by the **Central Government**.

Qualifications

Members should have expertise in:

- Accountancy
- Auditing
- Finance
- Law

Independence Requirements

- Members must declare that there is **no conflict of interest** or lack of independence.
- Full-time members should not be associated with an **audit firm or related consultancy firm**:
 - During their term
 - For **2 years** after their term

Powers of NFRA

Investigation

NFRA can investigate:

- **Suo motu**, or
- On a reference from the **Central Government**

It can investigate professional or other misconduct by:

- Individual Chartered Accountants
- Firms of Chartered Accountants

The investigation relates to members or firms registered under the **Chartered Accountants Act, 1949**.

Civil Court Powers

- NFRA has powers similar to those of a **civil court under the Code of Civil Procedure, 1908** while trying a suit.

Punishment

- If professional or other misconduct is proved, NFRA can **impose punishment**.

Appeal

- A person dissatisfied with an NFRA order can **appeal to the Appellate Authority**.



Indian Society & Social Justice

Pradhan Mantri Surya Sarovar Yojana (PM-SSY)



Why in News?

- The Union Cabinet has approved the **Pradhan Mantri Surya Sarovar Yojana (PM-SSY)**.
- It aims to strengthen India's:
 - **Renewable energy capacity**
 - **Energy security**
 - **Grid stability**

Key Facts About PM-SSY

About

- PM-SSY is a **Central Sector Scheme**.
- It promotes **Floating Solar Photovoltaic (FSPV) Projects** integrated with **Energy Storage Systems (ESS)**.
- Floating solar plants install solar panels on **buoyant platforms over water bodies**.
- It allows India to use inland water bodies for renewable energy without competing for scarce land resources.

Outlay and Target

- **Total financial allocation:** ₹5,070 crore
- **Target:** 5,000 MW of FSPV capacity
- **Implementation period:** FY 2026-27 to 2030-31

India's Floating Solar Potential

- Assessment by the **National Institute of Solar Energy (NISE)** estimates India's floating solar potential at **102.18 GWp**.
- Current installed floating solar capacity is only around **700 MW**.

Energy Storage Requirement

- Every eligible project must include a **co-located Energy Storage System**.
- Minimum storage requirement: **2 hours**
- Total storage under the scheme: **10,000 MWh**

Financial Support

Central Financial Assistance

- Developers will receive **₹1 crore per MW** after successful commissioning of eligible floating solar projects.

Project De-risking

- Additional CFA of up to **₹50 lakh per project**.
- It can support feasibility studies such as:
 - Bathymetry
 - Hydrography
 - Environmental studies

Significance of PM-SSY

Renewable Energy Capacity

- Floating solar capacity is expected to increase from around **700 MW to 5,700 MW**.

Climate Benefits

- Expected to reduce around **10 million tonnes of CO₂ emissions annually**.

Employment

- Expected to generate around **16,000–17,000 full-time equivalent jobs** across the project value chain.

Aatmanirbhar Bharat

The scheme can promote domestic manufacturing of:

- Floatation systems
- PV cells
- Solar modules
- Energy storage systems

Grid Stability

- Integration of **2-hour battery energy storage systems (BESS)** will help:
 - Balance electricity supply
 - Improve grid reliability
 - Manage peak demand

Floating Solar Photovoltaic (FSPV)

- FSPV means installing **solar PV systems on water bodies** instead of land.
- Suitable water bodies include:
 - Reservoirs
 - Lakes
 - Dams
 - Industrial ponds

Advantages

- **Land-efficient:** Reduces dependence on land for solar projects.
- **Land-neutral:** Avoids competition with agricultural land and habitation.
- Helps overcome **land acquisition constraints**.

Limitation

- Floating solar projects cost around **25% more** than ground-mounted solar plants.
- Higher cost is mainly because of:
 - Floating platforms
 - Anchoring systems
 - Waterproof electrical infrastructure

Major Floating Solar Project in India

Omkareshwar Floating Solar Park

- Located on the **Narmada River in Madhya Pradesh**.

- India's largest operational floating solar project.
- Current capacity: **278 MW**
- Planned expansion: **600 MW**

Global Floating Solar Scenario

- Global floating solar capacity reached around **9.6 GW in 2024**.
- **Asia accounts for nearly 90%** of global installations.

Status of Solar Energy in India

Solar Capacity

- India's solar power capacity increased from around **3 GW in 2014** to approximately **129 GW in 2025**.
- This supports India's target of **500 GW non-fossil fuel capacity by 2030**.

Leading Solar States

Major solar power producers include:

- Rajasthan
- Gujarat
- Maharashtra
- Tamil Nadu

Their advantage comes from high solar irradiation and supportive policies.

Grid Integration

- The **Green Energy Corridor** is strengthening transmission infrastructure for efficient evacuation of renewable power.

Rooftop and Agricultural Solar

PM Surya Ghar Yojana

- Around **24 lakh rooftop solar installations** till December 2025.

PM-KUSUM

- Promotes **grid-connected solar pumps** for farmers.

Battery Energy Storage

- A **₹5,400 crore Viability Gap Funding (VGF)** scheme supports **30 GWh of BESS**.
- It aims to improve the reliability of renewable energy.

Domestic Manufacturing

- India has achieved **100 GW of Solar PV module manufacturing capacity** under the **Approved List of Models and Manufacturers (ALMM)**.

- This supports **Aatmanirbhar Bharat**.

International Solar Alliance

- **ISA** is an Indian-led global initiative for solar energy cooperation.
- Headquarters: **Gurugram**
- It aims to:
 - Mobilise investment in solar energy
 - Aggregate demand for solar technologies
 - Promote solar deployment among **sun-rich countries between the Tropics of Cancer and Capricorn**.

PM-KISAN



Why in News?

- The Union Cabinet has approved the **continuation of PM-KISAN for the next 5 years**.
- The scheme will continue from **2026–27 to 2030–31**.
- This reaffirms the Government's focus on **farmers' prosperity and rural development**.

Key Facts About PM-KISAN

About

- **PM-KISAN** is a **Central Sector Scheme**.
- It was launched in **2019**.
- It provides assured income support to **landholding farmer families having cultivable land**.
- The **Union Budget 2026–27** allocated **₹60,000 crore** for PM-KISAN.

Financial Outlay

- Total outlay for **2026–27 to 2030–31: ₹3.15 lakh crore**.

Financial Assistance

- Each eligible farmer family receives **₹6,000 per year**.

- It is paid in **3 equal instalments**:

- ₹2,000
- ₹2,000
- ₹2,000

Mode of Transfer

- Money is transferred directly into **Aadhaar-seeded bank accounts**.
- Transfer is done through **Direct Benefit Transfer (DBT)**.

Objectives

PM-KISAN aims to:

- Increase farmers' income.
- Help farmers purchase agricultural inputs such as:
 - Seeds
 - Fertilisers
- Improve crop health and productivity.
- Reduce dependence on **informal credit**.

Beneficiary Identification

- **State Governments** identify eligible farmer households.
- They maintain a database containing details such as:
 - Name
 - Age
 - Category
 - Aadhaar number
 - Bank account details
 - Mobile number

Monitoring

- PM-KISAN follows a **multi-tier monitoring framework**.
- Monitoring takes place at:
 - National level
 - State level
 - District level
- The national review mechanism is chaired by the **Cabinet Secretary**.

Digital Delivery

The **PM-KISAN portal and mobile app** support:

- Registration
- Verification
- Fund-transfer tracking
- e-KYC

This helps improve **transparency and accessibility**.

Key Achievements

Overall Transfers

- More than **₹4.47 lakh crore** has been transferred directly to farmers' bank accounts.
- This has been done through **23 instalments**.

Support During COVID-19

- More than **₹1.71 lakh crore** was disbursed during the COVID-19 pandemic.

Women Farmers

- Women farmers have received more than **₹1.06 lakh crore**.
- They constitute nearly **one-fourth of all beneficiaries**.

Impact of PM-KISAN

An evaluation by the **Development Monitoring and Evaluation Office of NITI Aayog** found that:

- More than **92% of beneficiaries** used PM-KISAN assistance for **agricultural activities and investment**.
- Around **85%** reported:
 - Higher agricultural income
 - Reduced dependence on informal credit

Agricultural Growth

Between **2020–21 and 2025–26**:

- Cultivated area increased by around **9.65%**.
- Agricultural productivity increased by **10.53%**.
- Total foodgrain production increased by **21.18%**.

Significance

Continued PM-KISAN support can:

- Increase farmers' ability to **invest in agriculture**.
- Improve agricultural productivity.
- Help farmers manage agricultural risks.
- Reduce dependence on informal credit.
- Strengthen the **rural economy**.
- Support farmers' income security and livelihoods.

Cholanaikkan Tribe



Why in News?

- Members of the **Cholanaikkan tribe** recently came out of the forest to receive **essential government documents**.
- The event was organised by the **district administration in Kerala**.

About Cholanaikkan Tribe

- Cholanaikkans are an **ethnic tribal community** found only in the **Nilambur Valley** of the **Nilgiri Biosphere Reserve** in Kerala.
- They are popularly known as the **“Cavemen of Kerala.”**
- They are regarded as one of **Asia's last surviving cave-dwelling indigenous communities**.

Name

- They call themselves **Malanaikan** or **Sholanaikan**.
- **Shola/Chola** means **deep thicket in the forest**.
- **Naikan** means **king**.

Habitat and Settlement

- They live deep inside **dense forests**.
- They mainly live in **rock caves called Kallulai**.
 - **Kallu** = Rock
 - **Alai** = Cave
- Their caves are generally located near **streams**.
- They have **no fixed dwellings**.
- They prefer to stay close to **water sources**.
- They are divided into smaller groups called **Jenmam**.

Language

- They speak the **Cholanaikkan language**.
- Linguistic experts classify it under the **Dravidian language family**.

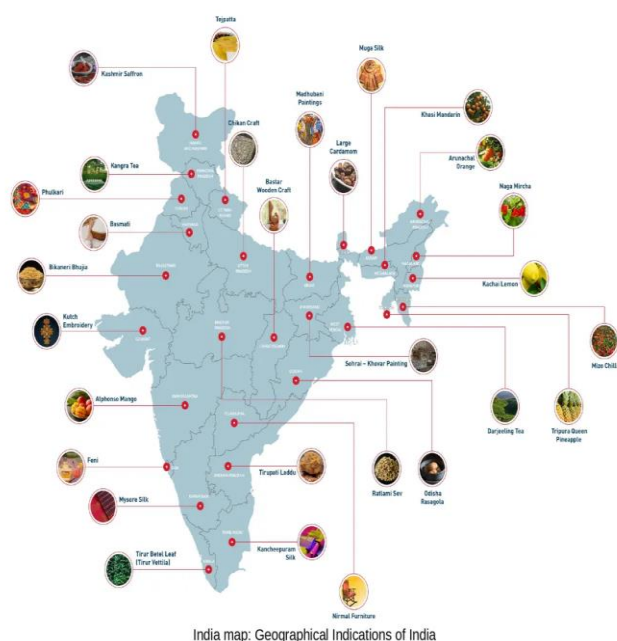
Occupation and Livelihood

- They largely depend on **collecting forest produce**.
- They rarely come out of the forest for their livelihood and daily needs.

Tribal Status

- The Cholanaikkan are classified as a **Particularly Vulnerable Tribal Group (PVTG)**.

Geographical Indication (GI) Tags in India



Why in News?

- **Geographical Indication (GI) tags** are increasingly being used to protect India's **cultural heritage**.
- GI tags link a product to its specific **place of origin**.
- They help prevent misuse and improve market recognition for:
 - Artisans
 - Farmers
 - Weavers
 - Producer groups
- Legal protection and government support in **finance, exports, tourism and marketing** are helping strengthen India's GI ecosystem.

- GI tags can support **rural livelihoods, consumer trust and global recognition** of traditional products.

What is a Geographical Indication (GI)?

- A **GI** is a designation given to products originating from a particular geographical area.
- The quality, reputation or other characteristics of the product must be **essentially linked to its geographical origin**.
- **TRIPS Definition:**
 - Article 22(1) of the **Trade-Related Aspects of Intellectual Property Rights (TRIPS)** defines GIs as indications identifying a good as originating from a particular territory, region or locality where its quality, reputation or other characteristic is essentially attributable to its geographical origin.

- **International Framework:**

- GIs are recognised under the **Paris Convention for the Protection of Industrial Property**.
- They are also recognised under the **WTO's TRIPS Agreement**.

Indian GI Framework

- **Legal Framework:**

- **Geographical Indications of Goods (Registration and Protection) Act, 1999**
- **Geographical Indications of Goods (Registration and Protection) Rules, 2002**

- **Administration:**

- GI registration and protection are administered by the **Geographical Indications Registry**.

- **Validity:**

- GI registration is valid for **10 years**.
- It can be renewed for successive **10-year periods**.

- **Cancellation:**

- Under **Section 27**, registration may be cancelled, varied or rectified if it is:

- Improperly obtained
 - Misleading
 - Generic
 - Legally non-compliant
- **2025 Amendment:**
 - The **Geographical Indications of Goods (Registration and Protection) (Amendment) Rules, 2025** reduced GI application and related fees by **80%**.
 - Renewal fee was reduced from **₹3,000 to ₹500**.
- **Registration Growth:**
 - India has **800+** registered GI products.
 - **607** have been granted since 2014.
 - Authorised users increased from **365 to around 29,000** by January 2025.
- **Leading States:**
 - As of December 2025:
 - **Uttar Pradesh – 81**
 - **Tamil Nadu – 76**
 - **Maharashtra – 55**
- **First GI Registration:**
 - **Darjeeling Tea** was India's first registered GI.
 - Other early registrations included:
 - **Aranmula Kannadi**
 - **Pochampally Ikat**

Significance of GI Tags

- **Heritage and Authenticity:**
 - Protect traditional knowledge and indigenous craftsmanship.
 - Assure consumers about the product's origin and quality.
- **Livelihoods and Income:**
 - Better visibility and access to premium markets can improve bargaining power and producer incomes.
 - GI recognition can create sustainable livelihoods for local producers.
- **Export Promotion:**
 - GI recognition can improve access to international markets.

- Example: **30 metric tonnes of Muzaffarnagar jaggery** were exported to Bangladesh in 2025, benefiting **545 farmer-members**.

Government Initiatives to Strengthen GI Ecosystem

- **PM Ekta Malls:**
 - Provide dedicated retail spaces for:
 - GI-tagged products
 - One District One Product items
 - Handicrafts
 - Government allocated **₹5,000 crore** for establishing these malls across States.
- **One Station One Product:**
 - Railway stalls allow artisans, farmers, weavers and producer groups to directly market regional products to passengers.
- **GI-Based Tourism:**
 - GI clusters are being linked with tourism.
 - Examples include:
 - Weaving-village trails
 - Tea-estate trails
 - Assam's proposed **Muga Silk Trail**
 - Silk Tourism Park
 - Muga Utsav
- **MSME Innovative Scheme:**
 - Its IPR component reimburses up to **100% of GI-registration expenses**.
 - Maximum assistance: **₹2 lakh per registered GI**.
- **Legal and Financial Assistance:**
 - Development Commissioner for Handicrafts provides up to **₹1.5 lakh** for GI enforcement and related legal expenses.
 - Support is also provided for registration, institutional training and enforcement.

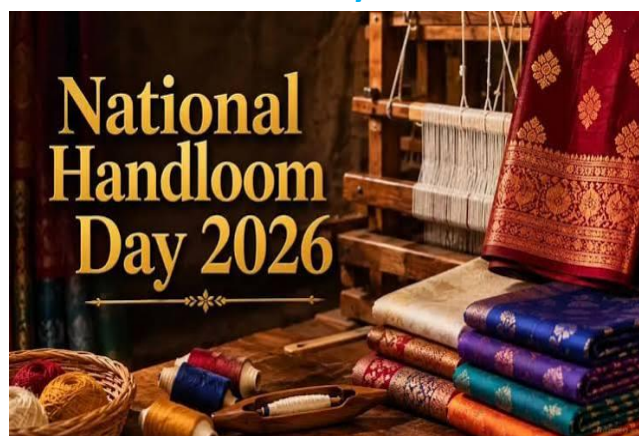
- **Handloom Promotion:**
 - As of June 2026:
 - **104 GI-registered handloom products**
 - **53 registrations** supported under Handloom Marketing Assistance.
- **APEDA Export Support:**
 - APEDA promotes GI-tagged agricultural products through:
 - Quality improvement
 - Capacity building
 - Infrastructure development
 - Overseas market promotion
- **Examples of New Export Markets:**
 - Karnataka GI fruits → **Maldives**
 - Salem Sago → **Canada**
 - Joha Rice → **UK and Italy**
 - Tezpur Litchi → **Dubai**
- **Trade Agreements:**
 - GI protection is increasingly included in India's trade negotiations.
 - **Indi Lime** was exported to Oman after the **India–Oman CEPA**.
 - New Zealand committed to facilitating registration of Indian GIs.
 - India and the **European Union** continued negotiations on a dedicated GI agreement.
- **Promotional Events:**
 - GI products are promoted through:
 - Craft fairs
 - Dilli Haat exhibitions
 - Seminars
 - **GI & Beyond: Virasat se Vikas Tak**
 - World Food India
 - Tribal Business Conclave

Conclusion

- GI tags are not only intellectual property tools.
- They also support:
 - **Cultural preservation**

- Rural development
- Export growth
- Artisan and farmer livelihoods
- By linking products with their place of origin, GI protection can help traditional producers move from **anonymous production to premium branding**.
- Stronger authorised-user registration, quality control, digital marketing, tourism integration and export promotion can further strengthen India's **heritage economy**.

National Handloom Day 2026



Why in News?

- India observed the **12th National Handloom Day** on **7 August 2026**.
- The day celebrates India's **weaving traditions** and recognises the **social, economic and cultural contribution** of handloom weavers and allied workers.
- It was instituted in **2015** to commemorate the **Swadeshi Movement of 1905**, which promoted indigenous goods and self-reliance.

Key Features of India's Handloom Sector

- **Historical Legacy:** Handloom traditions date back to the **Indus Valley Civilisation**. Spinning and weaving are also mentioned in the **Rigveda, Ramayana, Mahabharata** and **works of Kautilya**.
- **Traditional Craftsmanship:** The sector is based on **manual skills, household enterprises and traditional knowledge** passed down through generations.
- **Market Reach:** Digital platforms, modern designs and exhibitions are helping Indian handlooms reach wider markets.

- **Handloom Census:** India has conducted four handloom censuses:
 - 1987–88
 - 1995–96
 - 2009–10
 - 2019–20
- **Employment:** The **2019–20 Census** recorded around **31.45 lakh handloom households** and **35.22 lakh weavers and allied workers**.
- Around **8.48 lakh workers** are involved in pre-loom and post-loom activities such as winding, dyeing and calendaring.
- **Women:** Women constitute more than **72% of the handloom workforce**, with around **25.46 lakh workers**.
- **Rural Sector:** Out of **28.20 lakh looms**, around **25.30 lakh** are located in rural areas.
- **Social Inclusion:** The sector includes around:
 - 4.84 lakh SC workers
 - 6.28 lakh ST workers
 - 12.67 lakh OBC workers

Government Initiatives

National Handloom Development Programme (NHDP)

- Formulated for **2021–22 to 2025–26**.
- Provides support for:
 - Weaver welfare
 - Infrastructure
 - Production
 - Credit
 - Marketing
- Implemented through government organisations, cooperatives, federations, producer companies and banks.
- Around **200 Handloom Producer Companies** were formed during **2020–21 to 2026–27**.

Small Cluster Development Programme

- Provides assistance of up to **₹2 crore per cluster**.
- Supports:
 - Improved looms
 - Worksheds
 - Lighting
 - Design
 - Product development
 - Marketing
- **357 clusters** were sanctioned between 2021–22 and June 2026–27.

- Weavers can receive up to **100% subsidy** for workshed construction.
- Electronic jacquards have improved productivity and earnings.

Handloom Marketing Assistance

- Supports:
 - Domestic and export promotion
 - Urban Haats
 - Marketing incentives
 - Direct-sale platforms
- More than **960 marketing events** were organised between 2021–22 and June 2026–27.
- **Sant Kabir Handloom Award:** ₹3.5 lakh along with a gold coin, tamrapatra, shawl and certificate.
- **National Handloom Award:** ₹2 lakh along with tamrapatra, shawl and certificate.

Weaver MUDRA Scheme

- Provides handloom-sector loans at a concessional interest rate of **6% for three years**.
- Support includes:
 - Interest subvention
 - Margin-money assistance
 - Credit-guarantee fee coverage
- More than **40,000 loans worth over ₹280 crore** were sanctioned between 2021–22 and June 2026–27.

Social Security

- **PMJJBY:** Life insurance of **₹2 lakh** for eligible workers aged **18–50 years**.
- **PMSBY:**
 - ₹2 lakh for accidental death/permanent total disability
 - ₹1 lakh for permanent partial disability
 - Applicable to workers aged **18–70 years**.
- Enrolment increased from **1,11,957 workers in 2021–22 to 2,02,393 by May 2026–27**.
- Scholarships of up to **₹2 lakh annually** are available for two children of handloom workers pursuing recognised textile courses.

Mega Handloom Clusters

- Each mega cluster covers at least **10,000 handlooms**.
- Central assistance can be up to **₹30 crore over five years**.
- **8 clusters** are functional and **4 are under implementation**.
- Around **₹370.72 crore** has been released, benefiting **1,62,682 weavers**.

Raw Material Supply Scheme (RMSS)

- Provides:
 - Freight reimbursement on yarn
 - **15% price subsidy** on specified yarns
- Helps improve the **availability and affordability of raw materials**.
- 2026–27 allocation:
 - **NHDP: ₹205 crore**
 - **RMSS: ₹200 crore**

Union Budget 2026–27 and Handloom Sector

- **GST on 36 handicraft items, cotton handloom rugs, handwoven carpets and sewing machines** was reduced from **12% to 5%**.
- **National Fibre Scheme:** Strengthens India's textile raw-material base.
- **Textile Expansion and Employment Scheme:** Supports machinery, technology upgrades and testing facilities.
- **National Handloom and Handicraft Programme:** Aims to integrate and strengthen existing schemes.
- **Mahatma Gandhi Gram Swaraj Initiative:** Supports khadi, handloom, handicrafts, village industries and ODOP products.
- **ODOP Initiative:** Promotes district-specific handloom and handicraft products.

Market Access and Buyer Confidence

- India's handloom exports reached around **₹1,330.96 crore in 2025–26**.
- Major export destinations include:
 - UAE
 - United States
 - France
 - United Kingdom
 - Spain

- Around **1.50 lakh weavers and handloom entities** are registered on **GeM**.
- **Indiahandmade platform** allows verified weavers and producer groups to sell directly to consumers.
- **Handloom Mark**, launched in **2006**, certifies genuine handwoven products.
- **India Handloom Brand**, launched on **7 August 2015**, certifies premium natural-fibre handloom products.
- GI protection helps protect regional handloom traditions from unauthorised use.
- GI registrations cover **106 handloom products, 6 product logos and 227 handicraft products**.
- The **Handlooms (Reservation of Articles for Production) Act, 1985** reserves **11 textile articles** for handloom production.

NCDC Amendment Bill, 2026 : Expanding the Role of Cooperative Financing



Why in News?

- Parliament has passed the **National Cooperative Development Corporation (Amendment) Bill, 2026**, which seeks to expand the mandate and financing powers of the **National Cooperative Development Corporation (NCDC)**.
- The amendment aims to give cooperatives wider access to finance and support their expansion into areas such as **food processing, storage, marketing, technology and other economic activities**.

What are the Key Changes Proposed by the NCDC Amendment Bill, 2026?

1. Direct Financial Assistance

The amendment expands NCDC's ability to provide **loans and grants directly**.

- Earlier, direct financial assistance was mainly available to:
 - National-level cooperatives.
 - Cooperatives operating in more than one State.
- The amendment allows direct assistance to **any cooperative society or entity involved in cooperative development**, subject to prescribed conditions.
- NCDC can still provide funds to **State Governments** for financing cooperative societies.

2. Wider Definition of Foodstuffs

The Bill expands the meaning of "foodstuffs".

It now includes:

- Processed food.
- Other food items notified by the Central Government.

This can bring more food-related cooperatives within the scope of NCDC financial assistance.

3. Industrial Cooperatives

The existing requirement that eligible industrial, cottage and village cooperatives must be located in **rural areas** has been removed.

This allows eligible cooperatives operating outside rural areas to access NCDC support.

4. Greater Investment Powers

With prior approval from the Central Government, NCDC can participate in the **share capital of cooperatives and other entities involved in cooperative development**.

This gives NCDC another way to support the growth and expansion of cooperative institutions.

5. Information Sharing

NCDC will have the power to **collect and provide credit and other relevant information**.

Such information may be shared with:

- Central Government
- Reserve Bank of India
- Banks
- Other notified financial institutions

This can help improve the quality of financial assessment and decision-making.

What are the Concerns About the Amendment?

Federalism and State Autonomy

A major concern relates to the **division of powers between the Centre and States**.

- Cooperative societies whose activities are limited to one State fall under **Entry 32 of the State List**.
- Direct funding by NCDC could allow the Centre to interact directly with State-level cooperatives.
- Critics argue that this could **reduce the role of State Governments** and increase centralisation.

Implementation Challenges

State Governments currently have important responsibilities relating to:

- Supervision
- Regulation
- Auditing
- Monitoring of cooperatives

Direct NCDC financing without adequate coordination with States could create **overlapping responsibilities and monitoring difficulties**.

What is the National Cooperative Development Corporation?

The **NCDC** is a statutory organisation established in **1963** under the **National Cooperative Development Corporation Act, 1962**.

- **Nodal Ministry:** Ministry of Cooperation
- **Main objective:** Promote, strengthen and develop cooperatives.
- It provides financial assistance for:
 - Agricultural processing
 - Storage
 - Cold chains
 - Marketing
 - Dairy
 - Livestock
 - Fisheries
 - Poultry
 - Handlooms
 - Cooperatives involving women and SC/ST communities

Growing Financial Role

- NCDC's disbursements increased significantly from ₹5,735 crore in 2014–15 to ₹95,182 crore in 2024–25.

National Cooperation Policy, 2025

- The **National Cooperation Policy 2025** aims to build a stronger cooperative ecosystem as part of the vision of **Viksit Bharat 2047**.

Key Focus Areas

- Transparent functioning
- Technology-driven cooperatives
- Professional management
- Stronger institutional support
- Greater economic participation

The policy is being implemented with support from institutions such as:

- IFFCO
- NAFED
- Amul
- KRIBHCO
- NDDDB
- NCEL
- NABARD

What are Cooperatives?

A **cooperative** is a people-centred organisation that is:

- **Jointly owned**
- **Democratically controlled**
- **Voluntarily formed**

Its purpose is to meet the **common economic, social and cultural needs of its members**.

Constitutional Position

The Constitution provides important support to the cooperative movement.

- **Article 19(1)(c):** The 97th Constitutional Amendment Act, 2011 made the right to form cooperative societies a **Fundamental Right**.
- **Article 43B:** Directs the State to promote:
 - Voluntary formation
 - Autonomous functioning
 - Democratic control
 - Professional management

- **Part IXB:** Added by the 97th Constitutional Amendment to provide constitutional recognition and a framework for cooperatives.
- In **Union of India v. Rajendra N. Shah (2021)**, the Supreme Court held that Part IXB continues to operate in relation to **multi-State cooperative societies**.
- **Multi-State Cooperatives:** Come under the **Union List** and are regulated by the **Multi-State Cooperative Societies Act, 2002**.

Why are Cooperatives Important for India?

Economic Importance

India has one of the world's largest cooperative networks.

- More than **8.44 lakh cooperatives**
- Around **30 crore members**
- Around **94% of Indian farmers** are connected to the cooperative network.
- **PACS** form the backbone of rural credit.
- NCDC disbursed around **₹1.27 lakh crore in FY 2025–26**.

Export Potential

National Cooperative Exports Limited (NCEL) has helped Indian cooperatives enter international markets.

By mid-2026:

- Around **15.4 lakh metric tonnes** of products were exported.
- Export value exceeded **₹6,295 crore**.
- Exports reached **38 countries**.

Preventing Market Concentration

Large cooperatives such as:

- **IFFCO**
- **KRIBHCO**
- **Amul**

play an important role in sectors such as **fertilisers and dairy**.

They can strengthen the bargaining position of producers and help prevent excessive market concentration.

Social Importance

Women's Empowerment

Cooperatives provide women with opportunities for:

- Income generation
- Entrepreneurship
- Financial independence
- Collective decision-making

Through **Nandini Sahakar**, NCDC provided around **₹4,823 crore** to women-led cooperatives between 2021 and 2025.

Nearly **10 crore women** are connected with cooperatives through SHGs.

Support for Marginalised Communities

- Cooperatives can provide affordable institutional finance and reduce dependence on informal moneylenders.
- NCDC extended around **₹57 crore** in dedicated loans to SC/ST cooperatives during the last four years.

Employment

Cooperatives also support employment beyond agriculture in sectors such as:

- Dairy
- Fisheries
- Handlooms
- Livestock

More than **25,000 new societies** have been registered under **White Revolution 2.0**.

Cooperatives and Rural Infrastructure

- Cooperatives are also being used to create rural infrastructure.

Grain Storage

PACS are participating in the **world's largest grain storage plan**.

- Godowns have been completed in **145 PACS**.
- Storage capacity created exceeds **68,702 MT**.
- This can help reduce:
 - Post-harvest losses
 - Distress sales by farmers

PACS as Multi-Service Centres

PACS are being transformed from traditional credit institutions into **multi-service centres**.

They can provide services through:

- Common Service Centres
- PM Kisan Samridhi Kendras
- Jan Aushadhi Kendras

New-Age Cooperative Models

- The cooperative model is also entering urban services.
- **Bharat Taxi** is an example of a driver-centric cooperative mobility platform, with **7.76 lakh registered drivers** and **40.84 lakh registered customers**.

What Measures Can Strengthen Cooperatives?

1. Promote Model Bye-Laws

Wider adoption of **Model Bye-Laws** can:

- Standardise operations.
- Improve accountability.
- Expand the activities that PACS can undertake.

2. Reduce Political Interference

- Cooperatives need greater **autonomy from political interference and elite capture**.
- The recommendations of the **Vaidyanathan Committee (2004)** are relevant in this context.

3. Improve Governance of Urban Cooperative Banks

The **Malegam Committee** recommended separating:

- Ownership and cooperative functions
- Professional banking management

A professional **Board of Management** alongside the elected **Board of Directors** can improve governance.

4. Bridge the Digital Divide

Many rural cooperative members have limited digital literacy.

Targeted training can help them use:

- Digital banking
- Online governance systems
- Digital financial services

5. Build Strong Cooperative Brands

Cooperatives should develop **umbrella brands and quality certification**.

This can help them:

- Build consumer trust.
- Command better prices.
- Enter larger markets.

They can also diversify into emerging sectors such as:

- Eco-tourism
- Renewable energy
- Hydroponics
- Digital services.



Crux of The Hindu & Indian Express

Indian Society & Social Justice

Prime Minister's 80th Independence Day Address: Key Highlights



Why in News?

- Prime Minister **Narendra Modi** addressed the nation from the **Red Fort on 15 August 2026**, on the occasion of India's **80th Independence Day**.
- The address focused on the vision of **Viksit Bharat by 2047**, **Aatmanirbhar Bharat**, economic growth, technology, energy security, youth empowerment, national security, social welfare and the newly announced **Saptdhara (Sapt Shakti)** framework.
- The Prime Minister also expressed solidarity with people affected by **recent floods and landslides** and paid tribute to freedom fighters and revolutionaries.

1. Vision of Viksit Bharat by 2047

- The Prime Minister reiterated the goal of transforming India into a **Viksit Bharat by 2047**, when the country completes **100 years of independence**.
- He stressed that this goal requires:
 - **High ambitions**
 - **Firm resolve**
 - **National capability**

- **Collective effort**
- **Self-confidence**

- He called upon citizens to move beyond small ambitions and work towards a larger national vision.
- He emphasised the contribution of **140 crore Indians** in achieving this goal.

Progress highlighted

The Prime Minister presented a report card of India's progress over the previous 12 years:

- **25 crore people** have moved out of poverty.
- India has moved from the '**Fragile Five**' to the position of the **fastest-growing major economy**.
- Defence production increased nearly **4 times**.
- Khadi and Village Industries increased **5 times**.
- Electronics manufacturing increased nearly **7 times**.
- Railway coach production increased **21 times**.
- Mobile phone manufacturing increased **33 times**.
- Internet users increased **4 times**.
- Patent grants increased **4 times**.
- Digital transactions increased **100 times**.

2. Aatmanirbhar Bharat and Make in India

- The Prime Minister stressed the need for **self-reliance** and reducing dependence on foreign imports.
- He called for strengthening India's own production capabilities.
- The spirit of **Make in India** and **Vocal for Local** was highlighted.
- Indian products should be:
 - **High quality**
 - **Affordable**
 - **User-friendly**
 - **Globally competitive**
- He emphasised the importance of **cost, quality and scale**.

Semiconductors

- Three Indian semiconductor plants are already operational and exporting chips.

- **7–8 additional semiconductor production facilities** are expected to become operational within **1–2 years**.
- Semiconductor manufacturing was presented as an important pillar of technological self-reliance.

3. Critical Minerals Security

- The Prime Minister highlighted the **National Critical Minerals Mission**.
- The **Critical Minerals Corridor** announced in the Budget was also highlighted.
- India has entered into international agreements to strengthen access to critical minerals.
- Critical minerals are important for:
 - Semiconductors
 - Renewable energy
 - Electric vehicles
 - Defence technology
 - Advanced manufacturing
- The initiative aims to strengthen **resource security and strategic autonomy**.

4. Nuclear Energy and Energy Security

SHANTI Act

- The Prime Minister highlighted reforms under the **SHANTI Act**.

Nuclear Energy Target

- India has set a target of **100 GW of nuclear capacity by 2047**.
- **Five new nuclear reactors** are expected to become operational within the next **6–7 years**.
- India will also focus on **Fast Breeder Nuclear Technology**.
- Greater domestic capability in nuclear fuel was presented as an important part of **energy self-reliance**.

5. Offshore Oil and Gas Exploration

- The government has changed its approach towards offshore exploration.
- Around **99% of India's coastline** has been shifted from **'No-Go Areas'** to **'Go-Ahead Areas'** for oil and gas exploration.
- The **₹85,000 crore Samudra Manthan initiative** will support efforts to explore new offshore energy reserves.

- The move aims to improve **domestic energy security** and reduce dependence on imports.

6. Expansion of Gas and Solar Energy

Over the past 12 years:

- **City Gas Distribution** expanded from **70 to 700 cities**.
- Piped cooking gas reached **1.75 crore households**.
- Solar capacity increased from **2 GW to 160 GW**.

PM Surya Ghar Muft Bijli Yojana

- The scheme has crossed **50 lakh households**.
- Families can receive financial assistance of up to **₹80,000**.
- The objective is to reduce electricity bills through rooftop solar.
- Households can also earn by selling **surplus electricity**.

7. Green Transport and Hydrogen

Railway Electrification

- The Prime Minister highlighted that India's railway network achieved **100% electrification** within a decade.
- This reduces dependence on imported diesel and supports cleaner transport.

Hydrogen Train

- India has started work on its first **Made-in-India hydrogen train**.
- It was described as the world's **longest and most powerful hydrogen train**.
- This reflects India's push towards **clean transportation technologies**.

8. Agriculture and Farmer Welfare

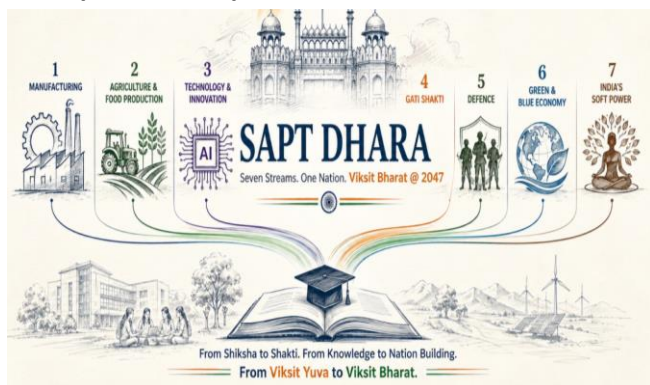
- The Prime Minister highlighted government support to farmers during global economic and geopolitical disruptions.
- The government provides subsidised fertilisers:
 - **Urea:** International price around ₹3,000 → farmers receive it for **less than ₹300**.
 - **DAP:** International cost above ₹5,000 → farmers receive it for **₹1,350**.

- The government has absorbed the additional cost to protect farmers from international price shocks.

9. Trade and Global Market Access

- India has signed **Free Trade Agreements with around 40 countries since 2014.**
- These agreements create opportunities for Indian:
 - Agriculture
 - Fisheries
 - Textiles
 - MSMEs
- The Prime Minister called upon Indian businesses to produce goods that are **better and cheaper** than competing global products.

10. Saptdhara / Sapt Shakti



A major feature of the speech was the announcement of **Saptdhara**, or **seven streams of national strength**.

The seven streams are:

1. Manufacturing Power

- Strengthen India's manufacturing capabilities.
- Develop complete domestic value chains.
- Focus on:
 - **Zero defects**
 - **Cost efficiency**
 - **Global quality**
 - **Large-scale production**
- India should become a reliable centre of global supply chains.

2. Agriculture and Food Processing

- Promote **chemical-free farming**.
- Build integrated **farm-to-export supply chains**.

- Indian agricultural products should meet global standards.
- Traditional Indian foods can be expanded into international markets.

3. Technology and Innovation

India should become a global innovation hub in:

- **Artificial Intelligence**
- **Quantum computing**
- **Space technology**
- **Advanced robotics**
- **Digital Public Infrastructure**
- **6G**

The Prime Minister stressed that **Made-in-India 6G** should reach every part of the country.

4. Gati Shakti

- Focus on integrated **multimodal infrastructure**.
- Key areas include:
 - High-speed rail
 - Highways
 - Inland waterways
 - Modern ports
- Greater emphasis will be placed on **port-led development**.

5. Defence Shakti

- Defence self-reliance was described as a national priority.
- India aims to become a major **global defence technology supplier**.
- Focus areas include:
 - Drones
 - Counter-drone systems
 - Hypersonic technologies
- Defence exports have expanded significantly.

6. Green and Blue Economy

- India will focus on:
 - **Green hydrogen**
 - Renewable energy
 - Energy storage
 - Ocean economy
 - Marine resources
 - Coastal tourism
- The objective is to combine economic growth with **climate action and green jobs**.

7. Soft Power

India's soft power will be strengthened through:

- Yoga
- Ayurveda
- Heritage
- Tourism
- VFX
- Animation
- Gaming
- Creative industries
- WAVES Summit

The Prime Minister also highlighted the potential of **wildlife, national parks, international sports events and concerts** to attract global visitors.

11. Corporate and Global Business Ambitions

The Prime Minister called for stronger Indian representation in global corporate rankings.

Targets highlighted include:

- **50 Indian companies in the Fortune 500**
- A major global Indian bank
- An Indian pharmaceutical company among the **world's top five**
- Globally competitive Indian firms in:
 - Law
 - Rating
 - Consulting
 - Accounting
 - Technology

12. Youth and Startup Ecosystem

- Youth were placed at the centre of the **Viksit Bharat** vision.
- India now has around **2.5 lakh registered startups**.
- The Prime Minister highlighted:
 - **₹1 lakh crore Research and Innovation Fund**
 - Skill India
 - Khelo India
 - National Drone Policy
 - Private participation in space
 - **National Education Policy 2020**
- The objective is to provide young people with both **opportunities and financial support**.

Education and Innovation

- Universities increased from fewer than **350 to nearly 1,000**.
- Medical colleges increased from fewer than **400 to around 850**.
- More than **10,000 Atal Tinkering Labs** have been established.
- Young Indian companies have successfully developed **satellites and rockets**.

13. One Crore Youth to be Trained in AI

- A major new announcement was the plan to train **1 crore youth in Artificial Intelligence skills within the coming year**.
- The objective is to ensure that Indian youth have the skills required to compete and lead in the **global AI economy**.

14. Bioeconomy and Electric Vehicles

The Prime Minister highlighted the growth of emerging sectors:

Bioeconomy

- Increased from around **₹60,000 crore in 2014** to nearly **₹20 lakh crore**.

Electric Vehicles

- Annual EV sales increased from around **1.5 lakh to 25 lakh**.

15. Aerospace and SVAMITVA

Aerospace

- The Prime Minister highlighted new aircraft maintenance hubs.
- He also referred to the successful flight of the **Made-in-India C-295 defence transport aircraft**.

SVAMITVA Scheme

- Drone technology is being used for **rural property mapping**.
- The scheme has covered around **3.25 crore families**.
- It has potentially unlocked around **₹140 lakh crore** in rural economic value.
- Digitised property records can help rural families access **loans and business opportunities**.

16. Free Online Coaching

- The Prime Minister announced a **Free Online Coaching** initiative.

- It will use **Digital Public Infrastructure (DPI)** and experienced teachers.
- The objective is to reduce the:
 - Financial burden
 - Emotional pressure
 - Cost of competitive examination preparation
- It will create a nationwide network for free competitive-exam preparation.

17. Sports Development

- The Prime Minister highlighted India's improving performance in international sports.
- Important initiatives include:
 - **TOPS**
 - **Khelo India**
- India is preparing its bid to host the **2030 Commonwealth Games**.
- India is also a strong candidate for hosting the **2036 Olympics**.

Nationwide Sports Talent Hunt

- A new talent identification initiative will focus on children aged **5–15 years**.
- Talent will be identified through:
 - Schools
 - Villages
 - Grassroots programmes
- Selected children will receive specialised training to develop future international-level athletes.

18. Nasha Mukh Yuva Abhiyan

- The Prime Minister called for a **drug-free India**.
- The **Nasha Mukh Yuva Abhiyan** will involve:
 - Families
 - NGOs
 - Spiritual organisations
 - Young people
- A **100-week nationwide campaign** was highlighted.
- The objective is to protect the younger generation from substance abuse.

19. Naxalism and Internal Security

- The Prime Minister said that **Naxalism has been decisively dismantled**.

- He recalled the sacrifice of more than **3,500 security personnel** during the decades-long conflict.
- Formerly affected areas are now witnessing:
 - Development
 - Peace
 - Trust
 - Greater government presence

He also warned against **ideological extremism and subversive elements** and called for identifying, isolating and bringing young people into the mainstream.

20. Civil Defence and Defence Exports

- The Prime Minister announced plans to create a **modern and voluntary Civil Defence network**.
- The initiative is linked to the changing nature of warfare, where critical civilian infrastructure can become a target.
- India's defence exports have increased **more than 50 times** and now reach around **100 countries**.

21. Women Empowerment

The speech highlighted women's contribution across:

- Aviation
- STEM
- Armed forces
- Entrepreneurship
- Manufacturing
- Public leadership

Lakhpati Didis

- The target of **3 crore Lakhpati Didis** has been achieved.
- A new target of **6 crore Lakhpati Didis** was announced.
- The initiative aims to strengthen the economic empowerment of rural women.

Women's Political Representation

- The Prime Minister called upon political parties to support the implementation of **one-third reservation for women in Parliament and State Assemblies**.

22. Social Security and Ayushman Bharat

- Social security coverage has expanded to around **100 crore people**, compared with around **25 crore before 2014**.

- The Prime Minister stressed that Viksit Bharat must reach the **last person**.

Ayushman Bharat

- Free medical coverage of up to **₹5 lakh** has been extended to senior citizens above **70 years**.
- The scheme has reportedly saved poor and middle-class families around **₹2 lakh crore** in medical expenses.

23. Digital Census

- India's **first Digital Census** is currently underway.
- The Prime Minister urged citizens to participate through **digital self-registration using mobile phones**.
- Accurate demographic data is important for:
 - Development planning
 - Policy formulation
 - Resource allocation
 - Public service delivery
- Youth were specifically encouraged to help their families complete the digital forms accurately.

24. Key Message: Panch Pran

The address concluded with a reaffirmation of the **Panch Pran**.

The Prime Minister called upon citizens to:

- Put **national interest above personal interest**.
- Remove the **colonial mindset**.
- Work collectively for national development.
- Turn India's dreams into concrete achievements.
- Move together towards **Viksit Bharat**.

Gallantry Awards 2026



Why in News?

- On the occasion of India's **80th Independence Day** on **15th August 2026**, President **Droupadi Murmu** approved **78 Gallantry Awards** for acts of exceptional **bravery, courage and self-sacrifice** in the service of the nation.

Gallantry Awards 2026

The 78 awards include:

- **9 Kirti Chakras**
 - **7 awarded posthumously**
- **19 Shaurya Chakras**
 - **1 awarded posthumously**
- **36 Sena Medals for Gallantry**
 - **5 awarded posthumously**
- **5 Bars to Sena Medals (Gallantry)**
- **3 Nao Sena Medals for Gallantry**
- **5 Vayu Sena Medals for Gallantry**

What are Gallantry Awards?

- Gallantry Awards are among India's highest honours for recognising **exceptional acts of bravery, valour and self-sacrifice**.
- They are awarded to **military personnel and civilians** for acts of courage in the service of the nation.

Types of Gallantry Awards

Gallantry Awards are broadly divided into **wartime** and **peacetime** awards.

Wartime Gallantry Awards

These recognise acts of valour performed **in the presence of the enemy**.

- **Param Vir Chakra**
 - India's **highest military decoration**.
- **Maha Vir Chakra**
- **Vir Chakra**

Peacetime Gallantry Awards

These are awarded for acts of bravery, valour or self-sacrifice **other than in the face of the enemy**.

- **Ashoka Chakra**
- **Kirti Chakra**
- **Shaurya Chakra**

The peacetime awards were initially instituted in **1952** as **Ashoka Chakra Class-I, Class-II and Class-III** and were renamed in **1967**.

Order of Precedence

The order of precedence among the major Gallantry Awards is:

1. **Param Vir Chakra**
2. **Ashoka Chakra**
3. **Maha Vir Chakra**
4. **Kirti Chakra**
5. **Vir Chakra**
6. **Shaurya Chakra**

How are Gallantry Awards Conferred?

The award process involves multiple stages:

- **Recommendation**
 - Recommendations originate from **military units, CAPFs or police organisations.**
- **Scrutiny**
 - The recommendations are examined through the **chain of command.**
- **Central Examination**
 - The **Central Honours and Awards Committee** examines the cases.
- **Final Approval**
 - The final list is approved by the **President of India.**

When are the Awards Announced?

Gallantry Awards are announced **twice a year**:

- **Republic Day**
- **Independence Day**

What is a Bar to a Gallantry Award?

- A **Bar** recognises a recipient for a **subsequent act of similar gallantry.**
- It is represented by a **miniature replica of the award on the ribbon.**
- Both the **original award and the Bar can be conferred posthumously.**

Significance

- The Gallantry Awards recognise individuals who demonstrate **extraordinary courage and sacrifice** while serving the nation.
- The 2026 awards also highlight the contribution of personnel from the **Army, Navy, Air Force, CAPFs and police organisations**, while honouring those who made the ultimate sacrifice in the line of duty.

Alcohol Prohibition in India : Bihar's Experience and the Way Forward



Why in News?

- Bihar's **2016 alcohol prohibition policy** has come under discussion following the '**Macro Perspective of Bihar's Development Achievements, Unfinished Agenda, and the Way Forward**' report presented at the **India Policy Forum 2026.**
- The report recommended **lifting the prohibition**, citing:
 - **Limited impact on violence against women**
 - **Significant loss of government revenue**
- However, the report's use of **National Crime Records Bureau (NCRB) data** has also been questioned.
 - A rise in reported crime may partly reflect **better reporting and registration of cases**, rather than an actual increase in violence.
 - **Rape cases declined or remained relatively stable after the ban**, suggesting that the impact of prohibition should be assessed using **specific and causally relevant indicators**, rather than overall crime figures.

What is the Constitutional and Legal Position on Alcohol Regulation?

Article 47

- **Article 47**, under the **Directive Principles of State Policy**, directs the State to:
 - Raise the level of **nutrition.**
 - Improve the **standard of living.**

- Improve **public health**.
- It also directs the State to work towards **prohibiting the consumption of intoxicating drinks and drugs injurious to health**, except for medicinal purposes.

Seventh Schedule – State List

- **Entry 8 of the State List** gives State Legislatures control over:
 - Production
 - Manufacture
 - Possession
 - Transport
 - Purchase
 - Sale of intoxicating liquor
- This explains why different States follow different approaches, ranging from **complete prohibition to State-controlled liquor sales**.

Supreme Court's Position

- The Supreme Court has held that there is **no Fundamental Right to trade in or consume alcohol**.
- States have the power to **regulate, restrict or completely prohibit** liquor.
- **Khoday Distilleries Ltd. v. State of Karnataka (1994)**:
 - The Court held that there is **no Fundamental Right to carry on a business in liquor**.
 - States can regulate or prohibit liquor trade and may even create a **State monopoly**.
- **State of Tamil Nadu v. K. Balu (2016)**:
 - The Court held that **Article 19(1)(g)** does not protect commercial liquor trade.
 - Restrictions on liquor outlets near highways were upheld in the interest of **public safety**.
- **State of U.P. v. Lalta Prasad Vaish & Sons (2024)**:
 - The Court held that State regulatory power under **Entry 8** can extend beyond potable liquor to certain forms of **non-potable or industrial alcohol**.

Government Measures Related to Alcohol Use

Several national policies and programmes address alcohol dependence and its wider health effects:

- **National Action Plan for Drug Demand Reduction (NAPDDR) 2021-22**
 - Focuses on awareness, treatment, counselling, rehabilitation and demand reduction under the **Nasha Mukh Bharat Abhiyan**.
- **National Mental Health Policy, 2014**
 - Recognises the relationship between **alcohol use and mental health**.
- **National Health Policy, 2017**
 - Supports measures for reducing harmful alcohol use.
- **National Suicide Prevention Strategy, 2022**
 - Includes measures related to controlling risk factors such as alcohol use.
- **National Action Plan and Monitoring Framework for Prevention and Control of Noncommunicable Diseases (NMAP), 2017-22**
 - Advocates the development of a **national alcohol policy**.

What Drives Alcohol Consumption in India?

1. Growing Alcohol Use

- According to **NFHS-6 (2023-24)**:
 - **18.9% of men** aged 15 years and above consume alcohol.
 - **1.1% of women** in the same age group consume alcohol.
- In NFHS-5 (2019-21), the corresponding figures were:
 - **18.7% for men**
 - **1.3% for women**
- In 2021, alcohol use contributed around **2.6 million Disability-Adjusted Life Years (DALYs)** in India.
- The estimated societal cost was around **₹6.24 trillion**.
- Per-capita alcohol consumption has increased by around **240% over the past two decades**.
- Nearly **half of alcohol consumption remains unrecorded**.

2. Biopsychosocial Factors

Alcohol consumption can be influenced by:

- **Genetic predisposition**
- Activation of the brain's **reward system**
- **Stress and anxiety**
- Desire for **euphoria**
- **Peer pressure**
- Changing **urban lifestyles**

3. Commercial Influences

The visibility and attractiveness of alcohol are increased by:

- **Surrogate advertising**
- **Influencer marketing**
- Alcohol-related content on **OTT platforms**
- Attractive packaging
- New products such as **pre-mixed drinks and flavoured spirits**

These factors can particularly increase alcohol's appeal among **younger consumers**.

4. Easy Availability and Affordability

- Widespread retail availability and **online delivery** make alcohol easier to access.
- Low-cost **Indian Made Indian Liquor (IMIL)** increases affordability, especially among rural and lower-income populations.
- Rising **urban incomes** can further increase purchasing capacity.

Arguments in Favour of Alcohol Prohibition

1. Reduction in Gender-Based Violence

- Restricting alcohol availability can reduce **alcohol-related intimate partner violence**.
- Studies in Bihar have found a substantial decline in **spousal violence against women** compared with other States.
- A **2024 Lancet Regional Health** study estimated that Bihar's prohibition prevented **more than 21 lakh cases of violence**.

2. Better Use of Household Income

- Alcohol restrictions can prevent vulnerable households from spending a large share of their **discretionary income on alcohol**.
- Such money may instead be directed towards:
 - **Children's education**

- **Nutrition**
- **Household assets**
- Other productive needs

3. Public Health Benefits

- Reduced alcohol consumption can lower the burden of:
 - **Liver disease**
 - **Cardiovascular diseases**
 - Other **non-communicable diseases**
 - Alcohol-related injuries
- A 2024 study estimated that Bihar's ban prevented around **18 lakh cases of overweight/obesity among men**.

4. Wider Economic Benefits

- Measuring prohibition only through **lost excise revenue** gives an incomplete picture.
- Reduced alcohol consumption can generate long-term benefits through:
 - Better health
 - Greater productivity
 - Improved household welfare
 - Lower social costs
- A 2019 study estimated that alcohol consumption costs India around **1.45% of GDP annually**.
- The social costs of alcohol consumption are estimated to be **more than three times the economic gains from alcohol excise taxes**.

Arguments Against Complete Prohibition

1. Growth of Illegal Markets

- Prohibition does not necessarily eliminate demand.
- Instead, demand can shift towards **illegal markets**.

This can encourage:

- **Liquor mafias**
- **Cross-border smuggling**
- **Corruption**
- Bihar faces particular challenges because of its borders with **Nepal, Uttar Pradesh, West Bengal and Jharkhand**.

2. Hooch Tragedies

- When regulated alcohol becomes unavailable, consumers may turn to **illicit and unregulated liquor**.

- In **2025**, a hooch tragedy in **Amritsar, Punjab**, claimed **21 lives**, while several others were hospitalised.
- The spurious liquor was suspected to contain **methanol**, a highly toxic chemical.

What is Hooch?

- **Hooch** refers to poor-quality, often illegally produced alcohol.
- Methanol-contaminated liquor can cause:
 - **Mass poisoning**
 - **Death**
 - **Permanent disability**

3. Unequal Enforcement

- Wealthier consumers may have better access to **smuggled or illicit liquor**.
- Poorer sections may be more exposed to arrest for:
 - Consumption
 - Small-scale supply
- This creates concerns about **inequality in enforcement**.

4. Revenue Loss for States

- Alcohol excise duties are an important source of revenue for many State governments.
- They can account for around **15-25% of total State tax revenue**.
- Prohibition can therefore remove a major fiscal source and affect the ability of States to finance:
 - Infrastructure
 - Welfare schemes
 - Healthcare
 - De-addiction programmes
- At the same time, the long-term gains from better **health and productivity** are difficult to measure accurately.

5. Pressure on Courts and Prisons

- Strict prohibition laws can result in **large numbers of arrests and prosecutions**.
- This can:
 - Increase incarceration, particularly among poorer and marginalised groups.
 - Add to the workload of courts.
 - Increase pressure on the prison system.

6. Limited Long-Term Effectiveness

- Prohibition may reduce alcohol consumption and domestic violence in the **short term**.
- However, experiences such as:
 - **US Prohibition (1920-1933)**
 - **Haryana's prohibition in the 1990s**
- show that complete bans often struggle to **eliminate demand in the long run**.

How Can Alcohol-Control Policy Be Improved?

1. Use the 'Nudge' Approach

Instead of relying only on blanket prohibition, governments can use **behavioural economics**.

Measures may include:

- Strict **age verification**
- Complete ban on **surrogate advertising**
- **Graphic health warnings** on alcohol packaging
- Policies designed to gradually reduce harmful consumption

2. Community-Based De-addiction

- De-addiction services should be taken closer to communities.
- **Panchayati Raj Institutions (PRIs)** and women's **Self-Help Groups (SHGs)** can help:
 - Identify vulnerable households.
 - Provide community counselling.
 - Support rehabilitation.
- The **Kudumbashree model** can provide a useful example of community participation.

3. Technology-Based Regulation

- States can explore **state-monopolised, biometric-linked rationing systems**.
- For example, **smart liquor cards** could limit the quantity an individual can purchase over a week or month.

4. Ring-Fence Alcohol Revenue

- Instead of putting all alcohol excise revenue into the general State budget, a fixed portion could be **legally earmarked** for health and welfare.
- For example, **20% of the alcohol 'sin tax'** could be ring-fenced for:
 - Psychiatric healthcare
 - De-addiction centres

- Nutrition programmes for **women and children**

5. Rehabilitation Over Criminalisation

- Alcohol dependence should primarily be treated as a **public-health and social issue**, rather than only as a criminal matter.
- Governments should strengthen:
 - **De-addiction centres**
 - **Counselling**
 - **Mental-health services**
 - **Community-based rehabilitation**
- At the same time, enforcement should remain strict against **illegal alcohol production and supply networks**.



Minimum Support Price (MSP) Regime



WHAT'S MSP

It is a "**minimum price**" for any crop that the government considers as remunerative for farmers and hence deserving of "**support**". It's also the price that government agencies pay whenever they procure the particular crop. The government now fixes MSPs for 23 crops, but is NOT legally bound to pay these even if open market rates for the said produce are ruling below their announced floor prices

#QUIXPLAINED

1

Why in News?

- Farmer protests in **Madhya Pradesh** over procurement of summer **moong at MSP** ended after the State Government increased the procurement limit.

- Procurement was increased from **25% to 60% of estimated moong production**.
- The issue has again raised the debate on the **long-term sustainability of India's MSP regime** and the need for agricultural reforms.

Why is the MSP Regime Becoming Difficult to Sustain?

- **High Fiscal Burden**
 - Extending MSP-backed procurement to all notified crops could cost the government around **₹10–17 lakh crore**.
 - This may reduce funds available for irrigation, agricultural R&D, storage and rural infrastructure.
- **Market Distortion**
 - A legally guaranteed MSP can discourage private buyers from participating below the MSP.
 - It can push the government towards becoming the major or **sole buyer (monopsony)**.
- **Cropping Pattern Distortion**
 - Assured procurement of **rice and wheat** encourages farmers to continue with these crops.
 - This discourages diversification towards **pulses, oilseeds and horticulture**.
- **Ecological Problems**
 - MSP-supported paddy cultivation in **Punjab and Haryana** has contributed to:
 - Groundwater depletion
 - Soil degradation
 - Stubble burning
- **Limited Coverage**
 - The **Shanta Kumar Committee (2015)** estimated that only about **6% of farmers** benefit from MSP procurement.
 - Benefits are concentrated in states such as Punjab and Haryana and among larger surplus-producing farmers.

- **Storage Problems**
 - Large procurement creates excess foodgrain stocks.
 - Rice and wheat stocks can exceed PDS and buffer-stock requirements.
 - This increases storage costs and wastage.
- **Outdated Cost Data**
 - MSP calculations use lagged cost data.
 - Sudden increases in fertiliser, diesel, labour and other input costs may not be reflected quickly.
- **WTO Concerns**
 - Greater MSP procurement may increase trade-distorting domestic support.
 - Under the **WTO Agreement on Agriculture**, developing countries have a **10% de minimis limit** for certain Amber Box support.

What is Minimum Support Price (MSP)?

- MSP is a **pre-announced price** at which the government procures specified agricultural commodities from farmers.
- It protects farmers from:
 - Sharp market-price falls
 - Distress sales
 - Bumper-harvest price crashes
- It also supports **national food security**.

Who Recommends MSP?

- MSPs are recommended by the **Commission for Agricultural Costs and Prices (CACP)**.
- CACP is an attached office of the **Ministry of Agriculture & Farmers Welfare**.
- Its recommendations are **advisory**.
- Final approval is given by the **Cabinet Committee on Economic Affairs (CCEA)**.

MSP Coverage

- The government announces MSP for **22 mandated crops**.
- Sugarcane has a separate **Fair and Remunerative Price (FRP)**.
- Major procurement agencies include:
 - **Food Corporation of India (FCI)**
 - **NAFED**

- **Cotton Corporation of India (CCI)**.

How is MSP Calculated?

A2 Cost

Includes direct paid-out expenses such as:

- Seeds
- Fertilisers
- Pesticides
- Hired labour
- Fuel
- Irrigation

A2 + FL

- Includes **A2 cost + imputed value of family labour**.
- Since **2018–19**, the government has ensured MSP at a minimum of **1.5 times the all-India weighted average cost of production**.
- This provides a minimum **50% return over production costs**.

C2 + 50%

- Recommended by the **National Commission on Farmers (NCF)** headed by **Dr. M.S. Swaminathan**.
- It proposes MSP at least **50% above comprehensive C2 cost**.
- C2 includes:
 - A2 + FL
 - Imputed rent on owned land
 - Interest on fixed capital
- Farmer organisations continue to demand this formula.
- The government has **not accepted** it, citing fiscal burden and possible market distortions.

Digital Procurement Platforms

e-Samridhi & e-Samyukti

- Developed by **NAFED and NCCF**.
- Used for procurement of **pulses and oilseeds**.
- Farmers can:
 - Register online
 - Upload land and bank details
 - Use Aadhaar identification
 - Book procurement slots
 - Receive digital payments

Kapas Kisan App

- Developed by **CCI** for cotton farmers.

- Provides:
 - Self-registration
 - Slot booking
 - Real-time quality assessment updates
 - Payment tracking

MSP and Agricultural Self-Sufficiency

- MSP is increasingly being used not only as a farmer safety net but also to promote **Atmanirbharta in agriculture**.
- The government aims to eliminate **pulse imports by 2027**.
- It has committed to procure **100% of state production of Tur, Urad and Masoor** until **2028–29**.
- Overall foodgrain procurement benefited **1.84 crore farmers in 2024–25**.

What Can Be Done Beyond MSP?

Minimum Income Support (MIP)

- Provide **per-acre direct income support** to farmers.
- It can provide income security without directly distorting market prices.

Strengthen PM-AASHA

- Expand the **Price Deficiency Payment System (PDPS)**.
- Farmers receive the difference between MSP and market price.
- This can reduce the need for costly physical procurement and storage.

Improve Agricultural Infrastructure

Focus on:

- Modern warehouses
- Cold chains
- Agriculture Infrastructure Fund
- Stronger **e-NAM**
- Better price discovery

Strengthen FPOs

Farmer Producer Organisations (FPOs) can:

- Increase farmers' bargaining power
- Improve market access
- Reduce input costs
- Improve price realisation

Promote Crop Diversification

Encourage:

- Pulses
- Oilseeds
- Millets
- Horticulture

This can reduce import dependence and improve ecological sustainability.

Encourage Contract Farming

- Promote farmer-buyer agreements with proper legal safeguards.
- Benefits can include:
 - Assured markets
 - Stable prices
 - Technology transfer

Improve Agricultural R&D

Focus on:

- Climate-resilient seeds
- Precision agriculture
- Soil Health Card
- **Per Drop More Crop**
- Better extension services

Targeted MSP

- Limit assured procurement to **strategically important crops and regions**.
- States can develop procurement models suited to their local agricultural conditions.

WTO-Compatible Support

- Gradually shift from trade-distorting **Amber Box price support** towards:
 - Income support
 - Infrastructure investment
 - Other **Green Box** measures.

Conclusion

- MSP remains important for **farmer protection and food security**, but expanding physical procurement across all crops can create fiscal, ecological and market-related problems.
- A more sustainable approach is to combine **targeted MSP with income support, PM-AASHA, crop diversification, FPOs, market reforms, rural infrastructure and climate-resilient agriculture**.
- The broader shift should be from **price support alone towards comprehensive farmer income and livelihood support**.

Pradhan Mantri Viksit Bharat Rojgar Yojana (PM-VBRY)



Why in News?

- PM-VBRY completed one year of implementation on 1 August 2026.
- It is aimed at expanding **formal employment** and **social security coverage** in India.
- The scheme focuses on:
 - First-time employment.
 - Additional job creation.
 - Expansion of EPFO-linked social security.
 - Support for labour-intensive manufacturing.

Key Facts About PM-VBRY

About

- PM-VBRY promotes first-time employment and additional job creation.
- It provides incentives to both:
 - Employees
 - Employers
- The scheme is implemented through the **Employees' Provident Fund Organisation (EPFO)**.

Implementation Period

- Announced in **August 2025**.
- Implemented from **1 August 2025 to 31 July 2027**.
- Total outlay: **₹99,446 crore**.

Employment Target

- Target: **More than 3.5 crore people**.
- This includes **1.92 crore first-time employees**.

Social Security

- EPFO-linked employment brings more workers under formal social security.
- Special focus is given to:
 - Labour-intensive manufacturing.

- New industries.
- Expanding industries.

National Manufacturing Mission

- PM-VBRY complements the **National Manufacturing Mission**.
- It supports the growth of India's formal industrial workforce.

Two-Part Incentive Framework

PM-VBRY provides separate incentives to employees and employers.

1. Incentive for First-Time Employees

- Employees earning up to **₹1 lakh per month** are eligible.
- One-time incentive equals **one month's EPF wage**, subject to a maximum of **₹15,000**.
- **First instalment:** After completing **6 months of service**.
- **Second instalment:** After:
 - 12 months of continuous service.
 - Completion of a financial literacy programme.
- A part of the incentive is deposited in a **designated savings instrument** to encourage long-term financial security.

2. Support to Employers

- Employers can receive up to **₹3,000 per month** for each eligible additional employee.
- Employee's monthly salary must be up to **₹1 lakh**.
- The employee must be retained for at least **6 months**.
- Support is provided for **2 years**.
- For the **manufacturing sector**, the support continues during the **third and fourth years**.
- The incentive aims to:
 - Reduce hiring costs.
 - Encourage additional recruitment.
 - Promote sustained employment.

Impact of PM-VBRY

Employment and Formalisation

- The scheme has encouraged employers to create new jobs.
- It has promoted first-time hiring.
- It has expanded **EPFO-based social security**.

- It is strengthening India's organised labour market.

Beneficiary Reach

- More than **72 lakh first-time employees** joined the formal workforce since August 2025.
- More than **15 lakh beneficiaries** received employment-linked incentives.

Women's Participation

- Nearly **30% of beneficiaries are women**.
- This supports greater participation of women in formal employment.

Digital Implementation

PM-VBRY operates through a **fully digital, EPFO-linked system**.

Key digital tools include:

- Aadhaar authentication
- Universal Account Numbers (UANs)
- Electronic Challan-cum-Return (ECR)
- Face Authentication Technology
- UMANG App — Unified Mobile Application for New-age Governance

Transparent Benefit Delivery

- Incentives are transferred directly to **Aadhaar-linked bank accounts** through **Direct Benefit Transfer (DBT)**.
- The PM-VBRY portal enables:
 - Real-time monitoring of beneficiaries.
 - Monitoring of sector-wise progress.
 - Greater transparency in implementation.

Outreach and Support

- Nationwide awareness campaigns are being conducted to increase participation.
- Cross-functional teams include officials from:
 - EPFO
 - Employees' State Insurance Corporation (ESIC)
 - Chief Labour Commissioner (CLC)
- These teams support grassroots participation and effective implementation.

Significance

PM-VBRY links **employment generation with social security**.

Its major focus areas are:

- Formalisation of employment.
- First-time employment.
- Lower hiring costs for employers.
- Greater female participation.
- Expansion of EPFO coverage.
- Strengthening of manufacturing employment.
- Digital and transparent benefit delivery.
- Building a stronger and more secure organised workforce.

VISHWAS 2026



Why in News?

- The **Employees' Provident Fund Organisation (EPFO)** has launched **VISHWAS 2026**.
- It aims to facilitate **amicable settlement of disputes** related to the levy of **damages and penalties**.
- The initiative provides employers with a **transparent, fully digital and time-bound** mechanism to settle eligible cases.

About VISHWAS 2026

- **Launched by:** Employees' Provident Fund Organisation (EPFO).
- **Ministry:** Ministry of Labour & Employment.
- **Nature:** One-time **dispute resolution initiative**.
- **Effective from:** 29 June 2026.
- **Duration:** 6 months from the date of notification.

Objectives

The scheme aims to:

- Promote **voluntary compliance**.
- Reduce **litigation**.
- Resolve long-pending disputes relating to **damages and penalties**.
- Provide **speedy settlement** of eligible cases.
- Safeguard the **interests of employees**.

Cases Covered

VISHWAS 2026 broadly covers four categories:

1. Cases under judicial challenge

- Cases where orders imposing **penalty or damages** are being challenged before a judicial forum.

2. Recovery pending

- Final damages or penalty orders where:
 - Recovery is pending.
 - Recovery is only partly completed.
 - **Recovery Certificate (RRC)** cases are involved.

3. Notice issued, order pending

- Cases where notices for damages or penalties have been issued, but the **final order has not yet been passed**.

4. Notice not yet issued

- Cases where notices for penalty or damages **have not yet been issued**.

Cases Excluded

The scheme does not cover:

- Cases where damages or penalties have already been **fully recovered**.
- Cases involving:
 - Fraud.
 - Misappropriation.
 - Deliberate falsification of records.
- Cases where applicable **statutory interest has not been fully deposited**.

How Can Employers Apply?

- Eligible employers with pending disputes can apply through the **EPFO Employer Portal**.
- Authentication can be done using:
 - **Digital Signature Certificate (DSC)**.
 - **e-Sign**.
- Applicants must provide an undertaking that they will **not pursue any further appeal**

regarding the dispute settled under the scheme.

Benefits

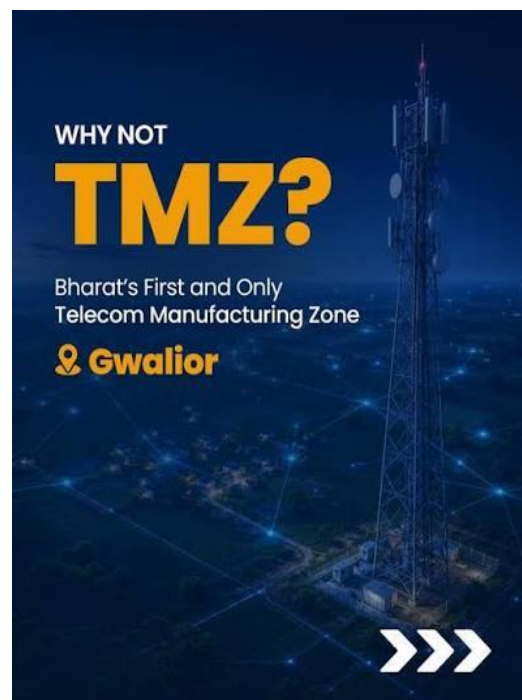
For Employers

- Eligible employers can settle disputes at **substantially reduced rates** for historical defaults made **before 14 June 2024**.
- They must pay the applicable **statutory interest** and meet the prescribed conditions.
- This provides an opportunity to regularise old EPF compliance issues at a **significantly lower financial cost**.

For Employees

- Although the scheme is mainly aimed at employers, employees can benefit indirectly through:
 - Faster resolution of long-pending EPF disputes.
 - Better compliance by establishments.
 - More efficient EPF-related processes.

Telecom Manufacturing Zone (TMZ), Gwalior



Why in News?

- The **Telecom Manufacturing Zone (TMZ)** in **Gwalior, Madhya Pradesh** has secured fresh investment commitments of **₹2,000 crore**.
- This has taken the **total committed investment to ₹5,500 crore**.

About Telecom Manufacturing Zone (TMZ)

- Located in Gwalior, Madhya Pradesh.
- It is India's first dedicated telecom manufacturing cluster.
- It aims to create a globally competitive, end-to-end telecom manufacturing ecosystem.

Objective

- Transform India from a telecom services-led economy into a telecom products and manufacturing hub.
- Based on the vision of:
 - "Make in India"
 - "Make for the World"
- Key focus areas:
 - Increase domestic value addition
 - Develop indigenous intellectual property (IP)
 - Boost telecom exports

Integrated Ecosystem

The TMZ will bring together the complete telecom value chain, including:

- Design
- Research & Development (R&D)
- Testing
- Manufacturing
- Semiconductors
- Optical fibre
- Telecom equipment
- Electronic components
- Allied industries
- It will also have common plug-and-play testing infrastructure.

Employment

- The zone is expected to generate more than 18,000 employment opportunities.

Strategic Advantages of Gwalior

Gwalior offers several advantages for the project:

- Central geographical location
- Strong connectivity
- Skilled workforce
- Competitive operating costs
- Existing industrial ecosystem
- Improved logistics

- Upcoming Agra–Gwalior Greenfield Expressway

Implementation

- The project will be jointly implemented through a Special Purpose Vehicle (SPV).
- The SPV will comprise:
 - Department of Telecommunications (DoT)
 - Government of Madhya Pradesh
- The State Government will support the project through:
 - Land
 - Capital
 - Skill development
 - Employment-linked incentives
 - Logistics support

Urban Cooperative Banks (UCBs)



Why in News?

- The Reserve Bank of India (RBI) will resume "on-tap" licensing of Urban Cooperative Banks (UCBs) after a gap of more than two decades.
- In the August 2026 Monetary Policy Committee (MPC) meeting, RBI released draft guidelines for stakeholder consultation.
- The move aims to strengthen the cooperative banking sector.

Key Highlights of the Draft Guidelines

- **Operational Track Record:** Credit cooperative societies must have at least 10 years of active operations to apply for a banking licence.
- **Deposit Requirement:** Minimum deposit base of ₹10,000 crore.
- **Net Worth:** Minimum net worth of ₹300 crore.

- **Financial Health:**
 - Minimum **CRAR: 12%**
 - Maximum **Net NPA ratio: 3%**
- **Geographical Presence:** RBI will initially give preference to societies registered under the **Multi-State Co-operative Societies Act, 2002**, especially those operating across multiple states.

Why Were New UCB Licences Paused?

- New UCB licences were paused in **2004**.
- The earlier **1993–2001 liberalised licensing policy** resulted in rapid expansion of UCBs.
- It was also associated with:
 - Governance problems
 - Financial instability
 - Weak regulatory practices

Interest Rate Framework

- RBI has also proposed to **rationalise the interest rate framework** for regulated entities.
- It is reviewing the:
 - **Marginal Cost of Funds Based Lending Rate (MCLR)**
 - **External Benchmark Lending Rate (EBLR)**
- The proposed reforms aim to:
 - Standardise interest calculation
 - Improve benchmark reset practices
 - Bring greater transparency in loan pricing
 - Strengthen monetary policy transmission
 - Improve consumer protection

National Urban Cooperative Finance and Development Corporation (NUCFDC)

- **NUCFDC** is a specialised **NBFC** registered with RBI.
- It is the **apex umbrella organisation** for UCBs.
- It supports UCBs through:
 - Shared digital banking technology
 - Cybersecurity
 - Liquidity assistance
 - Regulatory compliance
 - Capacity building

- It can help smaller UCBs **reduce costs and improve governance**.
- **NUCFDC** aims to obtain official **Self-Regulatory Organisation (SRO)** status after meeting the required **₹300 crore paid-up capital** threshold.
- It is currently headquartered in **New Delhi** and is proposed to be shifted to **Maharashtra**.
- **Maharashtra, Gujarat, Goa and Karnataka** together account for nearly **70% of UCBs**.

Urban Cooperative Banks (UCBs)

- UCBs are cooperative banks operating mainly in **urban and semi-urban areas**.
- They provide banking services to:
 - Small borrowers
 - MSMEs
 - Retail customers
- UCBs can issue **equity shares and preference shares** to raise capital, subject to RBI approval and regulations.

Regulation of UCBs

- UCBs are regulated by the **RBI** under the **Banking Regulation Act, 1949**.
- Their managerial aspects are overseen by:
 - **Registrar of Cooperative Societies (RCS)**
 - **Central Registrar of Cooperative Societies (CRCS)**
- The **Banking Regulation (Amendment) Act, 2020** strengthened RBI's regulatory and supervisory powers over cooperative banks.
- India has around **1,457 Urban Cooperative Banks**, according to RBI and NABARD.

Four-Tier Structure of UCBs

Since **2022**, RBI has classified UCBs into four tiers based on their deposit size.

Tier	Deposit Size
Tier 1	Unit UCBs, Salary Earners' UCBs and other UCBs with deposits up to ₹100 crore
Tier 2	Deposits above ₹100 crore and up to ₹1,000 crore
Tier 3	Deposits above ₹1,000 crore and up to ₹10,000 crore
Tier 4	Deposits exceeding ₹10,000 crore

Government e-Marketplace (GeM)



Why in News?

- The **Government e-Marketplace (GeM)** completed **10 years of operations on 9 August 2026**, marking a decade of technology-driven transformation in public procurement.

What are the Key Features of GeM?

- **About GeM:**
 - GeM is a unified, end-to-end digital platform for government procurement.
 - It aims to make procurement **paperless, cashless, contactless, transparent and competitive.**
- **Purpose:**
 - It uses digital technology and standardised processes to simplify and modernise government purchasing.
- **Coverage:**
 - GeM serves:
 - Central and State Ministries
 - Government Departments
 - PSUs
 - Autonomous Bodies
 - Local Bodies
 - Panchayats
 - Cooperatives
- **End-to-End Procurement:**
 - It covers the complete procurement process from:
 - Seller registration
 - Product listing
 - Bidding
 - Contract award

- Order fulfilment
 - Payment
- **Transparency and Competition:**
 - Buyers can use:
 - Direct purchase
 - Comparison
 - Electronic bidding
 - Reverse auctions
 - Digital records and real-time monitoring improve accountability and reduce discretion.
- **Data-Driven Procurement:**
 - Tools such as **GeM Availability Report, Past Transaction Summary, Last Purchase Price and price-trend analytics** help buyers make informed decisions.
- **Integration:**
 - GeM is being integrated with:
 - **Central Public Procurement Portal (CPPP)**
 - **Indian Railway Electronic Procurement System (IREPS)**
 - **Defence Public Procurement Portal (DPPP)**
- **Defence Procurement:**
 - The Department of Military Affairs crossed **₹1.35 lakh crore in cumulative Gross Merchandise Value (GMV)** as of 6 August 2026.

How Has GeM Expanded Public Procurement?

- **Expanding Procurement Scale:**
 - Connects more than **1.37 lakh government buyer organisations** with nearly **25 lakh sellers and service providers.**
 - Cumulative procurement has crossed **₹20 lakh crore.**
- **Marketplace Coverage:**
 - Offers more than **10,660 product categories** and **350 service categories.**
 - Products include medical equipment, computers and handicrafts.
 - Services include transport, catering, vehicle hiring and manpower services.

- **Digital Procurement:**
 - Supports:
 - **Digital India**
 - **Make in India**
 - **Aatmanirbhar Bharat**
 - **Vocal for Local**
 - **Ease of Doing Business**
- **Ease-of-Business Reforms:**
 - **Rate Contracts** support recurring procurement.
 - Removal of **Caution Money requirements** reduces compliance burdens for sellers.
- **Innovation Partnerships:**
 - GeM partnered with **IN-SPACE** for space-tech procurement.
 - It also partnered with the **Drone Federation India** for drone procurement.
- **Seller Financing – GeM Sahay:**
 - Provides eligible proprietorship sellers with **instant, collateral-free and paperless working-capital loans**.
 - This helps sellers fulfil government orders without requiring buyer consent.
- **Capacity and Compliance Support:**
 - Partnerships with **AJNIFM, CareEdge Ratings, NCGG and IIPA** support training, research and policy development.
 - Integration with **EPFO** strengthens compliance in manpower outsourcing services.
- **GeM Suvidha Kendras:**
 - Under the June 2026 partnership with CSC-SPV, **50 GeM Suvidha Kendras** are being established on a pilot basis.
 - They will assist with:
 - Registration
 - Vendor assessment
 - Catalogue creation
 - Capacity building
 - Grievance redressal

Participation of MSEs and Other Groups

- **Micro and Small Enterprises (MSEs):**
 - In 2025–26, more than **11 lakh registered MSEs** executed over **51 lakh orders** worth more than **₹2.36 lakh crore**.
- **Women-Led Enterprises:**
 - More than **2.1 lakh registered women-led MSEs** secured procurement exceeding **₹28,000 crore**.
 - Initiatives such as **Womaniya** and partnerships with **UN Women** support their participation.
- **SC/ST Enterprises:**
 - Procurement from SC/ST enterprises exceeded **₹6,000 crore**.
 - It recorded nearly **28% annual growth**.
- **Startups:**
 - Procurement from startups crossed **₹19,000 crore**.
 - It recorded more than **36% annual growth**.
- **SWAYATT:**
 - **SWAYATT (Startups, Women & Youth Advantage through e-Transactions)** promotes participation of:
 - Startups
 - Women entrepreneurs
 - MSEs
 - SHGs

Dedicated Market Platforms

- **Womaniya:**
 - Promotes products of women entrepreneurs and women SHGs.
- **SARAS Collection:**
 - Connects rural SHGs with government buyers.
- **Startup Runway 2.0:**
 - Provides startups with a dedicated platform to showcase innovative products and services.

Key Point

GeM has transformed government procurement by bringing buyers and sellers onto a transparent digital

platform while increasing opportunities for MSEs, women entrepreneurs, startups and other small businesses.

Ship Recycling in India



Why in News?

India became the **world's leading ship recycling nation in 2025**, with its global market share rising to **35.4%** and recycling volume increasing by nearly **60%** to **2.99 million gross tons (GT)**.

- The growth has been supported by **regulatory reforms, yard modernisation, Hong Kong Convention compliance, and improved safety and environmental standards.**

How Has India Emerged as a Global Leader in Ship Recycling?

- **Global Leadership:** According to UNCTAD, India ranked **first globally in ship recycling in 2025**.
 - India's share increased from **30.1% in 2024 to 35.4% in 2025**.
- **Recycling Volume:** It increased from **1.86 million GT in 2024 to 2.99 million GT in 2025**, nearly **60% growth**.
- **Maritime India Vision 2030:** India achieved its target of becoming the world's leading ship-recycling nation **five years ahead of schedule**.
- **Capacity Expansion:** India aims to almost double ship-recycling capacity to around **9 million Light Displacement Tons (LDT)**.

Alang-Sosiya Cluster

- Located in **Gujarat**, it is the backbone of India's ship-recycling industry.
- Accounts for around **98% of India's ship-recycling activity**.
- Has annual capacity of around **6 million GT**.

- Produces around **3.50 million metric tonnes of steel annually** through recycling.
- The cluster has:
 - Authorised recycling yards
 - Steel re-rolling mills
 - Waste-management facilities
 - Allied infrastructure

Worker Safety

- The **Safety Training and Labour Welfare Institute** at Alang-Sosiya has trained more than **1.5 lakh workers**.
- Training covers:
 - Occupational safety
 - Hazardous-material handling
 - Emergency response

Other Ship Recycling Yards

Apart from Alang-Sosiya, facilities include:

- **Amar Iron Udyog — Kolkata**
- **Steel Industrials Kerala Limited (SILK) — Kerala**

Modernisation of Yards

Indian yards have been upgraded with:

- Engineered plots
- Impermeable surfaces
- Drainage systems
- Mechanised handling equipment
- Segregated hazardous-waste storage
- Authorised waste-disposal systems
- Improved safety arrangements

What Is the Regulatory Framework for Ship Recycling?

Ship Recycling Act, 2019

- Provides the **principal legal framework** for ship recycling in India.
- Designates the **Directorate General of Shipping** as the National Authority.
- Covers:
 - Authorisation
 - Certification
 - Inspection
 - Enforcement

Ship Recycling Rules, 2021

These operationalise the Act and provide requirements for:

- Facility authorisation
- Ship-recycling plans
- Hazardous-material management
- Worker safety
- Training
- Reporting

Ship Recycling Regulations, 2026

- Strengthen **operational, environmental and safety standards**.
- Aim to ensure uniform compliance across recycling facilities.

Hong Kong Convention

- The **Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships** is the major international framework for ship recycling.
- It became legally binding on **26 June 2025**.
- India has aligned its domestic system with the Convention through its **Ship Recycling Act, Rules and Regulations**.

Modernisation Support

- Government provided **₹53.5 crore** for yard modernisation.
- This helped **115 ship-recycling facilities** achieve Hong Kong Convention compliance.

EU Green-Listing

- **35 Alang ship-recycling yards** have applied for inclusion in the EU list of approved facilities.
- Inspections are underway.
- **Shree Ram Vessel Scrap** and **Y. S. Investments** have been included in the draft 16th European List of Ship Recycling Facilities.

Inventory of Hazardous Materials (IHM)

- IHM identifies **hazardous substances present on ships**.
- It supports their safe management throughout the ship's lifecycle.
- It improves:
 - Traceability
 - Transparency
 - Risk management
 - Safe recycling

Ship-Breaking Credit Note Scheme

- Introduced under the **Ship Building Financial Assistance Scheme (SBFA) 2.0**.
- It encourages shipowners to recycle vessels at **compliant Indian recycling yards** while supporting domestic shipbuilding.

Financial Incentive

- Ship scrapping generates a **Credit Note equal to 40% of the vessel's recycled scrap value**.
- The Credit Note can be used to purchase a **new vessel built in India**.
- It can cover up to **5% of the value of the new Indian-built vessel**.

Ex-INS Viraat: Case Study

- **Ex-INS Viraat** was one of the world's longest-serving warships.
- It served:
 - **Royal Navy — 27 years**
 - **Indian Navy — 30 years**
- It was decommissioned in **March 2017**.
- The aircraft carrier reached **Alang, Gujarat, in September 2020** for dismantling and recycling.
- During its service, it:
 - Recorded more than **22,622 flying hours**
 - Spent **2,252 days at sea**
 - Covered more than **5.88 lakh nautical miles**
- Its recycling demonstrated India's ability to safely recover valuable materials from **large and complex vessels**.

Significance of Ship Recycling

1. Circular Economy

- Recycling recovers valuable materials such as **steel and other metals**.
- It reduces the need for fresh extraction of natural resources.

2. Resource Security

- Alang alone produces around **3.50 million metric tonnes of steel annually** through recycling.

3. Employment

- The sector creates employment across:
 - Recycling yards
 - Steel industries

- Waste management
- Transport and logistics

4. Environmental Protection

Modern recycling practices help improve:

- Hazardous-waste management
- Pollution control
- Resource recovery
- Occupational safety

5. Global Competitiveness

Compliance with the **Hong Kong Convention** and EU requirements can help Indian yards attract more international ships for responsible recycling.

Way Forward

India should focus on:

- **Green ship-recycling technologies**
- **Better worker safety**
- Strong hazardous-waste management
- Greater mechanisation
- International environmental compliance
- Expansion of recycling capacity
- Stronger linkage between **ship recycling and domestic shipbuilding**

Conclusion

India's rise as the **world's leading ship-recycling nation** shows the growing importance of the sector for **resource security, employment, circular economy and sustainable maritime development**. Continued investment in **modern infrastructure, worker safety and green technologies** can help India maintain its global leadership in responsible ship recycling.

Container Manufacturing Assistance Scheme (CMAS)

WHY CMAS MATTERS

- Growing Global Trade**
Rising trade drives higher demand for shipping containers.
- Growing Container Demand**
India's expanding EXIM trade requires reliable container availability.
- Import Dependence**
Nearly 2 million empty containers imported annually.
- CMAS Response**
Promotes domestic manufacturing and reduces import dependence.

Why in News?

- India's growing trade and manufacturing activities are creating a greater need for **shipping containers**. At present, dependence on imported containers can create supply-chain risks.
- To address this, the Government has proposed the **Container Manufacturing Assistance Scheme (CMAS)** to build a strong domestic container manufacturing industry and strengthen India's maritime and logistics sector.

What are the Key Facts About CMAS?

- **Budget Announcement:** CMAS was announced in the **Union Budget 2026–27** to develop a competitive domestic container manufacturing industry.
- **Financial Outlay:** The scheme has a proposed outlay of **₹10,000 crore over five years**.
- **Expansion of Capacity:** It will support both:
 - Setting up **new manufacturing units**
 - Expansion of **existing manufacturing facilities**
- **Production Target:** India aims to increase its annual container manufacturing capacity to around **7.5 lakh Twenty-foot Equivalent Units (TEUs)**, nearly **10 times the present capacity**.
- **Financial Assistance:** Support will be available for:
 - **Greenfield projects**
 - **Brownfield expansion**
 - Operational support to improve competitiveness
- **Ecosystem Development:** The scheme will also promote:
 - Testing infrastructure
 - Skill development
 - Capacity building
- **Strategic Goal:** The broader objective is to create a **globally competitive container manufacturing ecosystem**, reduce import dependence and improve supply-chain resilience.
- **Policy Link:** CMAS supports wider initiatives such as **Make in India** and **Maritime Amrit Kaal Vision 2047**, while also complementing multimodal logistics development.

What are Shipping Containers?

Shipping containers are **standardised steel units** used to transport goods through different modes of transport.

- They allow cargo to move between **ships, railways and road vehicles** without repeatedly unloading and repacking the goods.
- They follow internationally accepted **ISO standards**, making them suitable for global intermodal transport.
- The most common sizes are **20-foot and 40-foot containers**.
- Container capacity is commonly measured in **Twenty-foot Equivalent Units (TEUs)**.

Government Initiatives Supporting the Maritime Ecosystem

Building an Integrated Container and Logistics Network

Bharat Container Shipping Line

- In **February 2026**, the Ministry of Ports, Shipping and Waterways signed an MoU to establish the **Bharat Container Shipping Line (BCSL)**.
- It brings together:
 - Shipping Corporation of India (SCI)
 - Container Corporation of India (CONCOR)
 - Jawaharlal Nehru Port Authority
 - V.O. Chidambaranar Port Authority
 - Sagarmala Finance Corporation Limited
- The initiative envisages around **₹99,149 crore of investment** for developing **51 container vessels** of different sizes and procuring domestically manufactured containers.

PM Gati Shakti

- **PM Gati Shakti** improves multimodal connectivity between:
 - Ports
 - Railways
 - Highways
 - Industrial centres
- Better connectivity can reduce logistics bottlenecks and make cargo movement more efficient.

National Logistics Policy

The **National Logistics Policy** focuses on:

- Improving operational efficiency
- Digital integration
- Reducing logistics costs
- Better coordination across the freight ecosystem

Sagarmala Programme

The **Sagarmala Programme** promotes:

- Port-led development
- Maritime infrastructure
- Better connectivity
- Efficient cargo movement

Together with CMAS and BCSL, it can help create a more integrated logistics network for India's growing trade.

Wider Maritime Transformation

Modern Maritime Laws

India has introduced new laws to modernise the maritime regulatory framework:

- **Merchant Shipping Act, 2025**
- **Coastal Shipping Act, 2025**
- **Indian Ports Act, 2025**

These cover areas such as shipping, coastal trade and port governance.

Digital Maritime Governance

Initiatives such as:

- **One Nation One Port Process (ONOP)**
- **Maritime Single Window**
- **e-Samudra**

aim to reduce paperwork, simplify procedures and improve efficiency in port and shipping operations.

Shipbuilding Support

- The Government has announced a **₹70,000 crore Shipbuilding Financial Assistance Package**.
- The objective is to expand India's domestic shipbuilding capacity and attract investment into maritime manufacturing.

Integrated Maritime Ecosystem

- The combination of **CMAS, BCSL, shipbuilding support and port development** can connect different parts of India's maritime value chain:

- **Shipbuilding + Container Manufacturing + Shipping + Ports + Multimodal Logistics**

Major Port Infrastructure

Important projects include:

- **Vadhavan Port**
- **International Container Transshipment Port at Galathea Bay**
- **Tuna Tekra Container Terminal**
- **Outer Harbour Container Terminal at V.O. Chidambaranar Port**

These projects aim to increase India's **cargo-handling and transshipment capacity**.

Global Port Performance

- **Three Indian ports** were placed among the **world's top 30 ports** in the **Container Port Performance Index 2025**.
- This reflects continued improvement in India's port operations and efficiency.

Recent Progress in Container Manufacturing

India has already started showing progress in domestic container production.

- In **July 2026**, India produced its **first domestically manufactured EXIM shipping container** for **A.P. Moller–Maersk**.
- It was rolled out at the **Maersk–CONCOR Inland Container Depot** in **Dadri, Uttar Pradesh**.
- The container followed **ISO standards** and the **International Convention for Safe Containers (CSC)**.
- Maersk later ordered **1,000 additional Made-in-India containers** from **DCM Shriram Group**.
- This indicates growing confidence in India's ability to manufacture containers for the global market.

Why Does India Need Domestic Container Manufacturing?

1. Importance for Global Trade

- Around **80% of global merchandise trade by volume** is transported through the sea.
- Containerised cargo accounts for nearly **two-thirds of the value of international trade**.
- Therefore, availability of containers is critical for smooth international trade.

2. Supply-Chain Resilience

Global trade has faced increasing uncertainty due to:

- Geopolitical tensions
- Shipping-route disruptions
- Supply-chain shocks
- Freight-rate volatility

Domestic production of critical logistics equipment can reduce India's exposure to such disruptions.

3. Growing Indian Demand

India's expanding:

- Manufacturing sector
- Export-import trade
- Logistics network

is increasing the need for reliable container availability.

4. Reducing Import Dependence

- India currently imports nearly **2 million empty containers every year** for domestic requirements and repositioning.
- This dependence makes India vulnerable to international supply disruptions and price fluctuations.
- Domestic manufacturing can improve **availability, resilience and trade competitiveness**.

Significance of CMAS

CMAS can support India's transition from **container importer to container manufacturer**.

Its major benefits include:

- **Lower import dependence**
- **Greater supply-chain security**
- **Employment generation**
- **Technology development**
- **Growth of maritime manufacturing**
- **Improved logistics efficiency**
- **Stronger global trade competitiveness**

It can also create demand for supporting industries such as **steel, engineering, machinery, testing and logistics services**.

Conclusion

The **Container Manufacturing Assistance Scheme** is an important step towards building a stronger domestic maritime manufacturing base. By increasing container production, improving port infrastructure and supporting shipping and logistics, India can

reduce import dependence and make its trade network more resilient. The success of CMAS, along with initiatives such as **Bharat Container Shipping Line, Sagarmala, PM Gati Shakti and shipbuilding support**, can help India move towards becoming a **competitive global hub for maritime manufacturing and logistics**.

India's Digital Transformation : Building a Citizen-Centric Digital Economy



Why in News?

- As India marks its **80th Independence Day**, the government has highlighted the growing role of **Digital Public Infrastructure (DPI)** in transforming governance, improving service delivery, creating economic opportunities and supporting the vision of **Viksit Bharat**.

How Is India Building Digital Self-Reliance?

Electronics Manufacturing

India has made major progress in building a domestic electronics manufacturing ecosystem.

- Production Growth:** Electronics production increased nearly **seven-fold**, from **₹1.9 lakh crore in 2014–15 to ₹13.11 lakh crore in 2025–26**.
- Export Growth:** Electronics exports increased nearly **eleven-fold**, from **₹38,000 crore to ₹4.24 lakh crore**.
- Major Export Sector:** Electronic goods became India's **third-largest export category**, with exports of **USD 47.96 billion in FY 2025–26**.

- Employment:** The sector supports nearly **25 lakh jobs**, with women accounting for around **30%** of the workforce.
- Policy Support:** Key initiatives include:
 - Production Linked Incentive Scheme (PLI)
 - Electronics Components Manufacturing Scheme (ECMS)
 - India Semiconductor Mission (ISM)
 - Modified Electronics Manufacturing Clusters 2.0 (EMC2.0)

Semiconductor Push

- Semicon 2.0** has been approved with an outlay of **₹1.27 lakh crore**.
- Under **India Semiconductor Mission 1.0**, **12 semiconductor units worth ₹1.64 lakh crore** have been approved.
- Three facilities** have already started commercial production, while another is expected to begin operations in 2026.

Mobile Phone Manufacturing

India has emerged as a major global manufacturing hub for mobile phones.

- India is now the **world's second-largest mobile phone manufacturer**.
- Mobile phones moved from the **153rd-largest export item in FY 2014–15 to India's largest export product in FY 2025–26**.
- Production increased nearly **33 times**, from **₹18,000 crore to ₹6.27 lakh crore**.
- Exports grew nearly **165 times**, from **₹1,500 crore to ₹2.59 lakh crore**.
- The sector supports around **12 lakh jobs**.
- Women account for nearly **70% of the workforce**.

Expanding Telecom Connectivity

India's digital transformation has been supported by rapid expansion of telecom access.

- Telephone Connections**
 - Increased from **93.3 crore in 2014** to more than **134.8 crore by June 2026**.
- Tele-density**
 - Rose from **75.23% in 2014** to **94.31% by June 2026**.
- Wireless Subscribers**

- Active wireless mobile subscribers reached around **120.11 crore** in June 2026.

Internet and Digital Connectivity

- Internet subscribers increased from **25.15 crore in 2014** to more than **109.2 crore by March 2026**.
- Average wireless data prices fell sharply from around **₹308 per GB in 2014** to **₹7.51 per GB in 2026**.
- Average mobile broadband download speed increased from **13.67 Mbps in March 2022** to **132 Mbps in December 2025**.
- **5G services** are now available in **99.9% of districts** across India.
- Around **5.63 lakh 5G Base Transceiver Stations** had been deployed by June 2026.
- Around **6.31 lakh villages** have been covered by 4G services.
- Under **BharatNet**, **2.21 lakh Gram Panchayats** were service-ready by June 2026, supported by more than **8.5 lakh route km of optical fibre cable**.
- More than **4 lakh PM-WANI hotspots** had been deployed by February 2026.
- **Bharat 6G Vision** aims to position India among global leaders in 6G by **2030**.

UPI and Digital Payments

The **Unified Payments Interface (UPI)** has become one of the most important pillars of India's digital economy.

- UPI handles nearly **50% of global real-time payment transaction volume**.
- In **FY 2025–26**, it processed around:
 - **24,161.69 crore transactions**
 - **Worth ₹314.23 lakh crore**
- It serves more than:
 - **55.49 crore individuals**
 - **6.5 crore merchants**
- **731 banks** are connected to the platform.
- UPI accounted for around **85% of India's digital payment transactions by volume** in FY 2025–26.
- Monthly transactions increased from around **0.01 crore in 2016** to more than **2,000 crore per month by 2025**.

- UPI has expanded internationally to **11 countries**, including:
 - Singapore
 - UAE
 - France
 - Mauritius
 - Cambodia

Digital Commerce

Open Network for Digital Commerce

ONDC is creating an open and interoperable digital-commerce ecosystem.

- Buyers and sellers can transact across different platforms.
- By **June 2026**, ONDC had:
 - More than **20 crore buyers**
 - **5 lakh sellers**
 - Presence in around **1,000 cities**
 - Nearly **90 lakh transactions per month**

Supporting Grassroots Businesses

- Integration with **eSaras** and **Indiahandmade** has expanded digital market access for:
 - Self-Help Groups
 - Weavers
 - Artisans
- The **Sahayak WhatsApp Bot** supports small businesses in **five languages**.

Government e-Marketplace

GeM has made public procurement more:

- Transparent
- Competitive
- Paperless
- Accessible

By June 2026:

- Cumulative GMV crossed **₹18.4 lakh crore**.
- Around **₹5 lakh crore** was recorded in FY 2025–26.
- More than **11 lakh MSMEs** gained access to government markets.

SWAYATT

The **SWAYATT** initiative promotes participation of:

- Startups
- Women-led enterprises
- Youth-led businesses

By FY 2025–26:

- Women-led businesses secured **₹83,323 crore** in cumulative order value.
- Startups secured **₹54,005.8 crore**.

E-Governance and Digital Public Services

DigiLocker

- More than **72 crore registered users** as of **31 July 2026**.
- Over **934 crore documents** had been issued.
- It reduces dependence on physical certificates and enables digital verification.

UMANG

- Services increased from **166 in 2017** to **2,585 by 23 July 2026**.
- Cumulative transactions crossed **798 crore**.
- It acts as a single digital gateway for government services.

Aadhaar

- Aadhaar has become a key biometric identity platform for digital authentication.
- Aadhaar generation increased from **0.42 crore in 2010–11** to more than **145 crore by July 2026**.

Common Service Centres

- More than **5.16 lakh CSCs** were functional across India by June 2026.
- They provide physical access points for **Government-to-Citizen (G2C) e-services**.

Direct Benefit Transfer

- Aadhaar-linked **DBT** covers **318 schemes across 56 Ministries**.
- More than **₹52 lakh crore** has been transferred directly to beneficiaries.
- It helps improve targeted welfare delivery and reduces intermediary layers.

Why Is Digital Public Infrastructure Important?

India's digital transformation is not limited to internet connectivity. It is creating a common digital foundation for **citizens, businesses and government institutions**.

Major Benefits

- **Better Governance:** Faster and more transparent delivery of public services.

- **Financial Inclusion:** Digital payments allow more people and businesses to participate in the formal economy.
- **Economic Opportunities:** Platforms such as ONDC and GeM expand market access.
- **Digital Empowerment:** DigiLocker, Aadhaar and UMANG reduce dependence on physical documents and government offices.
- **Rural Connectivity:** BharatNet, 4G and PM-WANI are helping reduce the digital divide.
- **Self-Reliance:** Domestic electronics and semiconductor manufacturing can reduce dependence on imported technology.
- **Global Digital Leadership:** UPI and India's open digital platforms provide models that can be adopted internationally.

Way Forward

India's next challenge is to ensure that digital growth is **secure, inclusive and accessible to everyone**.

Key priorities include:

- Expanding high-quality connectivity in rural and remote areas.
- Strengthening semiconductor and component manufacturing.
- Promoting indigenous research in **6G and emerging technologies**.
- Improving cybersecurity and protection of digital data.
- Ensuring digital services remain accessible to people with limited digital literacy.
- Expanding India's digital public infrastructure internationally.

Ease of Doing Business Reforms in India



Why in News?

As India celebrates its **80th Independence Day**, the Government has highlighted a series of reforms

aimed at creating a more **business-friendly and enterprise-ready economy**.

- The focus is on:
 - **Digital governance**
 - Simplified compliance
 - Easier access to finance
 - Wider market opportunities
 - Better infrastructure
 - Greater regulatory certainty

What are the Major Government Initiatives to Improve India's Business Environment?

Digitalising Business Approvals and Compliance

- **National Single Window System (NSWS):**
 - Launched in **2021**.
 - Provides a single digital platform to identify and apply for government approvals.
 - Integrates approvals from **32 Central Ministries and 34 States**.
 - Provides access to more than **686 Central and 7,498 State approvals**.
 - More than **8.29 lakh approvals** had been granted by November 2025.
- **Startup India:**
 - Launched in **2016** to promote entrepreneurship and build a strong startup ecosystem.
 - Focuses on creating **job creators rather than job seekers**.
 - DPIIT-recognised startups increased from **502 in 2016 to over 2.47 lakh by 12 August 2026**.
- **SPICe+ Form:**
 - Introduced in **2020**.
 - Integrates **11 government services** from three Central Ministries and Departments.
 - Covers important processes such as:
 - Company name reservation
 - Incorporation
 - DIN allotment
 - PAN and TAN issuance
 - EPFO and ESIC registration
 - GSTIN allotment
 - Bank account opening

- **MCA21 V3:**
 - An **AI-driven corporate registry platform**.
 - Provides digital incorporation and registry services for companies and LLPs.
 - Between **2021 and 2025**, it processed **3.84 crore filings**, with **3.33 crore** approved through the Straight Through Process.
- **Udyam Registration:**
 - Introduced in **2020**.
 - Provides MSMEs with a **free, paperless and self-declaration-based registration system**.
 - MSME registrations increased from **0.10 lakh in October 2020 to over 9.27 lakh by 13 August 2026**.
- **Business Reform Action Plan (BRAP):**
 - Launched in **2015**.
 - Helps States and Union Territories improve their business environment.
 - Covers areas such as:
 - Single-window clearances
 - Land
 - Labour
 - Inspections
 - Taxation
 - Environmental approvals

How is the Government Improving Access to Finance?

- **Pradhan Mantri MUDRA Yojana (PMMY):**
 - Launched in **2015**.
 - Provides collateral-free loans of up to **₹20 lakh** for non-corporate and non-farm income-generating activities.
 - By **27 March 2026**, it had sanctioned **57.79 crore loans worth ₹40.07 lakh crore**.
- **Credit Guarantee Scheme:**
 - Helps Micro and Small Enterprises obtain loans without collateral or third-party guarantees.
 - Provides credit facilities of up to **₹10 crore**.

- By March 2026, CGTMSE had approved guarantee coverage of **₹13.67 lakh crore across 1.41 crore guarantees.**
- **Credit Assessment Model (CAM):**
 - Introduced by Public Sector Banks in **2025.**
 - Uses digitally available and verifiable data for faster MSME loan assessment.
 - Between April and December 2025, more than **3.96 lakh MSME applications worth over ₹52,300 crore** were sanctioned.
- **Trade Receivables Discounting System (TReDS):**
 - Provides MSMEs access to working capital by allowing them to **discount trade receivables with financiers.**
 - The value of invoices discounted through TReDS rose from around **₹40,000 crore in 2021–22 to ₹3.47 lakh crore in 2025–26.**
 - The **Union Budget 2026–27** proposed wider use of TReDS for Central Public Sector Enterprise transactions.

How is India Moving Towards Trust-Based Governance?

- **Jan Vishwas (Amendment of Provisions) Act, 2026:**
 - Decriminalises **717 provisions** and amends **784 provisions across 79 Central Acts covering 23 Ministries.**
 - The objective is to reduce criminal liability for **minor and technical offences.**
- **Reduction in Compliance Burden:**
 - More than **47,000 compliances** had been reduced by November 2025.
 - This included:
 - **16,108** simplified
 - **22,287** digitised
 - **4,458** decriminalised
 - **4,270** redundant compliances removed

- **GST 2.0:**
 - GST created a unified indirect tax framework in **2017.**
 - Reforms announced in **September 2025** rationalised tax rates and moved towards a **simplified two-rate structure.**
 - Registered GST taxpayers increased from around **60 lakh in 2017 to more than 1.68 crore by 31 July 2026.**
- **Faceless Assessment Scheme:**
 - Removes direct physical interaction between taxpayers and tax officers.
 - Uses:
 - Automated case selection
 - Random allocation
 - Digital communication
 - This promotes a more **transparent, standardised and consistent tax administration.**

How is India Expanding Market Access for Businesses?

- **Government e-Marketplace (GeM):**
 - Launched in **2016.**
 - Connects government buyers with businesses through a digital procurement platform.
 - As of **6 August 2026**, it had:
 - More than **1.37 lakh government buyer organisations**
 - Nearly **25 lakh sellers and service providers**
 - Cumulative procurement exceeding **₹20 lakh crore**
 - More than **75 lakh orders** were executed through GeM in FY 2025–26.
- **PM GatiShakti:**
 - Launched in **2021.**
 - Promotes integrated infrastructure planning and multimodal connectivity.
 - Brings together **58 Ministries/Departments, 36 States and UTs, and 3,291 data layers.**

- By February 2026, the Network Planning Group had evaluated **352 projects worth ₹16.10 lakh crore**.
- It helps businesses identify suitable locations and plan investments based on available infrastructure.
- **Open Network for Digital Commerce (ONDC):**
 - Launched in **2022**.
 - Creates an open and interoperable digital-commerce network.
 - Helps businesses access digital markets without depending entirely on individual platforms.
 - It has more than **7.64 lakh sellers across over 616 cities**.

How is India Strengthening its Global Business Footprint?

- **Export Promotion Mission:**
 - Launched in **2025**.
 - Focuses on:
 - MSMEs
 - First-time exporters
 - Labour-intensive sectors
 - Businesses from interior and low-export-intensity regions
 - It combines financial and non-financial assistance to reduce barriers to exports.
- **Trade Connect e-Platform:**
 - Provides exporters with:
 - Trade information
 - Market opportunities
 - Access to global buyers
 - By August 2026, it had crossed **20 lakh registered users** and facilitated more than **40 lakh Certificates of Origin**.
- **ICEGATE:**
 - The **Indian Customs Electronic Gateway** enables digital:
 - Filing
 - Duty payment
 - Document amendments
 - Query resolution
 - Refund processing

- Bills of Entry filed through ICEGATE increased from over **1.43 lakh in April 2020 to more than 6.14 lakh in June 2026**.

Conclusion

India's Ease of Doing Business reforms are moving beyond simply reducing paperwork. The broader focus is now on creating a **digital, predictable and enterprise-friendly business ecosystem**.

- Easier approvals can reduce delays.
- Better access to credit can help MSMEs expand.
- Digital platforms can widen market access.
- Simplified compliance can reduce the cost of doing business.
- Improved infrastructure and export support can help Indian enterprises compete globally.

Overall, these reforms aim to create an environment where businesses can **start more easily, access finance, reach wider markets and grow with greater confidence**.

Sovereign Green Bonds and Greenium



Why in News?

India's **sovereign green bond market** is gaining momentum as strong investor demand has pushed green bonds to trade at a persistent **greenium** compared with conventional government securities.

- The average greenium during the **first half of FY 2026–27** reached its **highest level since India began issuing sovereign green bonds in FY 2022–23**.

- The trend suggests that the market may be able to absorb a **larger supply of green bonds** in the second half of FY 2026–27.

What is Greenium?

- **Greenium** means the **lower yield or interest rate** that investors are willing to accept on a green bond compared with a similar conventional bond.
- Since **bond prices and yields move in opposite directions**, a lower yield means investors are willing to pay a **higher price** for green bonds.
- It reflects stronger investor preference for **environmentally sustainable investments**.

Why is a Stable Greenium Important?

- **Lower Borrowing Cost:**
 - A stable greenium can reduce the government's cost of borrowing.
 - This can make it easier to finance projects related to:
 - Renewable energy
 - Electric mobility
 - Climate adaptation
 - Other low-carbon infrastructure
- **Supports Net-Zero Goals:**
 - Lower financing costs can support India's efforts towards its **Net Zero by 2070** target.
- **Maturing Green Finance Market:**
 - A consistent greenium indicates stronger investor confidence in India's **green finance ecosystem**.
 - It also reflects growing confidence in green taxonomies and **Environmental, Social and Governance (ESG)**-based project evaluation.

What are Sovereign Green Bonds?

- **Sovereign Green Bonds (SGRBs)** are government debt instruments introduced in the **Union Budget 2022–23**.
- They are issued to finance projects that support India's transition towards a **low-carbon economy**.

Key Features

- **Dedicated Use of Funds:**
 - Money raised through SGRBs is earmarked for **eligible green projects**.
 - This improves transparency in the use of funds.
- **ICMA Alignment:**
 - India's SGRB Framework follows the **International Capital Market Association (ICMA) Green Bond Principles, 2021**.
 - This strengthens the credibility and transparency of the bonds.
- **Trading and Liquidity:**
 - SGRBs are issued through a **uniform price auction**.
 - They are eligible for **repo transactions**.
 - They can also be traded in the **secondary market**.
- **SLR Eligibility:**
 - SGRBs qualify for **Statutory Liquidity Ratio (SLR)** purposes.
 - Financial institutions can therefore count them towards their mandatory SLR holdings.

Sovereign Green Bond Framework

- India's first **Sovereign Green Bond Framework** was released by the **Ministry of Finance in 2022**.
- It identifies the projects that can receive financing through SGRB proceeds.

External Validation

- The framework was validated by **CICERO**, a Norway-based organisation.
- It received a rating of:
 - **Medium Green**
 - **Good Governance**
- This indicated alignment with international green bond standards.

How are Sovereign Green Bonds Managed?

- Proceeds from SGRBs are deposited into the **Consolidated Fund of India**.
- They are managed by the **Public Debt Management Cell** of the Ministry of Finance.

- A **Green Register** is used as part of the management mechanism.

Project Selection and Monitoring

- The **Green Finance Working Committee (GFWC)** is responsible for project selection and evaluation.
- It is chaired by the **Chief Economic Adviser**.
- The allocation and utilisation of funds are audited by the **Comptroller and Auditor General (CAG)** of India.

What is the Current Status of India's SGrB Market?

- India has around **₹877 billion** of sovereign green bonds outstanding.
- **30-year green bonds** have emerged as the dominant segment.
- Outstanding issuance of 30-year green bonds has crossed **₹500 billion**.

Changing Investor Demand

- Some early green bond issuances were **cancelled or reduced in size** because investor demand was not strong enough at yields acceptable to the government.
- Demand has improved in recent years, particularly for **longer-maturity green bonds**.

Why is Demand for Long-Term Green Bonds Rising?

- **Insurance Companies:**
 - Insurers need long-term assets to match their long-term liabilities.
- **Infrastructure Status:**
 - Green bonds are treated as **infrastructure investments**.
 - This provides insurers with greater flexibility in asset allocation.
- **Asset-Liability Management:**
 - Long-term green bonds fit the **Asset-Liability Management (ALM)** requirements of insurers and pension funds.

- This has supported strong demand for **30-year maturities**.

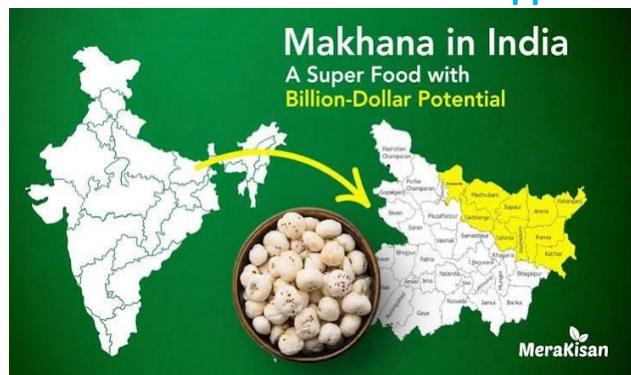
Types of Sustainable Finance Instruments

Instrument	Primary Objective	Use of Proceeds	Key Distinction	Example
Green Bonds	Environmental benefits	Specific green projects	Focus only on environmental and climate benefits	Sovereign Green Bonds (SGrBs)
Social Bonds	Positive social outcomes	Specific social projects	Focus on vulnerable or underserved groups	Educate Girls Development Impact Bond
Sustainability Bonds	Environmental + social benefits	Mix of green and social projects	Combines green and social objectives	Mexico's BONDESG
Sustainability-Linked Bonds (SLBs)	Achievement of sustainability targets	General purposes	Financial terms are linked to sustainability performance	UltraTech Cement's 2021 SLBs

Important Examples

- **Educate Girls Development Impact Bond:**
 - Implemented in rural Rajasthan between **2015 and 2018**.
 - It was the **world's first education Development Impact Bond**.
- **Mexico's BONDESG:**
 - Sustainable local-currency bonds.
 - Finance environmental and social projects aligned with the **UN Sustainable Development Goals (SDGs)**.
- **UltraTech Cement:**
 - In **2021**, issued India's first overall and dollar-denominated **sustainability-linked bonds**.
 - The bonds aimed at achieving a **22.2% reduction in carbon intensity by 2030**.

Makhana Sector in India: Production, Value Chain and Government Support



Why in News?

The **Government of India** is giving greater attention to the rapidly expanding **makhana sector** following the launch of the **National Makhana Board** in Bihar on **15th September 2025**.

- A **Central Sector Scheme for the Development of Makhana** has also been approved.
- The scheme has a total outlay of **₹476.03 crore** for **2025–26 to 2030–31**.
- The focus is on improving production, processing, value addition, branding, marketing and exports.

What is the Current Status of India's Makhana Sector?

Global Position

- India is the **world's largest producer of makhana**.
- **Bihar** is the major production hub, accounting for:
 - Nearly **three-fourths of India's production**
 - Around **80–85% of global supply**

Major Production Regions

Makhana cultivation is concentrated mainly in **North Bihar**, particularly:

- **Supaul**
- **Saharsa**
- **Madhepura**

It is also widely cultivated in the **Mithila and Seemanchal regions**.

Production and Productivity

- India's makhana production increased from:
 - **63,910 MT in 2024–25**

- To an estimated **80,590 MT in 2025–26**

- Average productivity increased from:
 - **2.03 MT/ha**
 - To **2.34 MT/ha**

Bihar alone produced around **60,000 MT in 2025–26**, with productivity of approximately **2.00 MT/ha**.

Domestic Market

- The domestic makhana market grew by around **17–18% annually between 2021–22 and 2024–25**.
- Major factors driving this growth include:
 - Rising health awareness
 - Premiumisation
 - Growth of branded products
- The domestic market is projected to reach **₹11,000–12,000 crore by 2029–30**.

Rising Prices

- Average makhana prices increased from around **₹500/kg during 2020–22** to nearly **₹1,250/kg in 2025**.
- The rise reflects **strong demand and relatively slower growth in supply**.

Domestic Consumption

- Monthly consumption of popped makhana is estimated at **3,000–3,500 MT**.
- During festive periods, consumption can rise to around **5,000 MT**.

Export Performance

- In **2025**, the Directorate General of Foreign Trade (**DGFT**) introduced **separate HSN codes for makhana products**.
- India exported **7,264.89 MT** of makhana worth **₹19,296.08 lakh in 2025–26**.

Major Export Markets

The **US, Canada and UAE** account for around **77% of India's makhana exports**:

- **US: 40%**
- **Canada: 20%**
- **UAE: 17%**

At the same time, markets such as **Germany, Nepal and Australia** offer higher unit-price realisations, creating scope for diversification towards **premium export markets**.

Key Facts about Makhana

What is Makhana?

- **Scientific Name:** *Euryale ferox*
- Also known as **fox nut**.
- It is an **aquatic crop** traditionally cultivated in:
 - Shallow ponds
 - Lakes
 - Wetlands
- Its edible seeds are processed and **popped for consumption**.

Major Growing States

Makhana is mainly cultivated in:

- Bihar
- West Bengal
- Assam

Its cultivation is supported by favourable **agro-climatic conditions** and traditional farming knowledge.

GI Tag

- **Mithila Makhana** has received a **Geographical Indication (GI) tag**.
- The tag recognises the distinctive:
 - Quality
 - Reputation
 - Traditional knowledge associated with makhana from the **Mithila region of Bihar**.

Changing Cultivation Practices

- Traditionally, makhana has been cultivated in **ponds**.
- **Field-system farming** is increasingly being adopted as a modern cultivation method.

Improved Varieties

Improved varieties contributing to higher productivity include:

- **Swarna Vaidehi**
- **Sabour Makhana-1**

Nutritional Value

Makhana contains:

- Carbohydrates
- Protein
- Dietary fibre
- Magnesium

- Potassium
- Phosphorus
- Iron

It is also:

- Low in fat
- Low in sodium
- Cholesterol-free

Why is Makhana Becoming a Health Food?

Its nutritional profile, relatively **low glycaemic load** and growing demand for **healthy, plant-based foods** have changed its image.

It has moved from being mainly a **traditional regional food** to a popular **health and premium snack**.

Government Initiatives for the Makhana Sector

National Makhana Board

- The **National Makhana Board** was announced in the **Union Budget 2025–26**.
- It was launched in **Bihar on 15th September 2025**.
- It aims to support the development of the makhana value chain.

Central Sector Scheme for Development of Makhana

- **Total outlay:** ₹476.03 crore
- **Period:** 2025–26 to 2030–31

Major Focus Areas

The scheme focuses on:

- Research
- Quality seeds
- Farmer training
- Harvesting
- Post-harvest management
- Value addition
- Branding
- Marketing
- Exports
- Quality control

Financial Allocation

- **2025–26:** ₹30 crore
- **2026–27:** ₹90 crore

Progress in 2025–26

- Around **8,159 farmers** benefited.

- **1,010 additional hectares** were brought under cultivation.
- **73 hectares** were brought under seed production.
- **89 Front Line Demonstrations** were conducted.

These demonstrations involved:

- State Agricultural Universities (**SAUs**)
- Central Agricultural Universities (**CAUs**)
- Indian Council of Agricultural Research (**ICAR**) institutions

Makhana Value Chain: From Farm to Market

1. Farm-Level Production

Makhana cultivation involves several labour-intensive activities:

- Pond preparation
- Seed broadcasting
- Crop management
- Manual harvesting
- Underwater collection of seeds

2. Primary Processing

After harvesting, the seeds undergo:

- Drying
- Cleaning
- Roasting
- Popping
- Polishing
- Sorting
- Grading

The final grading is based mainly on **size and quality**.

3. Secondary Processing and Value Addition

The sector is moving beyond traditional popped makhana.

New products include:

- Flavoured makhana
- Ready-to-eat snacks
- Makhana flour
- Other processed food products

This creates opportunities for:

- **Higher value realisation**
- **Employment generation**
- **Product diversification**

4. Role of Start-ups and FPOs

Start-ups and Farmer Producer Organisations (FPOs) are helping strengthen:

- Processing
- Branding
- Value addition
- Market access

This can help farmers capture a larger share of the value generated beyond primary production.

Role of Research and Technology

National Research Centre for Makhana

The **National Research Centre for Makhana (NRCM)** is working to improve cultivation and processing practices.

Its work includes:

- Water-efficient farming systems
- Integrated farming systems
- **Makhana-cum-fish farming**
- Improved cultivation techniques
- Better processing technologies

Seed and Capacity Building

Between **2012 and 2023**, NRCM:

- Distributed around **15,824.1 kg of high-yielding makhana seeds**
- Trained more than **3,000 farmers**

Mechanisation and Enterprise Support

NRCM has provided technical support to **24 enterprises**.

It has also developed technologies such as:

- Seed washers
- Graders
- Roasting machines
- Popping machines

These technologies have been **licensed for commercial use**.

Why is the Makhana Sector Important for India?

The growing sector has significance beyond food consumption.

- **Farmer Income**
- **Rural Employment**
- **Value Addition**
- **Export Potential**
- **Technology and Innovation**

Conclusion

India's makhana sector is evolving from a **traditional regional crop into a growing agri-food and health-snack economy.**

With **Bihar dominating global production**, rising domestic consumption, increasing exports, improved varieties, processing technologies and government support, makhana has significant potential to contribute to:

- **Higher farmer incomes**
- **Rural employment**
- **Value addition**
- **Agricultural exports**
- **India's position in the global health-food market**

Sugar Price Surge in India: Supply Tightness and Structural Challenges



Why in News?

- Sugar prices in India rose sharply in **August 2026**, with retail prices in major cities increasing by nearly **40% within two weeks.**
- The price spike comes after an initial expectation of comfortable sugar availability during the **2025–26 sugar season.** Subsequent reductions in production estimates, weather damage and stronger festive demand have tightened the domestic supply outlook.

Status of India's Sugar Sector

- India is the **world's second-largest sugar producer after Brazil** and the **largest consumer.**
- Normal annual production: around **320–340 LMT**

- Domestic consumption: approximately **280–290 LMT**
- Initial 2025–26 production estimate: **343 LMT**
- Latest government estimate: **306 LMT**
- **AISTA** has estimated net production at around **28.3 MT.**
- Around **8 LMT** has already been exported.
- Although stocks are considered sufficient to meet domestic requirements until the **October crushing season**, the earlier surplus expectation has shifted towards a **tighter supply position.**

Why Have Sugar Prices Increased?

1. Weather-Related Crop Damage

- **Excess rainfall and waterlogging in Maharashtra** affected sugarcane.
- Diseases such as **Red Rot and Top Borer** further reduced cane yield and sugar recovery.

2. Festive Demand

Demand normally rises before **Onam, Raksha Bandhan and the wider festive season**, particularly for sweets, confectionery and processed foods.

3. Declining Carry-Over Stocks

Lower-than-expected production combined with exports has reduced the quantity available for the domestic market before the next crushing cycle.

4. Hoarding and Speculative Stocking

Expectations of shortages have encouraged some mills, traders and bulk buyers to hold additional stocks, reducing immediate market availability.

5. Global Supply Tightness

- A global sugar deficit of around **33 LMT** is projected for 2026–27.
- International sugar prices increased by over **16%**, from about **USD 474/tonne in June to USD 552/tonne in August 2026.**

6. Ethanol Diversion Not the Primary Cause

- Sugarcane diversion towards ethanol was around **3 MT in 2025–26**, lower than earlier expectations.
- Therefore, the current price rise is mainly associated with **lower production, crop damage, festive demand and market behaviour**, rather than ethanol diversion.

Government Measures

Measure	Details
Duty-free raw sugar imports	Up to 10 LMT allowed under a Tariff-Rate Quota until 31 October; normal basic customs duty is 100%
Dealer stock limit	Maximum 400 tonnes from 1 August–30 November 2026
Bulk consumer limit	From 1 September, stocks restricted to 15 days of consumption
Early crushing	States and sugar mills encouraged to begin crushing earlier
Stock verification	Central and State teams conducting physical checks at mills

These measures aim to prevent **hoarding, artificial scarcity and excessive price escalation**.

Structural Problems in India's Sugar Sector

1. FRP–SAP Price Distortion

- The Centre determines the **Fair and Remunerative Price (FRP)**.
- States may announce a higher **State Advised Price (SAP)**.
- Sugarcane constitutes nearly **65–75% of sugar-mill costs**.
- Higher cane prices can reduce mill profitability, increase **cane arrears** and contribute to recurring production cycles.
- The pricing structure can also encourage cane cultivation in areas better suited for **pulses and oilseeds**.

2. High Water Consumption

- Sugarcane has expanded in relatively water-stressed areas such as **Maharashtra and Karnataka**.
- Heavy dependence on irrigation and groundwater increases:
 - **Groundwater depletion**
 - Drought vulnerability
 - Water stress
 - Dependence on subsidised pumping

3. Soil Degradation

Continuous sugarcane cultivation and inadequate crop rotation can lead to:

- Declining soil fertility
- **Salinity and alkalinity**
- Waterlogging

- Lower soil organic carbon
- Micronutrient depletion

4. Small Mills and Outdated Technology

Several mills operate at relatively small scales with ageing machinery.

Consequences include:

- Higher processing costs
- Lower sugar recovery
- Poorer international competitiveness
- Inefficient energy use
- Higher particulate emissions from inefficient boilers and bagasse combustion

5. WTO and Trade-Policy Challenges

Sugar export-support measures have attracted scrutiny under **WTO rules**.

At the same time, production-linked subsidies can encourage excessive cultivation, placing additional pressure on **land and water resources**.

6. Ethanol–Food Security Trade-off

Ethanol production provides an important additional revenue source for sugar mills and helps farmers by facilitating payment of cane dues.

However, excessive diversion of sugarcane-based feedstock towards ethanol during a poor sugar-production year could:

- Reduce sugar availability
- Increase domestic prices
- Intensify pressure on already stressed water resources

Sugarcane Cultivation in India

- Annual production: approximately **490–500 million tonnes**
- Area: around **5.5 million hectares**
- Major importance for **farmer income, rural employment, sugar production and ethanol**.

Climatic Requirements

Sugarcane generally prefers:

- **20–30°C temperature**
- **75–150 cm rainfall**
- Adequate sunshine
- A **cool and dry ripening period** for better sucrose accumulation

It is vulnerable to **frost and prolonged low temperatures**.

Major Cropping Seasons

Season	Major Region	Duration
Autumn	North India	~12 months
Spring	North India	Shorter duration
Adsali	South India	15–18 months
Eksali	South India	~12 months

Major Producing States

- **Uttar Pradesh** is the leading producer, followed by major producers such as:
- **Maharashtra, Karnataka, Tamil Nadu, Bihar, Punjab, Haryana, Andhra Pradesh, Telangana and Gujarat.**

Way Forward

1. Reform Cane Pricing

- Implement the **Rangarajan Committee recommendations (2012)** by moving towards a **revenue-sharing mechanism** linking cane prices with the realisation from sugar and its by-products.

2. Promote Crop Diversification

Following the **NITI Aayog Task Force (2020)** approach:

- Shift sugarcane away from severely water-stressed regions.
- Introduce a **dynamic Sugar MSP linked to FRP.**
- Encourage integrated **sugarcane bio-refineries.**

3. Expand Micro-Irrigation

- Promote **drip and subsurface irrigation** to reduce water use and improve productivity.

4. Adopt Agro-Climatic Planning

Sugarcane cultivation should be concentrated in areas with greater **water availability and climatic suitability.**

5. Develop Multi-Feedstock Bio-Refineries

- Distilleries should be capable of switching between **molasses, surplus maize and second-generation lignocellulosic biomass,** depending on sugarcane availability.

6. Make Trade Policy Predictable

- Move towards **formula-based export and import policies** linked to domestic production, consumption and stock levels rather than frequent ad-hoc interventions.

7. Promote Sustainable Cultivation

Encourage:

- Drought-tolerant varieties
- Crop rotation
- Soil-health management
- Precision irrigation

8. Ensure Policy Stability

- Farmers, mills and consumers need predictable policies covering **cane prices, ethanol diversion, exports, imports and stock limits.**



EDITORIALS

Crux of The Hindu & Indian Express

Economics

CAG Audit Flags Major Gaps in Green India Mission Implementation



Why in News?

- The **Comptroller and Auditor General of India (CAG)** has flagged major shortcomings in the implementation of the **Green India Mission (GIM).**
- The key concerns include:
 - **Inadequate funding**
 - **Weak coordination** between government schemes
 - **Poor monitoring**
 - **Weak planning**
 - Failure to achieve important targets related to **forest cover and forest quality.**
- The CAG audit examined the **planning, implementation and monitoring** of GIM

interventions in **16 States and Union Territories** during **2015-16 to 2024-25**.

Key Findings of the CAG Audit

- The GIM had targeted improvement in the quality of forest cover over **1.4 million hectares**.
- However, improvement was observed in only **0.11384 million hectares**.
- This represents a **91.87% shortfall** from the target.
- Similarly, the target was to increase forest cover over **1.4 million hectares**.
- Actual increase was recorded over only **0.03409 million hectares**.
- This represents a **97.57% shortfall**.

Major Reasons for the Shortfall

The CAG attributed the poor performance to:

- **Inadequate convergence** with other government programmes.
- **Insufficient funding**.
- **Deficiencies in planning**.
- **Weak monitoring mechanisms**.

What is the Green India Mission?

- The **Green India Mission (GIM)** was launched by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** in 2014.
- Its broad aim is to **protect, restore and enhance India's forest cover**.
- It is one of the **eight missions under the National Action Plan on Climate Change (NAPCC)**.

Major Objectives

The mission seeks to:

- Improve **forest and tree cover**.
- Improve the **quality of existing forest and tree cover**.
- Enhance **biodiversity**.
- Improve **ecosystem services**.
- Strengthen **water conservation**.
- Increase **carbon sequestration**.
- Improve **forest-based livelihoods**.

Targets

The GIM envisages:

- Increasing **forest and tree cover over 5 million hectares**.

- Improving the quality of forest and tree cover over another **5 million hectares**.

Importance of GIM for India's Climate Commitments

- Forest and tree cover are an important part of India's climate strategy.
- Enhancing forest and tree cover contributes to **carbon sequestration**.
- Under its **Nationally Determined Contribution (NDC)** under the **Paris Agreement**, India has committed to creating an additional **carbon sink of 2.5–3 billion tonnes of CO₂ equivalent by 2030** through additional forest and tree cover.
- India's **Long-Term Low-Carbon Development Strategy** identifies the Green India Mission as one of the important programmes supporting this objective.

Convergence Issues

- The GIM was expected to work together with several other government programmes.
- However, the CAG found that this planned **convergence was not effectively achieved**.

Major Schemes Involved

- **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)**
- **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)**
- **Nagar Van Yojana**
- **School Nursery Yojana**
- According to the audit, several of these programmes continued to operate largely in **silos**.
- This reduced the potential benefits of combining financial resources, manpower and implementation mechanisms.

Funding Gaps

- The CAG found that the mission failed to secure around **₹10,600 crore** in proposed funding support.
- For the initial four years:
 - **₹2,000 crore** had been approved by the **Cabinet Committee on Economic Affairs**.
 - Another **₹400 crore** was expected from **13th Finance Commission grants** towards the States' share.

- However, during the **10 years examined**, only **₹1,149.14 crore** was received through budgetary support.
- This was only **47.88%** of the expected budgetary support.

Weak Financial Controls

- The audit also identified shortcomings in financial management.
- **Eight States and Union Territories** did not maintain annual accounts.
- In other cases:
 - Accounts were **unaudited**.
 - Records contained **discrepancies with subsidiary records**.
- Such weaknesses reduce transparency and make it difficult to properly track the use of public funds.

Why is the Green India Mission Important?

1. Climate Change Mitigation

- Forests act as important **carbon sinks**.
- Increasing forest and tree cover can help India meet its climate commitments.

2. Biodiversity Conservation

- Healthy forests provide habitat for numerous species.
- Restoration of degraded forests can improve **ecosystem health and biodiversity**.

3. Water Security

- Forest ecosystems support **water retention, groundwater recharge and watershed protection**.
- Forest degradation can increase soil erosion and affect water availability.

4. Livelihood Support

- Forest-dependent communities rely on forests for **livelihoods and non-timber forest produce**.
- Improved forest ecosystems can strengthen these livelihood opportunities.

5. Ecosystem Services

- Forests provide services such as:
 - **Carbon sequestration**
 - **Soil conservation**
 - **Water regulation**
 - **Biodiversity protection**
 - **Climate regulation**

Political Response

- The **Congress party** criticised the government following the CAG findings.
- Congress Rajya Sabha MP and former Environment Minister **Jairam Ramesh** described the Green India Mission as a **“gigantic fraud”**.
- He argued that the mission, originally conceived in **2010** as part of Prime Minister Manmohan Singh's **National Action Plan on Climate Change**, had placed strong emphasis on:
 - **Monitoring**
 - **Planning**
 - **Effective implementation**
- He criticised the present implementation as falling short of the original objective of achieving genuine sustainable environmental change.

Key Concerns Highlighted by the Audit

- **Very large gap between targets and actual outcomes**.
- **Insufficient financial support**.
- Poor convergence among government programmes.
- Schemes operating in **isolated silos**.
- Weak **planning and monitoring**.
- Poor **financial record-keeping** in several States and UTs.
- Inadequate accountability for achieving mission targets.

Way Forward

- Ensure **adequate and predictable funding** for GIM.
- Improve convergence between **GIM, CAMPA, MGNREGS, Nagar Van Yojana** and other relevant programmes.
- Strengthen **state-level planning and implementation capacity**.
- Establish stronger **monitoring and evaluation mechanisms** with measurable outcomes.
- Ensure **regular auditing and transparent financial reporting**.
- Use **scientific data and remote sensing** to monitor changes in forest cover and quality.

- Focus not only on increasing forest area but also on improving **forest quality, biodiversity and ecosystem services**.
- Ensure greater participation of **local and forest-dependent communities** in restoration activities.
- Align GIM implementation more effectively with India's **NDC and long-term climate goals**.

Conclusion

The CAG findings highlight a major gap between the **ambition and implementation** of the Green India Mission. Despite its importance for **forest restoration, biodiversity, livelihoods and India's climate commitments**, inadequate funding, weak convergence, poor monitoring and financial-management gaps have limited its effectiveness. Strengthening institutional coordination, funding, transparency and outcome-based monitoring is essential for ensuring that the mission delivers meaningful improvements in India's forest ecosystems.

SEBI Introduces IT Resilience Index for Market Infrastructure Institutions



Why in News?

- The **Securities and Exchange Board of India (SEBI)** introduced the **Information Technology Resilience Index (ITRI)** on **24 August 2026**.
- The index is meant for **Market Infrastructure Institutions (MIIs)** such as:
 - Stock exchanges
 - Depositories
 - Other key market infrastructure institutions
- The main aim is to **strengthen the resilience, monitoring and oversight of their IT systems**.

What is the Information Technology Resilience Index (ITRI)?

- **ITRI** is a framework through which MIIs will regularly assess the overall health and resilience of their IT systems.

It will help identify:

- Weaknesses in IT systems
- Possible system failures
- Security risks
- Performance issues
- Areas requiring improvement

The framework will operate largely as a **self-assessment model**, with MIIs periodically calculating their own index and reporting the findings to their technology committees and governing boards.

9 Parameters of ITRI

Parameter	Weightage
Availability	20%
Security	20%
Integrity	10%
Governance	10%
Reliability & Monitoring	10%
Business Continuity	10%
Modularity & Flexibility	10%
Scalability	5%
Other relevant factors, including incident handling	5%
Total	100%

- **Highest weightage:** Availability and Security — **20% each**.

Early Warning System (EWS)

- A major feature of the framework is the development of an **Early Warning System (EWS)**.
- The EWS will help detect deterioration in ITRI parameters that could potentially result in:
 - Performance problems
 - System slowness
 - IT disruptions
 - Other service-related issues
- Once deterioration is detected, MIIs are expected to take **remedial measures**.

Role of Industry Standards Forum

The **Industry Standards Forum (ISF)** of MIIs, constituted by SEBI, will finalise:

- Sub-parameters
- Detailed measurement criteria
- Assessment methodology for each ITRI parameter

This will help create a standardised approach to measuring IT resilience across MIIs.

How Often Will ITRI Be Calculated?

MIIs will calculate the ITRI on a **half-yearly basis**.

- The index must be calculated within **60 days of the end of each half-year**.
- MIIs must provide a **comparative analysis of two consecutive half-years** on a rolling basis.
- They must also provide details of:
 - Corrective actions already taken
 - Corrective actions proposed

These details will be submitted to:

- **Standing Committee on Technology (SCOT)**
- **Governing Boards**

Implementation Timeline

According to SEBI:

- MIIs have already introduced **beta versions** of the framework.
- The full framework is scheduled to be rolled out by **28 February 2027**.
- The full rollout will include:
 - Early Warning System
 - Real-time monitoring of service delivery

Why is ITRI Important?

- Modern financial markets depend heavily on technology.
- Stock exchanges and depositories handle large volumes of transactions and sensitive financial information. Any major IT failure can affect:
 - Trading
 - Settlement
 - Investor access
 - Market confidence
 - Financial stability
- Therefore, IT resilience is an important part of **financial market stability**.
- The ITRI framework will help MIIs identify weaknesses before they develop into serious disruptions.

Significance of the Framework

1. Strengthens IT resilience

- MIIs will have a structured system to regularly evaluate their IT infrastructure.

2. Improves cybersecurity

- Giving **20% weightage to security** highlights the importance of protecting financial-market infrastructure from cyber threats.

3. Promotes preventive action

- The EWS can identify deterioration before it causes major disruption.

4. Improves accountability

- The results will reach the **SCOT and governing boards**, making senior-level oversight stronger.

5. Enables continuous comparison

- The rolling comparison of two half-year periods will help MIIs track whether their IT resilience is improving or deteriorating.

6. Supports real-time monitoring

- The full rollout will include **real-time monitoring of service delivery**.

UPI at 10: India's Digital Payments Revolution and Global Expansion



Why in News?

- The **Unified Payments Interface (UPI)** has completed a decade of transforming India's digital payment ecosystem.
- Developed by the **National Payments Corporation of India (NPCI)**, UPI has become a major component of India's **Digital Public Infrastructure (DPI)** and is now operational in **11 foreign countries**.

What is UPI?

Unified Payments Interface (UPI) is a **real-time digital payment system** developed by NPCI that allows users to operate multiple bank accounts through a single application.

Key Features

- Enables **24×7 instant payments**.
- Combines:
 - Bank-to-bank transfers
 - Merchant payments
 - Other banking services
- Provides interoperability between participating banks and payment applications.
- Uses **two-factor authentication and end-to-end encryption** for transaction security.

UPI's Remarkable Growth

Indicator	FY 2016–17	FY 2025–26
Annual transaction volume	2 crore	24,162+ crore
Annual transaction value	₹0.07 lakh crore	~₹314 lakh crore

- This represents an approximately **12,000-fold increase in transaction volume** and more than **4,000-fold growth in transaction value**.
- As of **July 2026**, **741 banks** were live on the UPI platform.

During July 2026 alone, UPI processed:

- **2,365.8 crore transactions**
- Value of around **₹29.87 lakh crore**

Evolution of UPI

2016 — Launch

- Pilot launched in **April 2016** with **21 member banks**.
- Public rollout began in **August 2016**.
- **BHIM** was introduced in December 2016 to facilitate direct bank-to-bank UPI payments.

2017 — Merchant Payments

- **Dynamic QR codes** were introduced.
- They reduced manual entry and made merchant transactions quicker.

2018 — UPI 2.0

UPI 2.0 added features such as:

- **Invoice in the Inbox**
- **Signed Intent and QR**

- **UPI Mandates**
- **Overdraft account linking**

2019 — Capital Market Integration

- **SEBI** permitted UPI for retail investors applying for **IPOs**.
- Monthly transactions crossed **1 billion** in October 2019.

2020–22 — Inclusion and Recurring Payments

Major developments included:

- **UPI AutoPay** for subscriptions, insurance, SIPs and EMIs.
- **UPI 123PAY** for feature-phone users.
- **UPI Lite** for small-value, faster payments without entering a PIN each time.
- Integration of **credit cards with UPI**.
- Monthly transactions crossed **5 billion** in March 2022.
- UPI transactions exceeded **US\$1 trillion in value during FY 2021–22**.
- **Bhutan** became the first country for UPI's cross-border deployment.

2023 — Credit Integration

- **Credit Line on UPI** allowed users to connect pre-approved bank credit facilities with UPI.
- UPI accounted for around **70% of India's digital payment transactions in FY 2023–24**.

2024 — Greater Accessibility

- **UPI Circle** enabled a primary user to authorise secondary users to make payments within specified limits.
- Tax-payment transaction ceiling increased from **₹1 lakh to ₹5 lakh**.
- **UPI 123PAY** limit increased to **₹10,000**.
- **UPI Lite** wallet limit rose to **₹5,000**, with a per-transaction ceiling of **₹1,000**.

2025 — Stronger Authentication

- **On-device biometric authentication** enabled payments using smartphone fingerprint or facial recognition.
- **Aadhaar-based Face Authentication** simplified UPI PIN onboarding, particularly for first-time users and senior citizens.

UPI's Global Footprint

Global Real-Time Payment Leadership

- According to the **IMF**, UPI accounted for approximately **49% of global real-time payment transaction volume in 2024**.
- This highlights India's emergence as a major provider of **large-scale interoperable digital payment infrastructure**.

Countries with UPI Presence

- UPI is operational through acceptance and/or cross-border remittances in:
- **Bhutan, Nepal, Singapore, UAE, France, Sri Lanka, Mauritius, Qatar, Cambodia, Greece and Maldives.**

Recent International Expansion



Cambodia — June 2026

- **NPCI International Payments Limited (NIPL)** partnered with **ACLEDA Bank Plc.** to enable **UPI acceptance in Cambodia**.

Greece — June 2026

- UPI became operational for **cross-border remittances between Greece and India**, with **Eurobank** facilitating the connectivity.

Maldives — July 2026

- On **30 July 2026**, cross-border remittances between the Maldives' instant payment system **Favara** and India's UPI became operational.

These developments are expanding India's digital-payment links beyond domestic transactions towards **international payment interoperability**.

Why Has UPI Become Successful?

- **Interoperability:** Different banks and payment applications can transact through a common platform.

- **Low-friction payments:** Mobile numbers, UPI IDs and QR codes simplify transactions.
- **24x7 availability:** Payments can be made instantly at any time.
- **Financial inclusion:** Services such as UPI 123PAY extend digital payments to users without smartphones.
- **Scalability:** The system handles extremely large transaction volumes.
- **Security:** Multi-factor authentication and encryption support secure transactions.
- **DPI-based approach:** UPI functions as a shared digital infrastructure rather than a closed payment network.

PM SVANidhi Scheme: Expanding from Credit to Comprehensive Livelihood Support

PM SVANidhi

Why in News?

- The **PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi)** Scheme has completed one year of its **restructured phase**, with the focus shifting beyond working-capital loans towards **formal financial inclusion, digital payments, social security, skill development and entrepreneurship**.

About PM SVANidhi

- **Launched:** June 2020 by the **Ministry of Housing and Urban Affairs (MoHUA)** during the Covid-19 pandemic.
- **Nature:** A **100% centrally funded Central Sector Scheme**.
- **Core objective:** Provide **collateral-free working-capital credit** to street vendors while reducing their dependence on informal lenders.
- It also seeks to bring street vendors into the **formal banking and digital financial ecosystem**.

Target Beneficiaries

The scheme covers:

- **Urban, peri-urban and rural street vendors**
- **Hawkers and thelewalas**

- Informal service providers such as **barbers, cobblers and laundry workers**
- Vendors operating within the jurisdiction of **Urban Local Bodies (ULBs)**.

Restructured PM SVANidhi

The Union Cabinet approved the restructuring in **August 2025**.

Feature	Provision
Extended lending period	Up to 31 March 2030
Target beneficiaries	1.15 crore
New beneficiaries targeted	50 lakh
Geographical expansion	Urban areas + Census Towns

Graduated Credit Structure

The scheme follows a **step-up lending model**, where timely repayment provides access to larger loans.

- First Tranche**
 - Loan up to **₹15,000**
 - Repayment period: **12 months**
- Second Tranche**
 - Loan up to **₹25,000**
 - Repayment period: **18 months**
 - Available after timely/early repayment of the first loan.
- Third Tranche**
 - Loan up to **₹50,000**
 - Repayment period: **36 months**
 - **No prepayment penalty.**

Interest Subsidy and Digital Incentives

- **7% annual interest subsidy** for standard, non-NPA accounts.
- Subsidy is transferred **quarterly through DBT** directly into the beneficiary's bank account.
- Monthly **digital transaction cashback up to ₹100** encourages cashless payments and digital banking.

UPI-Linked RuPay Credit Card

Successful repayment of the **second loan tranche** makes vendors eligible for a **UPI-linked RuPay Credit Card**.

- Initial credit limit: **₹10,000**
- Can be increased up to **₹30,000**
- Validity: **5 years**

This creates an additional formal credit channel for vendors beyond working-capital loans.

Digital and Institutional Reforms

Digital Lending Platform

- The **Digital Lending Platform (DLP)** provides an end-to-end mechanism covering:

Application → Verification → Approval → Disbursement

- This is intended to make access to institutional credit faster and simpler.

Vendor Migration Module

- Allows transfer of **Letters of Recommendation (LoRs)** when vendors shift between **ULBs and Census Towns**.
- Helps prevent disruption of benefits after relocation.

City Region Approach

- The geographical scope has been expanded through the **City Region Approach**, bringing **Census Towns** within the scheme along with conventional urban areas.

Who is Eligible?

Vendors can establish eligibility through:

- **Certificate of Vending or Identity Card** issued by the ULB.
- Verified **Letter of Recommendation (LoR)** from the **ULB/Town Vending Committee (TVC)** for surveyed or left-out vendors.
- Peri-urban and rural vendors operating within municipal jurisdictions can also qualify through an authorised **LoR**.

SVANidhi Se Samridhhi

- The **SVANidhi se Samridhhi** initiative extends PM SVANidhi beyond credit by creating a **social-security and welfare linkage mechanism**.

Objective

- It maps the **socio-economic conditions of beneficiaries and their families** and facilitates access to **eight Central Government welfare schemes**.

Eight Linked Schemes

1. **PM Jeevan Jyoti Bima Yojana (PMJJBY)**
2. **PM Suraksha Bima Yojana (PMSBY)**
3. **PM Jan Dhan Yojana**
4. **Registration under Building and Other Construction Workers (BoCW)**
5. **PM Shram Yogi Maandhan Yojana**

6. **One Nation One Ration Card (ONORC)**
7. **Janani Suraksha Yojana**
8. **PM Matru Vandana Yojana (PMMVY)**

Performance and Impact

During the **first year of the restructured phase**:

- **21.86 lakh loans** worth **₹6,294 crore** were disbursed.
- These loans reached **10.56 lakh new beneficiaries**.

Since the scheme's launch:

- **78.68 lakh vendors** have accessed formal credit.
- More than **1.18 crore loans** have been provided.
- Vendors have also benefited from **interest subsidies and digital-payment incentives**.

Entrepreneurship and Capacity Building

- **PM SVANidhi Startup Challenge** promotes solutions related to:
 - Market access
 - Digital payments
 - Financial services
 - Logistics
- **50 Street Food Hubs** are to receive financial assistance of up to **₹4 crore each**.
- Additional assistance of **₹25 lakh** is provided for vending zones.
- **Lok Kalyan Melas** facilitate interaction between vendors, banks and ULBs.
- More than **6 lakh street-food vendors** have received **FSSAI training** on food safety and hygiene.

Significance

PM SVANidhi represents a shift from a **credit-only intervention to an integrated livelihood-development model**.

- **Financial inclusion:** Connects informal workers with formal banking.
- **Credit deepening:** Graduated loans reward repayment behaviour and build creditworthiness.
- **Digital inclusion:** Encourages UPI and cashless transactions.
- **Social security:** Links vulnerable workers with multiple welfare programmes.

- **Entrepreneurship:** Supports market access, logistics and business development.
- **Formalisation:** Helps integrate street vending into the formal urban economy.
- **Food safety:** Training improves hygiene standards among street-food vendors.
- **Urban livelihood security:** Recognises street vendors as an important component of the urban informal economy.

India's Forex Reserves Reach Record High: Role of FCNR(B) Swap Window



Why in News?

- India's **foreign exchange reserves** touched a record **USD 729.33 billion** as of **21 August 2026**, supported significantly by the RBI's **concessional swap window for FCNR(B) deposits**.
- The rise in reserves strengthens the RBI's ability to manage **rupee volatility, external shocks and sustained capital outflows**.

How Does the FCNR(B) Swap Window Work?

Concessional Forex Swap

- A **forex swap** is an arrangement in which the RBI and commercial banks exchange currencies, with the transaction being reversed at a predetermined future rate.

Under the concessional window:

- The RBI conducts a **USD/INR Buy/Sell Forex Swap** with domestic banks.
- The forward premium is fixed at a rate **below prevailing market levels**.

- Banks are encouraged to mobilise stable foreign-currency resources, particularly through:

- **FCNR(B) deposits**
- **External Commercial Borrowings (ECBs)**
- Overseas foreign-currency borrowings

Working Mechanism

- NRIs place foreign-currency deposits with Indian banks → Banks bring the foreign currency to RBI under the swap arrangement → RBI provides rupees → Foreign currency becomes part of RBI's foreign exchange assets.
- The RBI effectively **takes on the exchange-rate risk** associated with the arrangement.
- This allows banks to offer more attractive terms to depositors.
- The inflowing foreign currency strengthens the RBI's reserve position **without relying entirely on spot-market dollar purchases**.

2026 Facility

- Banks offered FCNR(B) deposit rates of up to **7.4%**.
- The concessional window also attracted:
 - **USD 4.86 billion** through overseas foreign-currency borrowings.
 - **USD 2.59 billion** through **External Commercial Borrowings (ECBs)**.
- Alongside these inflows, **tax relief for foreign portfolio investments in government securities** and valuation gains in foreign-currency assets and gold contributed to the record reserve level.

2013 Precedent

- A similar mechanism was successfully used during the **2013 Taper Tantrum** under former RBI Governor **Raghuram Rajan**.
- It helped attract foreign-currency inflows and reduce pressure on the rupee during a period of significant external financial stress.

Role of Forex Reserves in Supporting the Rupee

- Forex reserves act as an **external financial buffer** for the economy.

During Rupee Depreciation

- When the rupee faces excessive downward pressure:
- RBI sells dollars → Dollar supply rises → Demand pressure in the forex market eases → Rupee volatility can be moderated.

Broader Importance

Strong reserves help:

- **Manage exchange-rate volatility**
- Meet **external payment obligations**
- Provide confidence to international investors
- Absorb sudden **capital outflows**
- Support **macroeconomic stability**
- Ensure availability of foreign currency for essential imports
- Strengthen the country's ability to service **foreign-currency debt**

Why Did the Rupee Remain Under Pressure?

Despite record reserves, the rupee continued to face depreciation pressures because of:

- Persistent **FPI outflows**
- Strong demand for foreign currency
- Higher global interest rates
- Elevated **crude oil prices**
- Geopolitical tensions

The **West Asia conflict** added to these pressures by disrupting energy supplies and pushing up global oil prices.

Since India depends heavily on **imported crude oil**, higher oil prices:

Increase import bill → Increase dollar demand → Put pressure on rupee → Add to inflationary pressures.

FCNR(B) Account

- **FCNR(B)** stands for **Foreign Currency Non-Resident (Bank)** account.
- It is a **fixed-deposit account** available to **Non-Resident Indians (NRIs)** and **Persons of Indian Origin (PIOs)**.

Feature	FCNR(B)
Currency	Freely convertible foreign currencies
Examples	USD, GBP, EUR, JPY
Nature	Fixed deposit
Exchange-rate exposure for depositor	Limited because deposit is maintained in foreign currency
Repatriability	Principal and interest are fully repatriable
Indian income-tax treatment	Interest is exempt from income tax in India

FCNR(B) Vs. NRE/NRO

- Unlike **NRE and NRO accounts**, which are maintained in **Indian rupees**, **FCNR(B)** deposits are maintained in designated **foreign currencies**.
- This protects the depositor from a loss in the value of the deposit caused by **rupee depreciation** against the relevant foreign currency.

What are Forex Reserves?

- **Foreign exchange reserves** are external assets held by a country's central bank, mainly in foreign currencies and other internationally recognised reserve assets.
- They function as a **financial shock absorber** and help a country meet its external obligations.

Components of India's Forex Reserves

1. Foreign Currency Assets (FCA)

- The **largest component** of India's reserves.
- Includes assets denominated in major foreign currencies such as:
 - US Dollar
 - Euro
 - Pound Sterling
 - Japanese Yen
- Often invested in **foreign government securities**.

2. Gold Reserves

- Gold held by the central bank as a **safe-haven reserve asset**.
- Can provide protection during periods of financial or geopolitical uncertainty.

3. Special Drawing Rights (SDRs)

- International reserve asset created by the **International Monetary Fund (IMF)**.
- Often referred to as **"Paper Gold"**.
- Supplements countries' official reserve assets.

4. Reserve Tranche Position (RTP)

- Represents the position a country can access at the **IMF**.
- Broadly reflects the difference between a country's IMF quota and the IMF's holdings of its currency.
- India's RTP was around **USD 4.78 billion in early 2025**, according to the provided source.

Management of India's Forex Reserves

The **Reserve Bank of India (RBI)** is the custodian and manager of India's forex reserves.

Legal Framework

Reserve management operates under:

- **Reserve Bank of India Act, 1934**
- **Foreign Exchange Management Act (FEMA), 1999**

Investment Principles

- The RBI broadly follows the priority:
- Safety → Liquidity → Return
- Hence, reserves are generally invested in highly secure and liquid instruments such as **top-rated sovereign securities and deposits with other central banks**.

Importance of Forex Reserves

1. Import Cover

Reserves provide foreign currency to finance essential imports such as:

- Crude oil
- Electronics
- Gold

They provide a cushion when external shocks disrupt foreign-exchange earnings.

2. Exchange-Rate Management

The RBI can use its reserves to intervene in the forex market.

Sharp rupee depreciation → RBI sells dollars → Dollar liquidity increases → Pressure on rupee can be reduced.

3. Investor Confidence

Large reserves signal greater capacity to withstand external shocks and meet international obligations.

This can improve confidence among:

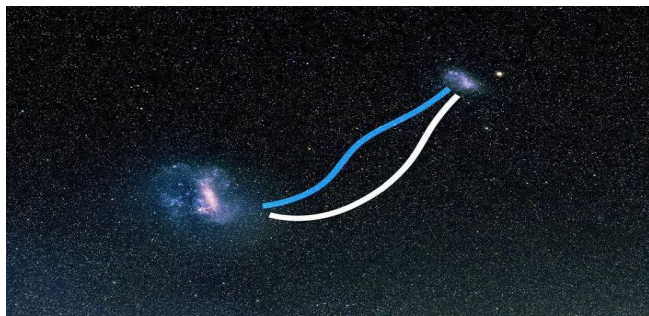
- **Foreign Direct Investors (FDI)**
- **Foreign Portfolio Investors (FPI)**

4. External Debt Servicing

Forex reserves provide the capacity to meet **foreign-currency-denominated debt obligations** of the government and domestic entities.

□□□

Magellanic Bridge



Why in News?

- A team led by the **Inter-University Centre for Astronomy and Astrophysics (IUCAA)** has discovered the **first known system of its kind in the Magellanic Bridge**.
- The discovery was made using the **eROSITA X-ray telescope**.

About Magellanic Bridge

- The **Magellanic Bridge (MB)** is a stream of **stars and gas** connecting two nearby galaxies:
 - **Large Magellanic Cloud (LMC)**
 - **Small Magellanic Cloud (SMC)**
- It is mainly a **gaseous structure**.
- Only a small part consists of **young stars formed in the Bridge itself**.
- It is believed to contain material **tidally stripped from the Small Magellanic Cloud** during its last close encounter with the Large Magellanic Cloud.
- This encounter is estimated to have occurred around **200–300 million years ago**.

Significance

- The Magellanic Bridge provides an opportunity to study how **close encounters between galaxies affect binary stars**.
- It can help scientists understand how binary stars:
 - Form.
 - Evolve.
 - Survive in different galact environments.
- Researchers can compare stellar evolution in the Magellanic Bridge with that in the **Large and Small Magellanic Clouds**.

- This can improve understanding of how interactions between neighbouring galaxies influence the evolution of their stars.

eROSITA X-ray Telescope

- **eROSITA** stands for **extended ROentgen Survey with an Imaging Telescope Array**.
- It is a **wide-field X-ray telescope**.
- It is mounted on the **Russian-German Spectrum-Roentgen-Gamma (SRG)** observatory.
- Developed under the leadership of the **Max-Planck Institute for Extraterrestrial Physics (MPE), Germany**.
- It is designed to produce **deep and sharp X-ray images** over large areas of the sky.
- **Energy range:** Approximately **0.2–8 keV**.
- It is placed in a **halo orbit around the L2 point**.
- eROSITA has been conducting an **all-sky survey**, mapping the entire celestial sphere once every **six months**.

Cholera



Why in News?

- **Cholera** has almost disappeared from wealthy countries due to better access to **clean water, sanitation and healthcare**.
- However, it remains one of the world's **deadliest waterborne diseases** in areas where clean water and basic healthcare are unreliable.

About Cholera

- Cholera is an infectious disease caused by the bacterium **Vibrio cholerae**.

- It can cause:
 - Severe diarrhoea.
 - Dehydration.
- Without treatment, severe cholera can become **fatal within hours**.

Transmission

- Cholera spreads mainly through **contaminated food and water**.
- It is more common in areas affected by:
 - Poor sanitation.
 - Overcrowding.
 - War.
 - Famine.
- Outbreaks are more common in **warm climates**.
- *Vibrio cholerae* can also survive in:
 - **Brackish water** (slightly salty water).
 - Coastal waters.
- Eating **raw shellfish**, such as shrimp and crab, can also be a source of infection.
- Cholera is **not likely to spread through casual person-to-person contact**.

Prevention

- Cholera is largely **predictable and preventable**.
- It can ultimately be eliminated when the entire population has sustained access to:
 - **Clean drinking water**
 - **Proper sanitation**
 - **Good hygiene practices**

Symptoms

- Most people infected with *Vibrio cholerae* **do not develop symptoms**.
- However, they can still spread the bacteria through their **faeces for 1–10 days**.
- Symptoms usually appear **12 hours to 5 days after infection**.
- Most affected people experience **mild or moderate symptoms**.
- Some patients develop:
 - Severe acute watery diarrhoea.
 - Severe dehydration.
 - Life-threatening complications.

Treatment

- The most important treatment is preventing **dehydration**.
- Patients may be treated with:
 - Plenty of **oral fluids**.
 - **Intravenous fluids** in serious cases.
- Healthcare providers may also prescribe antibiotics such as:
 - **Doxycycline**
 - **Erythromycin**
 - **Azithromycin**
- Children between **6 months and 5 years** may be treated with **zinc supplements**.
- **Antidiarrhoeal medicines are not recommended** for cholera and may worsen the condition.

National Roll-out Plan for the Vessel Communication and Support System



Why in News?

- The Government is rolling out the **Vessel Communication and Support System** for the safety and security of marine fishermen.
- The system uses **satellite-based two-way communication** to provide communication, alerts and support to fishing vessels at sea.

About the National Roll-out Plan

- The plan aims to install **indigenously developed transponders** on **1 lakh marine fishing vessels**.
- It will cover **mechanized and motorized fishing vessels** across all **13 coastal States and Union Territories**.

- The plan also includes:
 - Establishment of required **earth stations**.
 - Development of associated communication infrastructure.
 - Development of the **Nabhmitra application** in regional languages.
- Eligible fishermen will receive the **transponders free of cost**.

Financial Assistance

- The project will follow a **60:40 cost-sharing model** between:
 - Central Government – **60%**
 - States – **40%**
- **Union Territories** will receive **100% central assistance**.

Nodal Ministry

- **Ministry of Fisheries, Animal Husbandry & Dairying**

Vessel Communication and Support System

- It is a **satellite-based two-way communication system**.
- It helps fishermen at sea with **safety and security**.
- The system provides:
 - Adverse weather alerts.
 - **No Fishing Zone** alerts.
 - **International Maritime Boundary Line (IMBL)** warnings.
 - Geo-fencing-based alerts.
 - Integration with the **Nabhmitra App**.

Role of ISRO

- The system is being implemented with technical support from the **Indian Space Research Organisation (ISRO)**.
- ISRO has also developed the **Nabhmitra application** for real-time communication and support to the marine fishing community.

Nabhmitra Application

The application provides several services, including:

- **Periodic position reporting**
- **Two-way messaging**
- **Emergency and SOS alerts**
- Automatic **geo-fencing-based boundary crossing warnings**

- **Weather and cyclone advisories**
- Emergency weather alerts
- **Potential Fishing Zone (PFZ)** information
- Navigational assistance
- **e-Token/Trip Declaration system**

Significance

- Improves **safety and security of fishermen at sea**.
- Provides timely warnings during **cyclones and adverse weather**.
- Helps prevent accidental entry into **restricted fishing zones**.
- Provides alerts when vessels approach or cross the **IMBL**.
- Strengthens communication between fishermen and authorities.
- Promotes the use of **indigenous technology** in maritime safety.
- Regional-language support through Nabhmitra can improve accessibility for fishing communities.

PowerBank-50 Satellite Battery



Why in News?

- Hyderabad-based space startup **TakeMe2Space** has announced that its **PowerBank-50 satellite battery pack** has earned the “**flight heritage**” tag.
- It is India's **first indigenously developed satellite battery** to receive this recognition.
- The battery successfully completed its first mission aboard **Skyroot Aerospace's Vikram-1** during its maiden flight, **Mission 'Aagaman'**.

About PowerBank-50

- It is an **indigenously developed satellite battery pack**.
- Developed by **TakeMe2Space**, a Hyderabad-based spacetechnology startup.
- It is designed mainly for **small satellites**.
- A PowerBank-50 unit powered **Cosmoserve Space's experimental payload** aboard the rocket's **Orbital Adjustment Module (OAM)**.
- The payload operated at an altitude of around **450 km**.

Vikram-1 and Mission Aagaman

- **Vikram-1** is a privately developed Indian rocket by **Skyroot Aerospace**.
- It became the **first privately developed Indian rocket to reach orbit**.
- This made India the **third country after the United States and China** where a private company achieved orbital launch capability.
- During Mission Aagaman, the PowerBank-50 successfully operated throughout the launch and in space.

Performance in Space

The battery successfully worked under harsh space conditions, including:

- Vacuum
- Radiation
- Extreme temperature fluctuations
- Launch vibration and shock

Features of PowerBank-50

- **Type:** Lithium-ion satellite battery pack
- **Weight:** Around **380 grams**
- **Energy storage:** More than **50 Wh**
- **Size:** Roughly the size of a paperback book
- **Battery management:** Intelligent Battery Management System
- **Heating:** Onboard heaters
- **Enclosure:** Aluminium flight enclosure
- **Operational life:** Up to **5 years in Low Earth Orbit (LEO)**
- Multiple units can be **stacked together** to power **CubeSats and microsatellites**.

What is Flight Heritage?

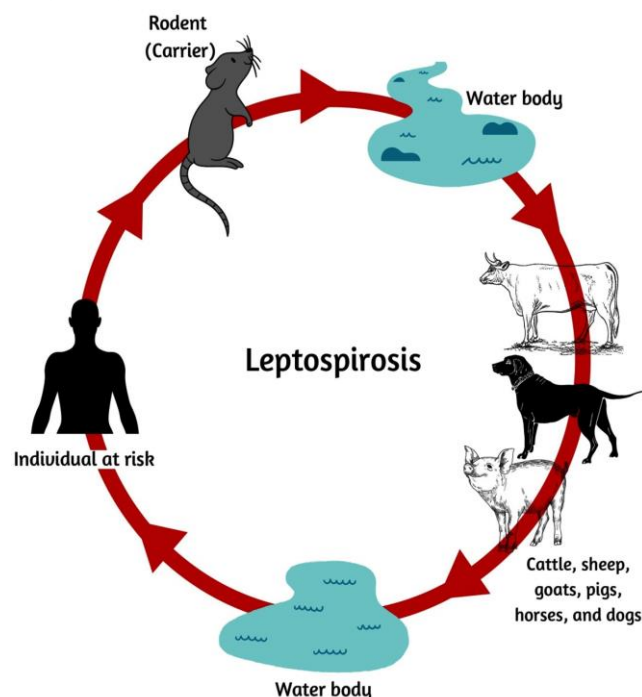
- **Flight heritage** means that a space component has been **successfully tested and operated during an actual space mission**.

- It is considered one of the most important credentials in the satellite industry.
- Satellite manufacturers, launch providers and insurers are often reluctant to use components that have **never flown in space**.
- A failure of even one important subsystem can result in the loss of a costly space mission.
- Therefore, new suppliers face a difficult challenge: they need to **fly a component to gain heritage**, but customers may hesitate to fly it without proven heritage.

Why is Battery Flight Heritage Important?

- Batteries are among the **most closely scrutinised components** of a spacecraft.
- They must survive:
 - Strong launch vibrations
 - Launch shock
 - Vacuum
 - Extreme hot and cold conditions
 - Radiation
 - Repeated temperature changes during each orbit
- Successful operation of PowerBank-50 in its first mission therefore provides **real-world validation of its reliability for future satellite missions**.

Leptospirosis



Why in News?

- **Leptospirosis** has been reported in Kerala since **1989**.
- It has remained **endemic in the State for more than three decades**.
- It has now become the **communicable disease with the highest mortality profile in Kerala**.

About Leptospirosis

- It is a **bacterial disease** that can affect both **humans and animals**.
- It is caused by the bacterium **Leptospira**.
- The bacteria can be found in **contaminated water or soil**.
- It is a **zoonotic disease**, meaning it can spread between **animals and humans**.

Transmission

Leptospirosis can spread through:

- Contact with **water or soil contaminated with urine or body fluids of infected animals**.
- Exposure is especially common after **floods, hurricanes and heavy rainfall**.
- Direct contact with body fluids of an infected animal.
- Eating food or drinking water contaminated by **urine of infected animals**.
- The bacteria can enter the body through:
 - Cuts or abrasions on the skin
 - Mucous membranes of the **mouth, nose and eyes**
- **Person-to-person transmission is rare**.

High-Risk Groups

- Leptospirosis occurs worldwide but is more common in **tropical and subtropical regions**.
- **Warm temperatures, high humidity and heavy rainfall** favour the survival of *Leptospira* bacteria.

People at higher risk include:

- Hikers
- Gardeners
- Outdoor cleaning and maintenance workers
- People handling animals
- People involved in outdoor water sports
- People swimming or wading in **contaminated lakes and rivers**

Symptoms

Common symptoms include:

- High fever
- Severe headache
- Chills
- Muscle aches
- Vomiting

Other possible symptoms include:

- Jaundice
- Red eyes
- Abdominal pain
- Diarrhoea
- Skin rash

Complications

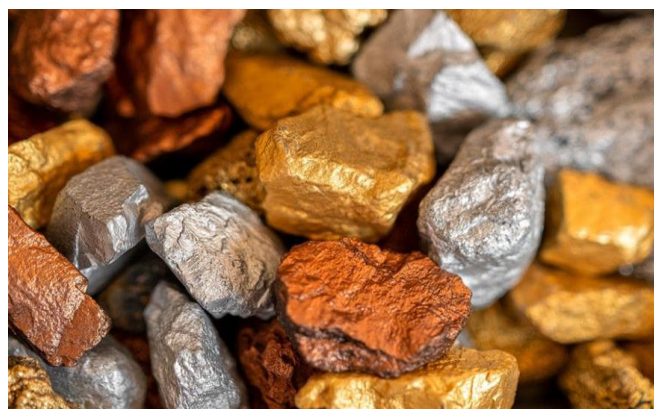
Without treatment, leptospirosis can cause:

- **Kidney damage**
- **Meningitis**
- **Liver failure**
- **Breathing difficulties**
- **Death**

Treatment

- Leptospirosis is treated with **antibiotics**.
- Commonly used antibiotics include **doxycycline and penicillin**.
- People with severe symptoms may require **intravenous (IV) antibiotics**.

Critical Minerals



Why in News?

- The **International Energy Agency (IEA)** in its *Global Critical Minerals Outlook 2026* highlighted continued concentration in mineral refining and renewed supply disruptions.

- This has increased concerns about **critical mineral supply-chain security**.
- China's tighter control over critical mineral processing and its **2025 rare earth export restrictions** have further increased global supply concerns.
- India is therefore accelerating the **National Critical Mineral Mission (NCMM)**, overseas mineral acquisitions and international partnerships to reduce import dependence.

What are Critical Minerals?

- Critical minerals are **non-fuel metallic or non-metallic elements** that are essential for advanced technologies.
- There is **no universally accepted global definition**. Countries identify critical minerals based on their economic importance, substitutability and supply risks.
- They are called **critical** because supply disruptions can seriously affect:
 - Economy
 - National security
 - Strategic industries
- India has identified **30 critical minerals**, including:
 - Lithium
 - Cobalt
 - Nickel
 - Graphite
 - Copper
 - Rare Earth Elements (REEs)

Strategic Importance of Critical Minerals

- Critical minerals are essential for **clean energy technologies**, advanced manufacturing and national security.
- **Solar energy**: Silicon, Tellurium, Indium and Gallium are used in photovoltaic cells.
- **Wind energy**: Neodymium and Dysprosium are used in permanent magnets for high-efficiency wind turbines.
- **Energy storage**: Lithium, Cobalt and Nickel are important for lithium-ion batteries.
- They are also needed for:
 - Electric Vehicles
 - Battery storage
 - Semiconductors

- Artificial Intelligence
- Advanced electronics
- Telecommunications
- Defence and aerospace
- Defence manufacturing uses specialised alloys and rare earth magnets for **missiles, jet engines and AI hardware**.
- Critical minerals support **SDG 7, SDG 9 and SDG 13**.
- Their secure supply is important for **industrial competitiveness, technological leadership, defence preparedness and energy security**.

Major Critical Minerals and Their Occurrence in India

- **Lithium**: Discovered in **Karnataka and Jammu & Kashmir**.
- **Cobalt and Nickel**: Generally occur with **copper ores**; small deposits are found in **Odisha and Jharkhand**.
- **Rare Earth Elements**: Significant reserves occur in **Andhra Pradesh, Karnataka, Odisha and Kerala**.
 - **Monazite sands of Kerala** are particularly rich in REEs.
 - Gujarat and Rajasthan also have **1.29 million tonnes of in-situ rare-earth oxide (REO)** in hard-rock deposits.
- **Graphite**: Substantial high-quality reserves occur in **Arunachal Pradesh, Jharkhand and Tamil Nadu**.

How is Geopolitics Reshaping Critical Mineral Supply Chains?

- **Export controls**: Major producers are increasingly using critical minerals as a geopolitical tool.
- China's **2025 export licensing controls on selected rare earth elements** exposed vulnerabilities in global supply chains.
- The IEA has highlighted the risks created by concentrated refining hubs.
- European prices of **gallium, dysprosium and terbium** were nearly five times China's prices due to supply bottlenecks and diversification costs.

- **Friendshoring:** Western countries are developing trusted supply chains through strategic partners.
- Major initiatives include:
 - US-led **Minerals Security Partnership**
 - US-Australia Compact
 - EU Critical Raw Materials Act
- Traditional geopolitical chokepoints are also affecting mineral supply chains.
- China's **May 2026 restrictions on sulphuric acid exports** affected processing of copper, lithium and cobalt.
- Disruptions around the **Strait of Hormuz** affected global sulphur and aluminium trade.
- Countries are increasingly following the **"China+1" strategy** by diversifying sources and investing in domestic mining and refining.

Global Approaches to Critical Mineral Security

- **China:** Controls a large part of the global value chain through mining, processing, refining and exports.
- **US:** Focuses on friendshoring, strategic alliances, domestic processing and overseas investments.
- **European Union:** Promotes strategic autonomy through domestic extraction, processing and recycling.
- **Australia:** Positions itself as a trusted supplier while expanding downstream processing.
- **Japan:** Uses resource diplomacy, overseas mining assets, long-term supply contracts and strategic stockpiles.
- **India:** Follows an integrated **"Mine-to-Market" strategy** combining domestic exploration, overseas acquisitions and international partnerships.

Steps Taken by India

- **National Critical Mineral Mission (NCMM):**
 - Implemented from **FY 2024–25 to FY 2030–31**.
 - Covers exploration, mining, processing, recycling, R&D, human resource development and strategic stockpiling.
 - Targets **1,200 domestic exploration projects**.

- Aims to produce at least **15 critical minerals by 2030–31**.
- Targets **270 kilotonnes annual recycling capacity** to recover **40 kilotonnes of critical minerals**.
- Promotes innovation through **1,000 patents and 7 Centres of Excellence**.
- **MMDR Act Amendment, 2023:** Allows the Central Government to auction **24 of the 30 identified critical minerals**.
- **Overseas acquisition:** KABIL secured **15,703 hectares in Catamarca, Argentina** for lithium exploration and aims to acquire **50 overseas mining assets by 2030–31**.
- **India-US Critical Minerals and Rare Earths Framework:** Signed in **May 2026**.
- **Pax Silica Initiative:** India joined the US-led initiative for resilient supply chains in critical minerals, semiconductors, AI and advanced manufacturing.
- **Quad Critical Minerals Initiative:** India, Australia, Japan and the US are working to build secure and diversified supply chains, with a plan to mobilise up to **USD 20 billion**.
- **Rare Earth Corridors:** Proposed in **Odisha, Kerala, Andhra Pradesh and Tamil Nadu**.
- **Sintered Rare Earth Permanent Magnets Scheme:** Targets an integrated domestic ecosystem of **6,000 MTPA**.
- **PLI Schemes:** Support domestic manufacturing of **ACC batteries, solar PV modules, electronics and semiconductors**.

Challenges to India's Critical Mineral Security

- **Heavy import dependence:** India is almost entirely dependent on imports for lithium.
- Cobalt is largely imported from the **Democratic Republic of Congo (DRC)** and mainly processed in China.
- Nickel is mainly sourced from **Indonesia**.
- Rare earth magnets are predominantly sourced from **China**.
- **Missing middle:** India lacks sufficient capacity for:
 - Battery-grade lithium chemicals
 - High-purity graphite
 - Rare earth separation
 - Advanced smelting
 - Chemical refining

- Around **70–90% of global value addition** is concentrated in these processing stages.
- **China's midstream dominance:** China refines over:
 - **90% of REEs and graphite**
 - Around **75% of cobalt**
 - Nearly **70% of lithium chemicals**
- **Inadequate exploration:** Indian exploration remains largely shallow and reconnaissance-based, while many critical minerals are deep-seated.
- **Weak project economics:** Small or low-grade deposits, remote locations and LWE-affected areas can reduce commercial viability.
- **Limited private investment:** Exploration and refining require high-risk, patient capital.
- **Weak circular economy:** Recovery from e-waste, batteries, mine tailings, fly ash and red mud remains limited.
- **Resource nationalism:** Countries such as Indonesia and several Latin American nations are restricting raw mineral exports to promote domestic value addition.
- **Lack of strategic stockpiles:** India does not yet have a comprehensive strategic reserve for critical minerals.

Measures to Strengthen Critical Mineral Security

- **Strengthen domestic exploration** using AI, airborne geophysical surveys, hyperspectral mapping and 3D geological modelling.
- **Build processing and refining capacity** for lithium, nickel, cobalt and rare earths.
- Develop mineral processing parks and integrated value chains through **public-private partnerships**.
- **Diversify overseas sources** through KABIL and mining acquisitions in countries such as Australia, Argentina, Chile, Namibia and African nations.
- Create **Strategic Critical Mineral Reserves**, similar to Strategic Petroleum Reserves.
- Promote **urban mining** and recycling of:
 - E-waste
 - Lithium-ion batteries
 - End-of-life vehicles
 - Mine tailings
 - Fly ash

- Red mud

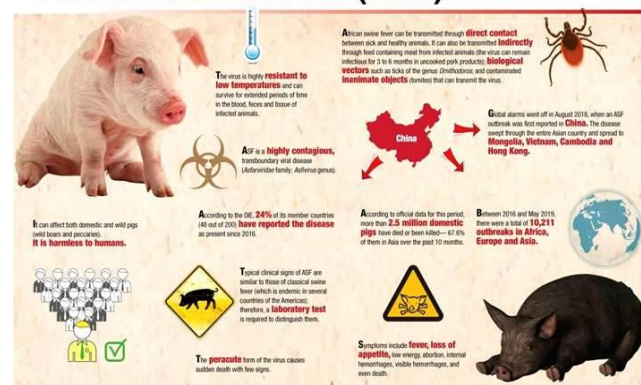
- Improve the **ease of mining** by streamlining environmental and forest clearances.
- Improve geological data availability and risk-sharing mechanisms.
- Develop a **National Critical Minerals Strategy** with:
 - Mineral-specific risk thresholds
 - Stronger inter-ministerial coordination
 - Supply-chain monitoring
 - Integration with India's industrial, energy and national security strategy.

Conclusion

- India's critical mineral security requires integration of **domestic exploration, advanced processing, recycling and international partnerships**.
- Strategic autonomy will require India to move beyond extracting raw minerals and become a major hub for **high-purity processing and circular recycling**.

Indigenous Live Attenuated Vaccine Against African Swine Fever

African swine fever (ASF)



Why in News?

- Scientists at **ICAR–National Institute of High Security Animal Diseases (ICAR-NIHSAD), Bhopal** have developed India's first indigenous live attenuated vaccine against African Swine Fever (ASF).
- The vaccine uses:
 - **Attenuated Genotype II ASF virus**
 - Specific **gene deletions**
 - Widely available **MA-104 cell line**

- This makes **large-scale production** more feasible and cost-effective.

African Swine Fever (ASF)

About

- **African Swine Fever** is a **highly contagious viral disease** affecting:
 - Domestic pigs
 - Wild pigs
- It is caused by the **African Swine Fever Virus (ASFV)**.
- It can cause:
 - High fever
 - Internal bleeding
 - Mortality rates of up to **100%**
- ASF is a **listed disease of the World Organisation for Animal Health (WOAH)**.
- It is covered under the **WOAH Terrestrial Animal Health Code**.
- Member countries are required to **notify WOAH of outbreaks**.

Transmission

ASF can spread through:

- Direct contact with infected pigs
- Infected pig carcasses
- Contaminated feed
- Food waste
- Contaminated equipment and other materials
- **Soft ticks** in certain regions

Human Health Risk

- ASF is **not a zoonotic disease**.
- It **does not infect humans**.
- However, humans can indirectly spread the virus through:
 - Contaminated clothing
 - Footwear
 - Vehicles
 - Equipment
 - Pork products

Global Outbreak

- ASF was first described in **Kenya in 1921**.
- After its emergence in **Georgia in 2007**, the disease spread widely across:
 - Europe

- Asia
- Oceania
- Parts of the Caribbean

- It continues to affect several **African countries**.

ASF in India

- ASF was first detected in India in **2020**.
- It subsequently spread across several **States and Union Territories**.
- The **North-Eastern region** was particularly affected.
- The disease caused:
 - Large-scale pig deaths
 - Movement restrictions
 - Disruption of pork production
 - Disruption of pork trade

Significance of the Indigenous Vaccine

- Can help **reduce pig mortality**.
- Can reduce **economic losses for farmers**.
- Strengthens **livestock biosecurity**.
- Supports **food security**.
- Reduces dependence on imported veterinary vaccines.
- Can support India's emergence as a supplier of **affordable veterinary vaccines**.

India's Electric Mobility Transition



Why in News?

- **Electric mobility** is transforming daily commuting and last-mile connectivity in India.
- India's EV transition is important for **climate action, sustainable transport, energy security and reducing dependence on fossil-fuel imports**.

Evolution of India's EV Sector

- India's electric-mobility journey began in **2015** with the **National Electric Mobility Mission Plan (NEMMP)** and **FAME scheme**.
- The aim was to:
 - Reduce petroleum-import dependence
 - Control urban air pollution
 - Reduce transport-sector emissions
 - Promote domestic EV manufacturing
- **FAME India Scheme:** Launched in 2015 under NEMMP. It supported EV purchase incentives, charging infrastructure and manufacturing.
 - Phase I continued till **March 2019**.
 - Phase II continued till **April 2024**.
- Global EV sales increased from **9.18 lakh units in 2016 to 1.878 crore units in 2024**.
- India's EV adoption increased from **0.08% in FY2015–16 to 8.26% in FY2025–26**.
- EV sales in India increased from around **50,000 units in 2016 to 23 lakh units in 2025**.
- **Uttar Pradesh** was the largest EV market in 2025, followed by **Maharashtra and Karnataka**.
- India had **52,718 public charging stations** by July 2026.

EV Manufacturing and Infrastructure

- India is moving from an **assembly-led market towards a complete EV manufacturing ecosystem**.
- Domestic production includes:
 - Battery packs
 - Motors
 - Drivetrains
 - Power electronics
 - Wiring
 - Charging equipment
- Companies such as **Tata Motors, Mahindra, TVS and Bajaj Auto** are expanding EV production.
- Around **400 EV startups** are operating in India.
- The **e-Amrit** tool helps users locate EV charging stations.

- AI is being used for:
 - Navigation
 - Route planning
 - Traffic updates
 - Connected vehicle features

India Electric Mobility Index

- Launched by **NITI Aayog in August 2025**.
- It compares EV progress across **States and Union Territories**.
- It uses **16 indicators under 3 pillars**:
 - Transport electrification
 - Charging infrastructure readiness
 - EV research and innovation
- States and UTs are classified as:
 - **Frontrunners**
 - **Performers**
 - **Aspirants**
- **Delhi, Maharashtra and Chandigarh** were classified as Frontrunners.

Major Government Initiatives

State EV Policies

- By December 2025, **29 States and UTs** had notified EV policies.
- **4 States/UTs** had draft policies.
- Incentives include:
 - Capital subsidies
 - Preferential land allotment
 - Stamp-duty waivers
 - SGST reimbursement
- Major EV hubs include **Tamil Nadu, Maharashtra, Karnataka, Gujarat, Haryana and Uttar Pradesh**.

National Mission on Manufacturing

- Identifies **electric vehicles as a key sector** for innovation-led industrial growth.
- It aims to increase manufacturing's share in GDP from **12.9% to 25% by 2035**.
- It also focuses on:
 - Advanced manufacturing
 - Technology development
 - Global value-chain integration
 - EV manufacturing clusters

PM E-DRIVE Scheme

- Notified in **2024** with an outlay of **₹10,900 crore**.
- Promotes:
 - EV adoption
 - Domestic manufacturing
 - Charging infrastructure
- Supports more than **28 lakh electric vehicles**.
- By January 2026, **22.12 lakh vehicles** had been sold under the scheme.
- **₹4,391 crore** is allocated for **14,028 electric buses**.
- **₹2,000 crore** is allocated for public charging stations.
- **₹780 crore** is allocated for upgrading vehicle-testing agencies.

PM e-Bus Sewa–Payment Security Mechanism

- Notified in **2024** with an outlay of **₹3,435.33 crore**.
- Provides payment security to e-bus operators.
- Aims to support more than **38,000 e-buses**.
- Payment-security coverage can extend up to **12 years**.
- **10,000 electric buses** are to be deployed through the **PPP model**.

SPMEPCI

Scheme for Promotion of Manufacturing of Electric Passenger Cars in India

- Promotes domestic manufacturing of electric passenger cars.
- Manufacturers must:
 - Invest at least **₹4,150 crore**
 - Achieve **25% Domestic Value Addition within 3 years**
 - Achieve **50% Domestic Value Addition within 5 years**

PLI-Auto Scheme

- Launched in **2021**.
- Supports domestic manufacturing of **Advanced Automotive Technology products**, including EVs.
- Requires at least **50% domestic value addition**.
- By January 2026, **₹2,377.56 crore** had been disbursed.

PLI-ACC Scheme

- Launched in **2021** with an outlay of **₹18,100 crore**.
- Aims to establish **50 GWh domestic Advanced Chemistry Cell battery capacity**.
- Batteries account for around **35–40% of an EV's cost**.
- Domestic battery production can:
 - Reduce import dependence
 - Lower EV costs
 - Improve energy security
 - Create employment

GST Incentive

- Electric cars, two-wheelers and three-wheelers attract a reduced **GST rate of 5%**.

India's EV Growth Outlook

- India aims to develop an integrated EV ecosystem under **Make in India**.
- The EV market is projected to grow from **USD 3.71 billion in 2025 to USD 191.04 billion by 2034**.
- India aims for **30% EV share in total vehicle sales by 2030**.
- Around **1.32 million charging stations** are targeted by 2030.
- Growing localisation, R&D and global partnerships can help India become an **EV export hub**.

Corporate Average Fuel Efficiency (CAFE) Norms

- Introduced in **2017**.
- Aim to promote:
 - Fuel-efficient vehicles
 - Lower emissions
 - EV adoption
 - Reduced fuel consumption
- **CAFE III**: Proposed for **2027–2032**.
- **CAFE IV**: Proposed for **2033–2037**.
- Proposed emission limits:
 - **91.7 g CO₂/km** under CAFE III
 - **70 g CO₂/km** under CAFE IV
- A **super-credit mechanism** is expected to encourage manufacturers to increase EV sales.

Lab-Grown Diamonds (LGDs)



Why in News?

- **Lab-grown diamonds (LGDs)** are gaining attention as a **sustainable alternative to natural diamonds**.
- Their importance is increasing due to:
 - Declining natural diamond reserves
 - Environmental concerns from mining
 - Ethical concerns related to diamond mining
- India is promoting **indigenous LGD production** through research and technological innovation.

What are Lab-Grown Diamonds?

- **About:** LGDs are **synthetic diamonds** produced in controlled laboratory environments.
- They are **chemically, physically and optically identical** to natural diamonds.
- Both have the same **crystalline carbon structure**.
- LGDs have similar:
 - Rarity
 - Scintillation
 - Lustre
 - Durability
- They also offer better **supply-chain traceability** compared with mined diamonds.

Production Methods

HPHT – High Pressure, High Temperature

- Pioneered in **1954**.
- Replicates the extreme conditions found deep inside the **Earth's mantle**.

- Carbon is exposed to **very high pressure and temperature**, causing it to crystallise into diamond.

CVD – Chemical Vapour Deposition

- Introduced in **1962**.
- Uses a small **diamond seed** placed inside a sealed chamber.
- The chamber contains carbon-rich gases such as **methane**.
- The gases are converted into plasma.
- Pure carbon deposits on the diamond seed **layer by layer**.

Advantages of Lab-Grown Diamonds

- **Environmental Sustainability:** Avoids many environmental impacts associated with diamond mining, such as:
 - Deforestation
 - Soil erosion
 - Heavy water consumption
 - Ecological displacement
- **Lower Carbon Footprint:** LGDs produced using **renewable energy** can have a much lower carbon footprint.
- **Affordable:** Improvements in laboratory technology have reduced production costs.
- **Industrial Uses:** Due to their durability and thermal conductivity, LGDs are used in:
 - Cutting and drilling
 - Semiconductor manufacturing
 - Quantum computing
 - Protective coatings

India's Push for Indigenous Production

- The **Union Budget 2023–24** announced measures to promote domestic LGD production.
- Focus was placed on research in **HPHT and CVD technologies**.
- India processes around **90% of the world's diamonds** and contributes nearly **75% of global diamond trade by value**.
- India produced more than **3 million LGDs in 2023**, accounting for over **15% of global production**.

InCent-LGD

- The **Ministry of Commerce and Industry** provided a five-year grant of about **₹243 crore** to **IIT Madras**.
- The grant is for establishing the **India Centre for Lab-Grown Diamond (InCent-LGD)**.
- The centre aims to develop:
 - Indigenous manufacturing machinery
 - Refining technologies
 - Indigenous diamond seeds
 - Domestic technical expertise
- The larger objective is to make India a **global manufacturing hub for the LGD industry**.

Concerns Regarding Natural Diamond Mining

- **Dwindling Reserves:** Major mines such as **Argyle in Australia** and **Diavik in Canada** are nearing exhaustion.
- Mines accounting for around **90% of global production** are estimated to have a lifespan of no more than **50 years**.
- **Occupational Health Risks:** Mine workers may face hazards such as **asbestos exposure**, which can cause serious diseases.
- **Blood Diamonds:** Illicit diamond trade can finance **military activities and civil conflicts**.
- Despite the **Kimberley Process**, gaps in regulation can allow conflict diamonds to be smuggled across borders.

Kimberley Process

- India is the **Chair of the Kimberley Process for 2026**.
- India is also a **founding member of the Kimberley Process Certification Scheme (KPCS)**.
- The process aims to prevent the trade in **conflict diamonds** and promote transparency in the global diamond trade.

Diamond Resources in India

- India was one of the **earliest diamond-producing regions in the world**, with diamond mining dating back to the **5th century BC**.
- During the **16th and 17th centuries**, **Golconda** emerged as a major global diamond trading centre.

- Famous diamonds associated with India include:

- **Kohinoor**
- **Great Moghul**
- **Hope**
- **Nizam**
- **Pitt (Regent)**
- **Orloff**
- **Darya-i-Noor**

Present Diamond Mining

- **Majhgawan Diamond Mine in Panna, Madhya Pradesh** is India's only active mechanised commercial diamond mine.
- It is operated by **National Mineral Development Corporation (NMDC)**.

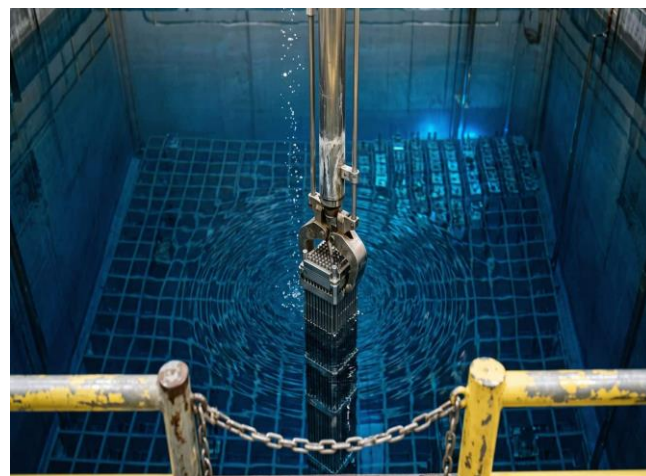
Major Diamond-Producing Regions

- **Panna Diamond Belt – Madhya Pradesh**
- **Krishna River gravels – Andhra Pradesh**
- **Mahanadi River gravels – Odisha**
- **Wairagarh Conglomerates – Maharashtra**

Important Kimberlite Deposits

- **Majhgawan Pipe – Madhya Pradesh**
- **Wajrakarur Pipe – Andhra Pradesh**

Spent Nuclear Fuel Antineutrinos



Why in News?

- Researchers from the **Double Chooz Collaboration in France** have reported the first **high-precision measurement of the energy signature of antineutrinos** emitted by **spent nuclear fuel**.
- The finding could open a new method for **remotely monitoring nuclear facilities and spent-fuel inventories**.

Neutrinos

- **Neutrinos** are extremely light, **electrically neutral subatomic particles**.
- They interact very weakly with matter.
- As a result, huge numbers of neutrinos can pass through objects and even human bodies without being detected.

Reactor Antineutrinos

- **Nuclear fission** produces large quantities of antineutrinos.
- Even after a nuclear reactor is shut down, radioactive isotopes continue to decay.
- Isotopes such as **praseodymium-144** and **rhodium-106** emit a low-intensity antineutrino flux.
- This residual flux comes from:
 - Partially used nuclear fuel
 - Spent-fuel cooling pools

Key Finding

- Researchers detected the **residual antineutrino signal** from spent nuclear fuel.
- Around:
 - **56%** of the signal came from fuel in the **reactor cores**.
 - **44%** came from **spent fuel** stored in nearby cooling pools.

Importance for Nuclear Safeguards

- Changes in the residual antineutrino flux can help inspectors **remotely verify spent-fuel inventories**.
- If fuel assemblies are secretly removed, the antineutrino signal would decrease.
- This could provide a **non-invasive method of monitoring nuclear fuel**.

Possible Applications

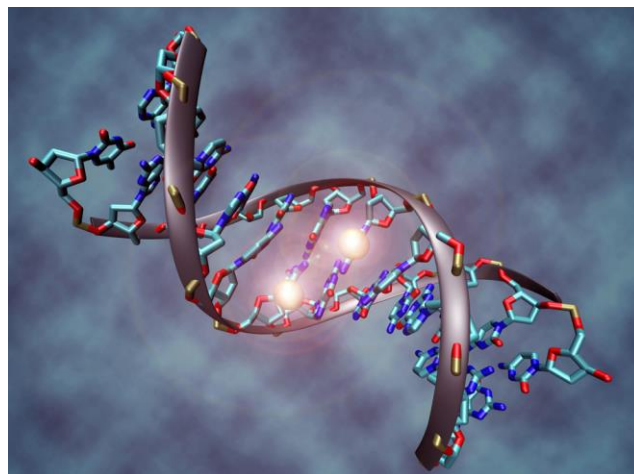
- Neutrino detectors could potentially:
 - Estimate **plutonium content** in reactor cores in real time.
 - Monitor changes in nuclear fuel composition.
 - Detect **premature removal of fuel**.
 - Help identify activities intended to produce **weapons-grade plutonium**.

Limitations

- Current neutrino detectors are generally **large and stationary**.

- They require extensive **shielding** to reduce interference from cosmic rays.
- A **Double Chooz detector** weighed more than **500 tonnes**, including around **300 tonnes of shielding**.
- Therefore, developing smaller and more portable detectors remains a major challenge.

Epigenetic Inheritance



Why in News?

- A study published in *Nature Genetics* found that certain **epigenetic changes**, especially **DNA methylation patterns**, can be inherited across generations in mice without changing the underlying **DNA sequence**.
- The findings challenge the conventional understanding of **Mendelian inheritance** and suggest that heritable information may extend beyond DNA sequence.
- However, the study was conducted in **mice**, so its findings cannot be directly applied to humans.

What are the Key Findings of the Study?

- **Non-Mendelian Inheritance:**
 - Researchers identified around **7,600 genomic locations** with different DNA methylation patterns.
 - About **93% followed Mendelian inheritance**, while nearly **7% showed non-Mendelian epigenetic inheritance**, accounting for more than **500 instances**.
 - This suggests that epigenetic inheritance may be more widespread than previously recognised.

- **Sex-Specific Epigenetics:**
 - In more than **300 regions** of the mouse genome, methylation patterns depended on the animal's sex.
 - Female mice showed significantly higher methylation in their liver tissues than males.
- **Discovery of New Genes:**
 - The study identified at least **five new genes** showing genomic imprinting.
- **Naturally Occurring Paramutation:**
 - Researchers identified naturally occurring intergenerational **paramutation** at the *Capn11* gene.
 - The gene is involved in **testicular meiosis and male fertility**.
 - Two other highly likely cases of paramutation were also identified involving **Intracisternal A Particles (IAPs)**.
 - IAPs are **endogenous retroviral elements** present in the mouse genome that can resist normal DNA demethylation during sperm and egg formation.

What is Epigenetics?

- **About:** Epigenetics is the study of **heritable changes in gene expression** that happen without changing the underlying DNA sequence.
- **Core Concept:**
 - DNA can be considered the **"hardware"** containing genetic instructions.
 - The epigenome acts like **"software"**, controlling which parts of the DNA are switched on or off.
 - Although cells contain the same DNA, epigenetic differences allow **liver, brain and muscle cells** to perform different functions.
- Epigenetic marks can be influenced by factors such as **diet, stress, ageing, physical activity and toxins**.

Major Epigenetic Mechanisms

1. DNA Methylation

- It is one of the most common epigenetic mechanisms.
- A chemical tag called a **methyl group ($-\text{CH}_3$)** is added to DNA, usually at cytosine bases.
- DNA methylation, especially around gene promoters, is often linked with **reduced gene transcription**.

2. Histone Modification

- DNA is wrapped around proteins called **histones** to form chromatin.
- Chemical changes to histones control how tightly DNA is packed.
- **Tightly packed DNA:** Less accessible and generally silenced.
- **Loosely packed DNA:** More accessible and available for transcription.

3. Non-Coding RNAs

- These are RNA molecules that do not produce proteins.
- They can regulate gene expression by binding to coding RNAs and causing their breakdown.

What is Genomic Imprinting?

- **Genomic imprinting** is an epigenetic process where gene expression depends on whether the gene copy came from the **mother or father**.
- Normally, mammals inherit two copies of most genes:
 - One from the mother.
 - One from the father.
- In an imprinted gene, one copy is **epigenetically silenced**, usually through methylation.
- For example, if a gene is maternally imprinted, only the **paternal copy** remains active.

What is Paramutation?

- **Paramutation** is a process where the epigenetic state of one allele changes the epigenetic state of its homologous allele.
- The altered state can potentially **persist across generations**.

What are the Implications of Epigenetic Inheritance?

- **Missing Heritability:**

- Epigenetic changes may explain some inherited traits that traditional **Genome-Wide Association Studies (GWAS)** cannot identify because they do not involve changes in DNA sequence.

- **Precision Medicine:**

- Since some epigenetic changes are reversible, they may become targets for **epigenetic therapies** to restore normal gene function.

- **Environment and Inheritance:**

- Diet, stress and toxins can influence epigenetic marks.
- This highlights the importance of **nutrition, environmental protection and parental health**.
- However, the extent to which these changes are inherited across generations in humans remains under study.

- **Complex Diseases:**

- Non-Mendelian inheritance may help explain certain diseases that cannot be fully understood through traditional genetic inheritance, including some **cancers and metabolic disorders**.

- **Evolution:**

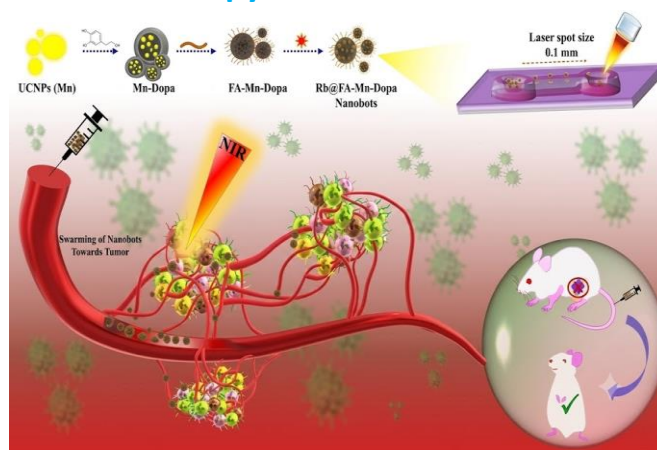
- Epigenetic changes may allow organisms to respond to environmental changes faster than genetic mutations.

How Does Epigenetic Inheritance Differ from Mendelian Inheritance?

Feature	Conventional Mendelian Inheritance	Epigenetic Inheritance
Basis	Transmission of DNA sequence variants (alleles) from parents to offspring	Transmission of gene-regulating epigenetic marks without changing DNA sequence
Key Principle	Follows Mendel's laws of segregation and independent assortment	Can show non-Mendelian inheritance patterns

Gene Expression	Mainly determined by inherited DNA sequence	Influenced by epigenetic marks that can switch genes on or off
Stability	DNA sequence is generally stable across generations	Epigenetic marks are dynamic and reversible
Reproductive Resetting	DNA is transmitted through sperm and eggs	Most epigenetic marks are normally erased during sperm and egg formation
Inheritance Pattern	Generally follows predictable parent-to-offspring patterns	Some marks can escape resetting, vary by sex, or affect another allele through paramutation

Light-Activated Nanobots for Breast Cancer Therapy



Why in News?

- Scientists from the **Institute of Nano Science and Technology (INST), Mohali** have developed **light-activated multifunctional nanobots** for more precise and targeted breast cancer therapy.

How Do the Nanobots Work?

- **Light-Activated Movement:**

- The nanobots are based on **Upconversion Nanoparticles (UCNPs)**.
- They respond to **near-infrared (NIR) light** and show **phototaxis**, meaning they move directionally towards the light source.
- This helps in delivering therapeutic action to a targeted location.

- **Cancer Cell Targeting:**

- The nanobots are functionalised with **folic acid**.

- This helps them recognise breast cancer cells that have an increased number of **folate receptors**.
- A **980-nanometre near-infrared laser** produces localised heating to destroy cancer cells.
- **Photodynamic Therapy:**
 - A **photosensitizer** produces **Reactive Oxygen Species (ROS)** when exposed to near-infrared light.
 - The nanobots combine:
 - **Photothermal therapy** – uses heat to destroy cancer cells.
 - **Photodynamic therapy** – uses ROS to damage and destroy cancer cells.
 - The combined effect produced greater tumour inhibition than either therapy alone.

Smart Control of Nanobots

- The therapeutic activity of the nanobots can be influenced by:
 - **Laser intensity**
 - **pH**
 - **Glutathione concentration**
- This allows better control of their activity in biological environments.

Key Advantages

- **Fuel-free:** The nanobots do not require an external chemical fuel source.
- **External control:** Their movement and therapeutic action can be controlled using light.
- **Targeted treatment:** Helps concentrate treatment around cancer cells.
- **Reduced damage:** May reduce damage to healthy tissues and **systemic toxicity**.
- **Minimally invasive:** Offers potential for more precise cancer treatment.

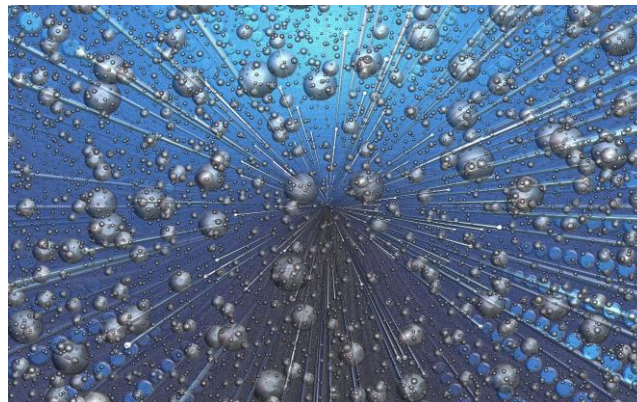
Testing and Significance

- The nanobots showed therapeutic efficacy in:
 - **Cellular models**
 - **Breast tumour-bearing mice**
- The findings highlight their potential for **precise, targeted and minimally invasive breast cancer therapy**.

Key Point

Light-activated nanobots combine targeted movement, photothermal therapy and photodynamic therapy to provide a more precise approach to breast cancer treatment.

Blueball and X(2370)



Why in News?

Scientists have found some of the **strongest evidence yet for a long-predicted form of matter called a glueball**, with the particle **X(2370)** emerging as a leading candidate.

What is the Strong Force?

- The **strong force** is one of the **four fundamental forces of nature**.
- It holds **quarks together** to form particles such as **protons and neutrons**.
- It also helps keep protons and neutrons bound inside the **atomic nucleus**.
- The strong force is explained by the theory of **Quantum Chromodynamics (QCD)**.

Role of Gluons

- In QCD, the strong force is mediated by particles called **gluons**.
- Gluons are different from photons because **gluons themselves carry a type of charge**.
- Because of this, gluons can **interact with one another**.

What is a Glueball?

- QCD predicts that **gluons can bind together** to form short-lived composite particles called **glueballs**.
- In a glueball, the dominant constituents are **gluons**.
- This is different from conventional **mesons**, which are mainly made up of **quark-antiquark pairs**.

Why are Glueballs Difficult to Detect?

- Glueballs are **highly unstable** and decay very quickly into lighter particles.
- They can also **mix with ordinary hadrons** having similar quantum properties.
- This makes it extremely difficult to identify whether an observed particle is actually a glueball.

X(2370) as a Glueball Candidate

- The **X(2370)** particle was first observed in **J/ψ meson decays in 2011**.
- Its mass and other properties broadly match theoretical predictions for a **pseudoscalar glueball**.
- Further analysis of J/ψ decay data has strengthened the possibility that **X(2370) could be a glueball**.
- Its observed characteristics are broadly consistent with theoretical expectations.

Significance

- If the glueball interpretation of **X(2370)** is confirmed, it would provide **landmark experimental evidence for a new form of hadronic matter**.
- It would show that particles made predominantly of **gluons**—the force carriers of the strong interaction—**can exist as independent composite states**.
- Such a discovery would also provide an important test of **Quantum Chromodynamics (QCD)** and improve our understanding of the strong interaction.

India–US Cooperation in NASA’s Moon Base Programme



Why in News?

The **National Aeronautics and Space Administration (NASA)** has invited the **Indian Space Research Organisation (ISRO)** to join its ambitious **Moon Base Programme**.

- The programme aims to establish a **permanent human outpost near the Moon’s South Pole**.
- The invitation reflects the growing **India–US cooperation in civil and commercial space activities**.

India–US Civil Space Cooperation

- **India-US Civil Space Joint Working Group (CSJWG):**
 - The invitation was extended during the **9th meeting of the India-US Civil Space Joint Working Group** held at **ISRO headquarters in Bengaluru**.
 - The meeting focused on strengthening **civil and commercial space cooperation** under the **US-India TRUST initiative**.
 - Both countries reviewed the successful **NISAR (NASA-ISRO Synthetic Aperture Radar) mission** and discussed possibilities for further cooperation.
 - They also reaffirmed their commitment to **UN COPUOS guidelines** on the long-term sustainability of outer-space activities.
- **Artemis Accords:**
 - The cooperation builds upon India’s participation in the **Artemis Accords**, which India joined in **June 2023**.
 - This creates a broader framework for India’s participation in international lunar exploration.

Moon Base Programme and Artemis Framework

What is the Artemis Programme?

- The **Artemis Programme**, led by NASA, aims to:
 - Return humans to the Moon for the first time since the **Apollo missions in 1972**.

- Establish a **permanent lunar presence**.
- Develop capabilities for future **crewed missions to Mars**.

What is the Moon Base Project?

The Moon Base Project is a **three-phase programme** aimed at creating humanity's first long-term human outpost near the **lunar South Pole**.

Why the Lunar South Pole?

- The region contains **water ice** in **permanently or long-shadowed areas**.
- Lunar water could potentially support:
 - Drinking water
 - Life-support systems
 - Scientific research
 - Production of hydrogen and oxygen for fuel

Three Phases

Phase	Timeline	Main Focus
Phase 1	Through 2029	Robotic missions, South Pole exploration, technology demonstrations and groundwork
Phase 2	2029–2032	Construction of systems and critical infrastructure for long-term lunar presence
Phase 3	After Phase 2	Assembly of a permanent lunar outpost for astronauts, scientific research and long-term operations

What are the Artemis Accords?

- The **Artemis Accords** were established in **2020** by NASA, the US Department of State and seven initial signatories.
- They provide a **non-binding framework of principles** for peaceful, safe and sustainable civil exploration and use of outer space.
- India became the **27th signatory in 2023**.

Key Principles

The framework promotes:

- Peaceful exploration of space
- Transparency in space activities
- Interoperability of systems
- Emergency assistance to astronauts
- Registration of space objects
- Sustainable use of space resources
- Preservation of space heritage
- Reduction of orbital debris

- Responsible sharing of scientific data

Significance for India's Space Vision

The proposed cooperation aligns with **India's Space Vision 2047**.

India's Long-Term Goals

- **Indian human Moon landing by 2040**
- Development of the **Bharatiya Antariksh Station**
 - First module targeted for **2028**
 - Full station targeted for **2035**

From Independent Missions to Global Cooperation

India has already demonstrated its lunar capabilities through missions such as **Chandrayaan-3**.

Participation in a lunar outpost programme could help India move from:

- **Independent space missions**
- **International scientific cooperation**
- **Human spaceflight**
- **Long-duration lunar operations**

This would strengthen India's position as a **major global space power**.

Potential Benefits for India

- **Advanced technology:** Access to experience in long-duration human spaceflight and lunar infrastructure.
- **Scientific research:** Greater opportunities for lunar geology, resource studies and space science.
- **Human spaceflight capability:** Valuable experience for India's own future crewed missions.
- **International collaboration:** Strengthens India's role in multilateral space exploration.
- **Strategic positioning:** Enhances India's position in the emerging global lunar economy.
- **Private-sector opportunities:** Could create opportunities for Indian space startups and industries in areas such as robotics, communications, materials and life-support systems.

Challenges

- **High technological complexity:** Building and maintaining infrastructure on the Moon requires advanced systems and extreme reliability.

- **Harsh lunar environment:** Radiation, extreme temperatures, vacuum and abrasive lunar dust create major engineering challenges.
- **High costs:** Sustained lunar operations require significant long-term investment.
- **Resource utilisation:** Extracting and using lunar water ice at scale remains technologically challenging.
- **International governance:** Increasing lunar activity will require responsible management of resources, scientific sites and potential commercial activities.

Conclusion

NASA's invitation to ISRO marks another important step in **India–US space cooperation**. Participation in the Moon Base Programme could give India valuable experience in **lunar infrastructure, human spaceflight and deep-space operations**. It also complements India's own **Space Vision 2047**, helping India move from successful individual missions towards **large-scale international human space exploration**.

EVEREST: India's First Privately Built 800 kN FFSC Rocket Engine



Why in News?

Bengaluru-based **Astrobase Space Technologies** unveiled **EVEREST**, described as India's first privately built **800 kN Full-Flow Staged Combustion (FFSC) LOX-Methane rocket engine**.

- The development marks another major milestone for **India's private space sector**, following the launch of **Vikram-1**.

- The engine is being developed for **reusable medium-lift launch vehicles**.

What is the EVEREST Engine?

- **Thrust: 800 kN**
- **Specific Impulse:** About **340 seconds**
- **Throttle Range: 50% to 110%**
- **Propellants: Liquid Oxygen (LOX) and Methane**
- **Target Application:** Reusable medium-lift launch vehicles

The engine is designed to support **reusability, precise control and frequent launches**.

What is Full-Flow Staged Combustion (FFSC)?

FFSC is an advanced rocket-engine architecture in which **both the fuel and oxidiser pass through separate pre-burners** before entering the main combustion chamber.

How Does it Work?

- The **fuel and oxidiser** are sent through separate pre-burners.
- The pre-burners produce high-pressure gases.
- These gases drive the **turbopumps** that feed propellants into the engine.
- The gases are then directed into the **main combustion chamber**.
- This allows more complete utilisation of the propellants and can provide **high efficiency and high performance**.

Why is FFSC Important?

- High propulsion efficiency
- Better propellant utilisation
- Suitable for **high-thrust applications**
- Designed for **multiple operating cycles**
- Useful for **reusable launch vehicles**

Why LOX-Methane?

EVEREST uses **Liquid Oxygen (LOX) and Methane** as propellants.

- Methane provides relatively **clean combustion**.
- Cleaner combustion can help with **engine reusability and maintenance**.
- Combined with FFSC architecture, LOX-Methane is well suited for **reusable launch systems**.

Reusable Launch Capability

Astrobase is developing EVEREST as part of a **reusable launch system**.

The company's published vehicle architecture targets:

- Around **3 tonnes payload**
- **500-km Low Earth Orbit (LEO)**
- **Return-to-launch-site recovery**

The objective is to improve:

- Launch economics
- Turnaround time
- Precision control
- Launch frequency

Development Roadmap

- Development of EVEREST began in **2024**.
- Several engine subsystems have already undergone testing.
- **Full-scale hot-fire testing** at Astrobase's facility in **Anantapur, Andhra Pradesh**, is a key development milestone for **2026**.
- This will be followed by:
 - Stage-level testing
 - Vehicle integration
 - Further qualification activities

Planned Engine Testing

The company plans to **manufacture and test around 20 engines** before its first orbital flight.

- **Target for first orbital flight: 2028**

Government Support

- Astrobase is a recipient of the **IN-SPACE Technology Adoption Fund**.
- The fund supports private-sector development of technically demanding space technologies.
- Advanced propulsion is an important area because developing high-thrust engines requires significant **testing infrastructure, engineering expertise and investment**.

Global Significance

According to Astrobase:

- **India is the fourth country after Russia, the US and China to develop FFSC technology.**
- Astrobase is described as the **fourth commercial company globally** to develop a high-thrust FFSC engine.

This places India's emerging private space industry in a technologically advanced area of **rocket propulsion**.

Strategic Significance for India

- 1. Reusable Launch Vehicles**
- 2. Indigenous Propulsion**
- 3. High-Cadence Launches**
- 4. Commercial Space Economy**

5. Private Sector Participation

Conclusion

The EVEREST engine represents an important development in **India's private space sector**, particularly in advanced propulsion. Its **800 kN thrust, FFSC architecture and LOX-Methane propulsion** are aimed at supporting reusable launch vehicles and more economical access to space. If successfully tested and operationalised, EVEREST could strengthen India's capabilities in **indigenous propulsion, reusable rockets, high-cadence launches and commercial space services**.

Deepak Dhar Wins 2026 Dirac Medal



Why in News?

Renowned Indian theoretical physicist **Professor Deepak Dhar** has been selected as a **co-recipient of the 2026 Dirac Medal** for his important contributions to **statistical physics and non-equilibrium systems**.

The award has been given by the **Abdus Salam International Centre for Theoretical Physics (ICTP)** in Trieste, Italy.

- Dhar shares the honour with **Bernard Derrida, Marc Mézard and Haim Sompolinsky**.
- He becomes only the **second scientist working in India** to receive the Dirac Medal, after **Ashoke Sen in 2014**.
- His work on the **Abelian Sandpile Model** is one of his most influential contributions.

What is the Abelian Sandpile Model?

- The **Abelian Sandpile Model**, developed by Deepak Dhar in **1990**, provides a mathematical framework for understanding how simple interactions can produce **large and unpredictable cascading events**.
- It built upon the idea of **Self-Organized Criticality**, proposed in 1987 by **Per Bak, Chao Tang and Kurt Wiesenfeld**.

How does the model work?

Imagine adding grains of sand one by one to a pile.

- Initially, the pile remains stable.
- As more grains are added, it gradually approaches a **critical state**.
- Once the pile reaches this state, adding just one more grain can cause an **avalanche**.
- The avalanche may be:
 - Very small
 - Moderate
 - Extremely large

This simple model helps explain how a small change can sometimes produce a much larger event.

What is Special About the "Abelian" Property?

- Dhar demonstrated an important mathematical property of the model.
- The **final stable arrangement of the sandpile does not depend on the order in which individual grains topple**.
- In simple terms:
- **Different sequences of toppling → Same final stable configuration**
- This property made it possible to mathematically study a system that otherwise appears highly unpredictable.

What is Self-Organized Criticality?

- **Self-Organized Criticality (SOC)** describes a system that can naturally move towards a **critical state without external control**.
- Once the system reaches this state, even a small disturbance can produce an event of very different sizes.
- **Simple Example**
- **Small disturbance**
- → **System already near critical state**
- → **Avalanche**

- → **Small or very large outcome**
- This concept has helped scientists study **cascading behaviour in complex systems**.

Applications

Ideas from sandpile models and self-organized criticality have been used to understand complex behaviour associated with:

- **Earthquakes**
- **Forest fires**
- **Traffic jams**
- **Neural activity**
- **Financial-market fluctuations**

Who is Professor Deepak Dhar?

- **Born:** 1951, Pratapgarh, Uttar Pradesh
- Studied at **Allahabad University**
- Completed his master's degree from **IIT Kanpur**
- Received his **PhD from Caltech in 1978**
- During his doctoral studies, he worked as a teaching assistant to **Nobel laureate Richard Feynman**.

Major Awards

- **Shanti Swarup Bhatnagar Prize:** 1991
- **TWAS Prize:** 2002
- **Padma Bhushan:** 2023
- **Boltzmann Medal:** 2022
- **Dirac Medal:** 2026

Dhar became the **first Indian recipient of the Boltzmann Medal**, the highest distinction in statistical physics.

He is also among a small group of scientists who have received **both the Boltzmann Medal and the Dirac Medal**.

Dirac Medal

About the Award

- The **Dirac Medal** was instituted in **1985** by the **Abdus Salam International Centre for Theoretical Physics (ICTP)**.
- It honours **Paul A. M. Dirac**, one of the major figures in modern theoretical physics and a **Nobel laureate** known for his foundational contributions to quantum mechanics.

Key Facts

- **Instituted:** 1985
- **Awarding institution:** ICTP

- **Location:** Trieste, Italy
- **Named after:** Paul A. M. Dirac
- **Announced:** Every year on **8 August**, Dirac's birthday
- **Field:** Theoretical physics

The award recognises scientists who have made **outstanding contributions to theoretical physics**.

Traditional Exclusion

By tradition, the Dirac Medal is not awarded to scientists who have already received the:

- **Nobel Prize**
- **Fields Medal**
- **Wolf Prize**

Interestingly, some Dirac Medal recipients have later gone on to win the **Nobel Prize**.

Abdus Salam International Centre for Theoretical Physics

The **ICTP** is an international research institution focused on **physical and mathematical sciences**.

- **Founded:** 1964
- **Founder:** Abdus Salam
- **Location:** Trieste, Italy
- It works under a tripartite arrangement involving:
 - **Government of Italy**
 - **UNESCO**
 - **International Atomic Energy Agency (IAEA)**

Founding Vision

- Abdus Salam established ICTP with the broader goal of promoting **scientific research and international collaboration**, particularly by connecting scientists from the **Global South with the wider international scientific community**.

Why is Deepak Dhar's Work Important?

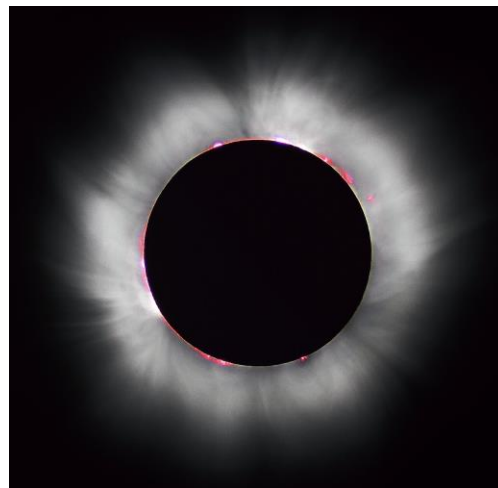
Dhar's work demonstrates how **simple mathematical rules can generate highly complex behaviour**.

The Abelian Sandpile Model has therefore become an important tool in the study of:

- Complex systems
- Statistical physics
- Non-equilibrium phenomena
- Cascading events
- Self-organized criticality

His recognition with the **2026 Dirac Medal** is also significant for India because it highlights the contribution of Indian scientists to **fundamental theoretical research**.

Total Solar Eclipse: Studying the Sun's Corona



Why in News?

- On **12 August 2026**, a **total solar eclipse** was visible across **eastern Greenland, western Iceland, northern Russia, northern Spain and a small part of Portugal**.
- The event provided astronomers and space agencies an opportunity to observe the Sun's faint **corona**, which is normally hidden by the intense brightness of the Sun's surface.

What is a Total Solar Eclipse?

A total solar eclipse occurs when the **Sun, Moon and Earth come into near-straight alignment**, known as **syzygy**.

- The **Moon comes between the Sun and Earth**.
- It completely blocks the Sun's visible disc for observers located within the Moon's **umbra**.
- The period during which the Sun is completely covered is called **totality**.
- During totality, the sky becomes darker and the **solar corona becomes visible**.

Moon's Shadow

The Moon's shadow has two main regions:

- **Umbra:** The central part where sunlight is completely blocked. Totality occurs here.
- **Penumbra:** The outer part where sunlight is only partially blocked, producing a partial eclipse.

As the Moon moves around Earth and Earth rotates, the Moon's shadow moves across the Earth's surface.

- **Eclipse path:** The broader region affected by the eclipse.
- **Path of totality:** The narrow region where the umbra falls and a total eclipse can be seen.

Since the umbra is much smaller than the penumbra, totality is visible over a limited area and usually lasts only **a few minutes or less at a particular location.**

Solar Eclipse and Its Types

A **solar eclipse** happens when the Moon passes between the **Sun and Earth**, blocking some or all of the Sun's light.

- It can occur only during a **New Moon**.
- A New Moon occurs roughly once every month, but a solar eclipse does not happen every month.
- This is because the Moon's orbit is tilted by about **5°** with respect to the **ecliptic plane**.
- Therefore, most New Moons pass above or below the Sun from Earth's viewpoint.
- Solar eclipses mainly occur during **two eclipse seasons each year**, when the New Moon crosses the ecliptic plane.

Types of Solar Eclipse

1. Total Solar Eclipse

- The Moon completely covers the Sun's disc.
- Visible from the **path of totality**.
- The Sun's **corona** becomes visible.

2. Annular Solar Eclipse

- The Moon is near its **farthest point from Earth**.
- It appears smaller than the Sun.
- The Moon does not completely cover the Sun.
- A bright "**ring of fire**" remains around the Moon.
- The shadow region involved is the **antumbra**, which extends beyond the tip of the umbra.

3. Partial Solar Eclipse

- The Sun, Moon and Earth are not perfectly aligned.
- Only a portion of the Sun is covered.
- The Sun can appear **crescent-shaped**.

4. Hybrid Solar Eclipse

- A rare type of eclipse.
- It appears **total from some locations and annular from others**.
- This happens because of Earth's curvature and changes in the position of the Moon's shadow.

Why is the Solar Corona Important?

The corona is the Sun's **outer atmosphere**. It is extremely faint compared with the photosphere.

Total eclipses help scientists study it in several ways:

- **Observing the Inner Corona:** The bright photosphere is blocked during totality, allowing the inner corona to be studied directly.
- **Coronal Heating Problem:** The corona can reach temperatures of **more than 1 million°C**, while the Sun's visible surface, the photosphere, is around **5,500°C**. Understanding this huge temperature difference remains a major scientific puzzle.
- **Solar Magnetic Fields:** The corona consists of **plasma**, or charged gas, shaped by the Sun's magnetic field. Its streamers and other structures provide information about solar magnetic activity.
- **Solar Cycle:** Observations of coronal structures help scientists understand the Sun's approximately **11-year solar cycle**.
- **Space Weather:** The corona is the source of the **solar wind** and the region from which **Coronal Mass Ejections (CMEs)** emerge.
 - These events can affect **satellites, GPS, communication systems and power grids**.
- **Solar Wind:** Studying the corona helps explain how charged particles such as **electrons and protons** are accelerated and released into space.

Important Scientific Discoveries During Solar Eclipses

Discovery of Helium, 1868

During the **1868 total solar eclipse in India**, French astronomer **Pierre Jules Janssen** detected an unusual yellow spectral line from the solar chromosphere.

- The observation suggested the presence of an unknown element.
- English astronomer **Norman Lockyer** later studied the spectral line.
- He named the element **helium**, after **Helios**, the Greek word for the Sun.

Evidence for General Relativity, 1919

During the **1919 solar eclipse**, English astronomer **Arthur Eddington** observed the apparent positions of stars near the Sun.

- The observations provided early evidence that **gravity bends light**.
- This supported **Albert Einstein's General Theory of Relativity**.



Crux of The Hindu & Indian Express

Science & Technology

E-Samudra: Digital Transformation of Maritime Governance



Why in News?

- **E-Samudra**, a comprehensive digital platform for maritime governance, was launched on **8 August 2026** in **Mumbai**.
- It was inaugurated by **Union Minister for Ports, Shipping and Waterways Sarbananda Sonowal** during a national stakeholder interaction on “**Seafarer Security, Safety and Welfare and Inauguration of E-Samudra**”.
- The programme was organised by the **Directorate General of Maritime Administration (DGMA)** under the **Ministry of Ports, Shipping and Waterways (MoPSW)**.

- The platform aims to provide **single-window digital services** to seafarers, shipping companies, ports and other maritime stakeholders.

What is E-Samudra?

- **E-Samudra** is an integrated digital ecosystem for maritime administration.
- It aims to shift maritime governance from a **physical office-based system** to **Digital First and Faceless Governance**.
- It will bring multiple maritime services under a **single digital window**.
- Key features include:
 - **End-to-end digital workflows**
 - **Online payments**
 - **Real-time tracking**
 - **Digitally issued certificates**
 - **Time-bound and transparent service delivery**
- The platform is designed to allow a **seafarer onboard a vessel** to access government services as easily as someone on shore.

Key Initiatives Launched Alongside E-Samudra

- **e-NAVIK 24x7 Grievance Redressal System:** Provides round-the-clock grievance redressal for seafarers.
- **Seafarer Tracking Dashboard:** An upcoming system for tracking seafarers and improving administrative oversight.
- **Digital Seafarers Employment Agreement (d-SEA):** A digital system for employment agreements of seafarers.
- **Seafarers Welfare Fund Society (SWFS):** Enhanced welfare measures for seafarers.
- **Sagar Mein Yog:** Promotes the physical and mental wellbeing of seafarers.
- **Sagar Mein Samman:** Aims to improve opportunities and support for **women seafarers**.

Why is Digitalisation of Maritime Governance Important?

- India's active seafarer workforce increased from around **1.03 lakh in 2013** to more than **3.23 lakh in 2025**.
- The rapidly expanding workforce requires:
 - Faster government services.
 - Better regulatory compliance.
 - Transparent processes.

- Stronger welfare mechanisms.
- Easier access to certificates and documentation.
- E-Samudra is expected to reduce **compliance burdens**, improve **service delivery** and strengthen **transparency**.

India's Growing Maritime Position

- India has emerged as the **second-largest supplier of seafarers globally**.
- India aims to become the **world's largest supplier of seafarers**.
- India has also emerged as the **world's leading ship recycling destination**.
- The country is working towards becoming one of the **top five shipbuilding nations globally**.
- These developments support India's broader maritime ambitions under:
 - **Maritime India Vision 2030**
 - **Maritime Amrit Kaal Vision 2047**

Three Pillars of India's Maritime Policy

According to the Ministry of Ports, Shipping and Waterways, India's maritime policy is anchored in three major pillars:

1. **Merchant Shipping Act, 2025**
 - Recognises **seafarers as Key Workers**.
2. **Maritime Amrit Kaal Vision 2047**
 - Provides a long-term roadmap for India's maritime development.
3. **Minimum Government, Maximum Governance**
 - Focuses on simplified procedures, digital governance and improved service delivery.

DGMA's Role During Global Shipping Disruptions

- Recent geopolitical disruptions have affected global shipping and Indian seafarers.
- DGMA monitored:
 - More than **16,000 calls**.
 - Over **40,000 communications**.
 - Safe repatriation of more than **4,000 stranded Indian seafarers**.

- These efforts involved coordination among:
 - **Ministry of External Affairs**
 - **Indian missions**
 - **Indian Navy**
 - **Shipowners**
 - Other maritime stakeholders.

Focus on Seafarer Welfare

- The government has placed **seafarer security, safety, welfare and dignity** at the centre of maritime development.
- **Sagar Mein Yog** focuses on physical and mental wellbeing.
- **Sagar Mein Samman** focuses on increasing opportunities and support for women in the maritime sector.
- The rising number of women seafarers reflects increasing **inclusivity in India's maritime workforce**.

Significance of E-Samudra

- **Ease of Living:** Makes government services easier and more accessible for seafarers.
- **Ease of Doing Business:** Simplifies regulatory processes for maritime companies and stakeholders.
- **Transparency:** Reduces physical interaction and makes processes digitally traceable.
- **Accountability:** Real-time tracking and digital records can improve monitoring.
- **Efficiency:** Reduces paperwork and processing delays.
- **Faceless Governance:** Enables services without requiring physical visits to government offices.
- **Seafarer Welfare:** Improves access to grievance redressal and welfare services.
- **Maritime Competitiveness:** Supports India's ambition to become a leading global maritime power.

Way Forward

- Expand integration of all maritime services through the **E-Samudra** platform.
- Ensure strong **cybersecurity and protection of seafarers' personal data**.
- Improve digital access for seafarers working in remote or offshore locations.

- Strengthen **24x7 grievance redressal** and emergency support.
- Continue improving welfare, safety and career opportunities for Indian seafarers.
- Use digital governance to support the objectives of **Maritime India Vision 2030** and **Maritime Amrit Kaal Vision 2047**.

Conclusion

E-Samudra marks an important shift towards **technology-enabled, transparent and citizen-centric maritime governance**. By bringing multiple services onto a common digital platform, India aims to improve the **ease of living for seafarers**, strengthen the **ease of doing business** for maritime stakeholders and support its ambition of becoming a leading global maritime nation.

Indian Pharmacopoeia Commission Recognized as WHO-SEARN Regional Centre of Excellence



Why in News?

- The **Indian Pharmacopoeia Commission (IPC)** under the **Ministry of Health & Family Welfare, Government of India**, participated in the **10th Anniversary Meeting of the South-East Asia Regulatory Network (SEARN)**.
- The meeting was held in **Kathmandu, Nepal**, on **4–5 August 2026**.
- A major milestone was the recognition of **IPC as the WHO-SEARN Regional Centre of Excellence in Pharmacovigilance and Technical Centre in Quality**.
- The recognition acknowledges India's contribution towards strengthening **medicine safety, pharmaceutical quality standards and regulatory capacity** across the WHO South-East Asia Region.

South-East Asia Regulatory Network (SEARN)

- **SEARN** is a collaborative platform established by the **WHO South-East Asia Regional Office (SEARO)**.
- It was established in **2016** to strengthen regulatory systems across Member States.
- It promotes:
 - **Knowledge sharing**
 - **Regulatory convergence**
 - **Capacity building**
 - **Regulatory reliance mechanisms**
- Its thematic working groups focus on:
 - **Quality assurance**
 - **Pharmacovigilance**
 - **Clinical trials oversight**
 - **Regulatory preparedness**
 - **Medical device regulation**

Main Objective

To improve access to **safe, effective and quality-assured medical products** across the WHO South-East Asia Region.

Indian Pharmacopoeia Commission (IPC)

- IPC is an institution under the **Ministry of Health & Family Welfare, Government of India**.
- It plays an important role in developing and promoting **standards for medicines** in India.
- At the SEARN meeting, IPC highlighted India's efforts to strengthen the country's **drug regulatory system** and promote access to **quality-assured medicines** through internationally harmonised standards.

Key Contributions of IPC

IPC showcased several important initiatives:

1. Indian Pharmacopoeia

- IPC develops and publishes the **Indian Pharmacopoeia**, which provides standards for the identity, purity and quality of medicines.

2. Reference Standards

IPC has established:

- **Indian Pharmacopoeia Reference Substances (IPRS)**
- **Impurity Reference Standards (IMPRS)**

These support quality testing and pharmaceutical quality control.

3. Pharmacovigilance

- IPC supports pharmacovigilance activities through the **Pharmacovigilance Programme of India (PvPI)**.
- **Pharmacovigilance** involves monitoring and assessing the safety of medicines and identifying adverse effects.

4. Materiovigilance

- IPC also supports the **Materiovigilance Programme of India (MvPI)**.
- It focuses on monitoring the safety of **medical devices**.

5. Capacity Building

- IPC conducts capacity-building programmes and works with **national and international stakeholders** to strengthen regulatory expertise.

Recognition by WHO-SEARN

- IPC has been recognised as: **Regional Centre of Excellence in Pharmacovigilance and Technical Centre in Quality**

Significance of the Recognition

The recognition reflects IPC's contribution towards:

- Strengthening **pharmacovigilance systems**.
- Improving **pharmaceutical quality standards**.
- Building **regulatory capacity** across the region.
- Promoting **pharmacopoeial science and standards**.
- Supporting **knowledge sharing** among Member States.
- Encouraging **regulatory harmonisation and convergence**.
- Strengthening regional cooperation in medicine regulation.

10th Anniversary Meeting of SEARN

The meeting brought together representatives from:

- **National Regulatory Authorities (NRAs)**
- **Pharmacopoeias**
- **International organisations**
- Regulatory institutions from across the **WHO South-East Asia Region**

Key Issues Discussed

The meeting provided a platform to discuss emerging challenges in pharmaceutical regulation, including:

- **Quality assurance**

- **Medicine safety**
- **Regulatory reliance**
- **Digital transformation**
- **Regional regulatory cooperation**
- Strengthening regulatory systems

What is Pharmacovigilance?

- **Pharmacovigilance** refers to the monitoring, detection, assessment and prevention of adverse effects or other medicine-related problems.
- It is important for ensuring the **safety and effective use of medicines** after they enter the healthcare system.

What is Materiovigilance?

- **Materiovigilance** refers to the monitoring and assessment of adverse events and safety issues associated with **medical devices**.
- In India, these activities are supported through the **Materiovigilance Programme of India (MvPI)**.

Importance for India

The recognition strengthens India's position in the regional pharmaceutical regulatory system.

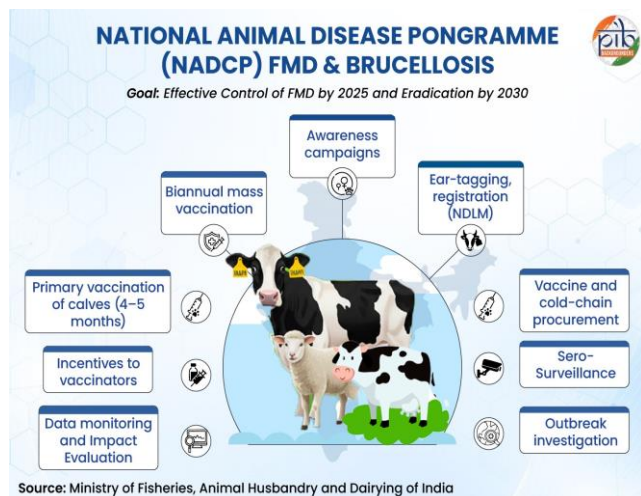
It can help India:

- Share its regulatory expertise with neighbouring countries.
- Strengthen **medicine safety monitoring**.
- Promote internationally aligned **quality standards**.
- Build regulatory capacity across the South-East Asia Region.
- Improve cooperation among national regulatory authorities.
- Contribute to the availability of **safe, effective and quality-assured medical products**.

Conclusion

The recognition of the **Indian Pharmacopoeia Commission as the WHO-SEARN Regional Centre of Excellence in Pharmacovigilance and Technical Centre in Quality** marks an important achievement for India's pharmaceutical regulatory system. It highlights India's growing role in **pharmacovigilance, medicine quality, regulatory capacity-building and regional cooperation**, while supporting the wider goal of ensuring **safe, effective and quality-assured medical products** across the South-East Asia Region.

National Animal Disease Control Programme (NADCP)



Why in News?

- The **National Animal Disease Control Programme (NADCP)** has completed several years of nationwide vaccination and surveillance for **Foot and Mouth Disease (FMD)** and **Brucellosis**.
- Since its launch in **September 2019**, the programme has administered **147.16 crore FMD vaccine doses**, benefiting **8.04 crore farmers**.
- FMD outbreaks declined from **132 in 2019 to 40 in 2025**.
- Brucellosis outbreaks declined from **22 in 2019 to 15 in 2025**.
- The programme is supported by digital livestock databases, veterinary infrastructure, research institutions and the **One Health** approach.

About NADCP

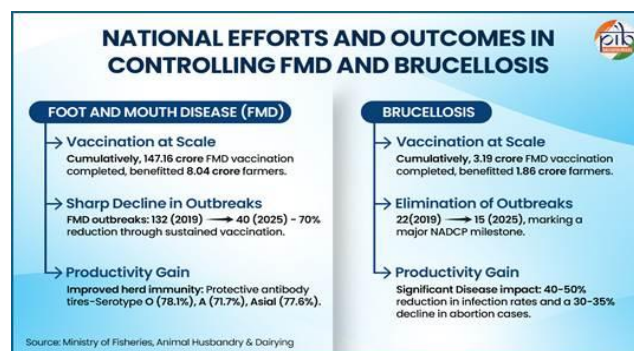
- Launched:** September 2019
- Objective:** Control and eventually eradicate:
 - Foot and Mouth Disease (FMD)**
 - Brucellosis**
- The programme focuses on:
 - Nationwide vaccination
 - Disease surveillance
 - Sero-surveillance
 - Outbreak investigation
 - Animal identification and traceability
 - Cold-chain infrastructure
 - Digital monitoring

Vaccination Targets

- FMD:** Vaccination of eligible livestock **twice every year**.
- Brucellosis:** One-time vaccination of **female bovine calves aged 4-8 months** during their lifetime.

Why Livestock Health Matters?

- According to the **20th Livestock Census 2019**:
 - Total livestock population: **535.78 million**
 - Bovines: **302.79 million**
- Livestock provides major livelihood support to rural households.
- Diseases such as FMD and Brucellosis can cause:
 - Reduced milk production
 - Reproductive problems
 - Lower animal productivity
 - Economic losses
 - Trade restrictions



Foot and Mouth Disease (FMD)

- FMD is a **highly contagious viral disease**.
- It affects **cloven-hoofed animals**, including:
 - Cattle
 - Buffaloes
 - Sheep
 - Goats
 - Pigs
- Effects include:
 - Reduced milk production
 - Slow growth
 - Poor reproductive performance
 - Reduced working capacity of draft animals
 - Restrictions on international trade

- Regular mass vaccination is important for controlling the disease.

FMD Serotypes

- **Type O:** Most common and widespread serotype.
- **Type A:** Highly variable and requires well-matched vaccines.
- **Asia1:** Mainly found in South Asia, including India.

FMD Progress

Average protective immunity after vaccination:

- **Type O:** 78.1%
- **Type A:** 71.7%
- **Asia1:** 77.6%

Reported outbreaks:

- **2019:** 132
- **2025:** 40

There has been **no FMD outbreak caused by Asia1 for the last three years** in the country.

Brucellosis

- Brucellosis is a **bacterial reproductive disease**.
- In cattle and buffaloes, it is caused by **Brucella abortus**.
- It affects reproductive organs and can cause:
 - Reduced fertility
 - Reduced lactation
 - Lower milk and meat production
- There is **no curative treatment for bovines**, making vaccination an important control measure.

Brucellosis Progress

- One-time vaccination is provided to **female bovine calves aged 4–8 months**.
- 2025 seroconversion:
 - Cattle calves: **75.63%**
 - Buffalo calves: **67.17%**
- Outbreaks declined:
 - **2019:** 22
 - **2025:** 15

Major Components of NADCP

- Mass FMD vaccination every six months.
- Brucellosis vaccination of eligible female bovine calves.
- Public awareness campaigns.

- Ear-tagging and animal registration.
- Uploading livestock information on the **Bharat Pashudhan Portal**.
- Pre- and post-vaccination sero-surveillance.
- Vaccine and cold-chain management.
- Outbreak investigation and virus typing.
- Quarantine and animal movement control.
- Continuous monitoring and impact assessment.
- Minimum **₹3 per vaccination dose** remuneration for vaccinators.

Sero-surveillance and Sero-monitoring

- **Sero-surveillance:** Population-level assessment of antibody prevalence to understand disease exposure and immunity.
- **Sero-monitoring:** Continuous tracking of antibody levels over time to assess immunity.

Livestock Health and Disease Control Programme (LHDCP)

- NADCP has been integrated into the broader **Livestock Health and Disease Control Programme (LHDCP)**.
- The umbrella framework brings together:
 - NADCP
 - Livestock Health and Disease Control component
 - **Pashu Aushadhi**
- **2026–27 budget outlay: ₹2,010 crore.**

Improvement in Livestock Productivity

Indigenous and Non-descript Cattle

- 2014–15: **927 kg/animal/year**
- 2024–25: **1,343.2 kg**
- Increase: **44.89%**

Buffalo

- 2014–15: **1,880 kg**
- 2024–25: **2,365.2 kg**
- Increase: **25.80%**

Average Bovine Productivity

- 2014–15: **1,640 kg/animal/year**
- 2024–25: **2,250 kg**
- Increase: **36.63%**

Milk Production

- 2014–15: **146.31 million tonnes**
- 2024–25: **247.87 million tonnes**
- Increase: **69.4%**

- Target: Average milk production of **3,000 kg/animal/year by 2030**.

Migratory Livestock

- Since **2024**, FMD vaccination has also been extended to pastoral sheep and goats.
- It covers migratory populations in:
 - Haryana
 - Himachal Pradesh
 - Uttarakhand
 - Jammu & Kashmir
 - Ladakh
- The aim is to prevent disease spread along **migratory routes**.

Veterinary Infrastructure

- **4,019 Mobile Veterinary Units (MVUs)** are operational across **29 States and UTs**.
- Services are available through toll-free number **1962**.
- They have:
 - Benefited **136 lakh farmers**
 - Treated **276 lakh animals**

Bharat Pashudhan Portal

- Provides digital integration of:
 - Livestock registration
 - FMD vaccination
 - Brucellosis vaccination
- Each animal receives a unique **12-digit Tag ID**.
- By **July 2026**, more than **39 crore livestock** had been registered.
- It enables:
 - Real-time monitoring
 - Animal traceability
 - Better vaccination tracking
 - Data-based planning

Research and Vaccine Support

- Financial support is provided to **ICAR institutions** for:
 - Vaccine research
 - Quality testing
 - Disease surveillance
 - Sero-surveillance
 - Disease modelling
 - State-wise sampling
- Support is also provided for cold-chain infrastructure and vaccine-related manufacturing through the **Animal Husbandry Infrastructure Development Fund**.

Farmer Engagement

- **MAITRIs** provide doorstep veterinary services.
- **39,810 technicians** have been trained with financial support.

One Health Approach



- **One Health** recognises the close connection between:
 - Human health
 - Animal health
 - Environmental health
- NADCP contributes to:
 - Early detection of animal diseases
 - Zoonotic disease prevention
 - Better antimicrobial use
 - Pandemic preparedness
- The **National One Health Mission** was approved by **PM-STIAC in July 2022** as a cross-ministerial initiative.

Pandemic Fund Project

- Launched in **2024**.
- Name: **Animal Health Security Strengthening in India for Pandemic Preparedness and Response**
- Funding: **US\$25 million**
- Supported by the **G20 Pandemic Fund**.
- Partners:
 - Asian Development Bank
 - Food and Agriculture Organization
 - World Bank

Main Focus

- Disease surveillance
- Genomic surveillance
- Environmental surveillance
- Laboratory strengthening
- Cross-border cooperation
- Early detection of zoonotic and transboundary diseases.

Important Documents

Standard Veterinary Treatment Guidelines (SVTG)

- Promote scientific veterinary practices.
- Encourage rational use of medicines.
- Support antimicrobial stewardship.

Crisis Management Plan (CMP) for Animal Diseases

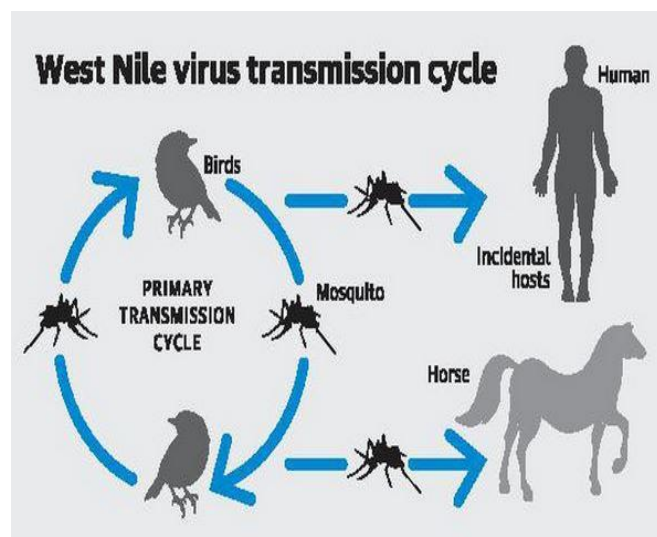
- Provides a national framework for preparedness.
- Guides rapid response during animal disease outbreaks.
- Supports containment and recovery.

Future Priorities

The programme identifies several future areas:

- Alignment with international standards for **FMD freedom**.
- Expansion of laboratory accreditation.
- Greater use of **genomic surveillance**.
- **AI-enabled disease intelligence**.
- Climate-resilient disease surveillance.
- Stronger coordination under the **One Health** framework.

West Nile Fever



Why in News?

Health authorities have issued a caution after **suspected cases of West Nile fever (WNF)** were reported in **Ernakulam district of Kerala**.

What is West Nile Fever?

- **About:** West Nile fever is an infectious disease caused by the **West Nile virus (WNV)**.
 - WNV is a **positive-sense, single-stranded RNA virus** belonging to the **Flaviviridae** family and **Orthoflavivirus** genus.
- **Transmission:** The virus is mainly spread through the **bite of an infected mosquito**.
 - **Casual human-to-human transmission has not been documented.**
 - Rare transmission can occur through:
 - **Blood transfusion**
 - **Organ transplantation**
 - **Laboratory exposure**
 - **Mother to baby during pregnancy, delivery or breastfeeding**
- **Vector and Reservoir:** **Birds are the principal reservoir hosts**, while **Culex mosquitoes** are the main vectors.
 - Culex mosquitoes commonly breed in **stagnant or polluted water**.
 - They are generally more active **at night**.

What are the Symptoms of West Nile Fever?

- Around **80% of infected people remain asymptomatic**.
- About **20% develop symptomatic illness**.
- **Less than 1% develop neuroinvasive disease**, which can affect the brain and nervous system.
- The usual **incubation period is 2–6 days**, though it can range from **2–14 days**.
 - The incubation period may be longer in **immunocompromised individuals**.

Where is West Nile Virus Found?

- West Nile virus is commonly found in:
 - **Africa**
 - **Europe**
 - **Middle East**
 - **North America**
 - **West Asia**

- **Historical Background:**

- The virus was first isolated from a woman in the **West Nile district of Uganda in 1937.**
- It was later identified in **birds in the Nile Delta region in 1953.**

How is West Nile Fever Diagnosed and Treated?

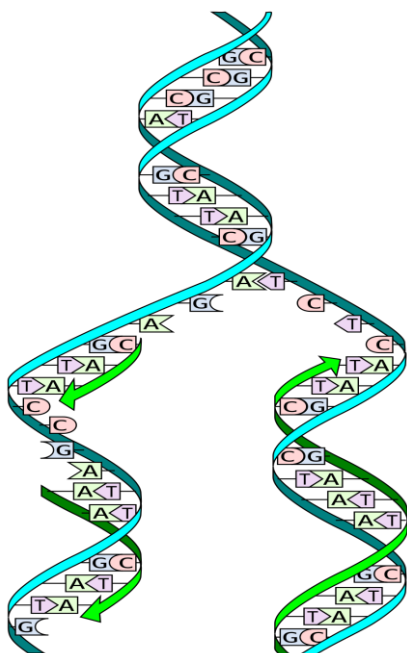
- **Diagnosis:** WNF is confirmed through **laboratory testing**, along with assessment of:
 - Symptoms
 - Possible mosquito exposure
- **Treatment:** There is currently **no licensed human vaccine or specific antiviral treatment.**
 - Treatment mainly depends on appropriate medical care and management of symptoms.

How can West Nile Fever be Prevented?

The most effective protection is to **avoid mosquito bites and control mosquito breeding.**

- Use measures that prevent **mosquito bites.**
- Reduce exposure to mosquitoes, particularly during their active periods.
- **Eliminate stagnant water** where mosquitoes can breed.
- Maintain cleanliness around areas where **Culex mosquitoes** may breed.

Replicative Helicases and DNA Replication



Why in News?

- **Replicative helicases** have recently attracted attention following new research that has provided a clearer understanding of **how DNA replication begins at the molecular level.**

What is Helicase?

- **Helicase** is an enzyme that **unwinds and separates the two strands of DNA.**
- This separation allows the genetic information stored in DNA to be **copied during DNA replication.**

Why is DNA Unwinding Necessary?

- DNA normally exists as a **double helix.**
- The two strands are held together by **hydrogen bonds** between complementary bases.
- During DNA replication, these strands must be **separated** so that each can serve as a template for making a new strand.

How do Replicative Helicases Work?

1. Loading onto DNA

- Replicative helicases are loaded onto DNA at or near **replication origins.**
- They are positioned at specific sites where DNA replication is initiated.

2. ATP-Driven Movement

- Helicases move along DNA using energy obtained from **nucleotide hydrolysis.**
- This energy drives the separation of the two DNA strands.

3. Separation of DNA Strands

- As the helicase moves along DNA, it **destabilises the interactions between complementary bases.**
- This exposes the individual DNA strands for further replication.

4. Formation of Replication Fork

- The unwinding of DNA creates a characteristic **Y-shaped structure called the replication fork.**
- The separated parental DNA strands become available to the **DNA replication machinery.**

Role of Topoisomerases

- DNA unwinding creates **torsional stress and supercoiling** ahead of the replication fork.

- **Topoisomerases** help relieve this stress.
- They prevent:
 - Excessive twisting
 - Tangling of DNA
 - DNA breakage

How is New DNA Formed?

- Once the parental DNA strands are separated, **each strand acts as a template**.
- The replication machinery uses these templates to synthesise **new complementary DNA strands**.
- In this way, the genetic information can be accurately copied.

Regulation of DNA Replication

- DNA replication is a **tightly regulated process**.
- It must begin at the **correct stage of the cell cycle**.
- Recent research has provided greater detail about the activation of the helicase machinery.

MCM2–7 and CMG Helicase

- **MCM2–7** initially exists as **inactive double hexamers** on DNA.
- These complexes undergo structural and functional remodelling to become **active CMG helicases**.
- This activation is closely linked with the **initial melting and unwinding of DNA**.

AI-Designed Bacteriophages and the Rise of Generative Biology



Why in News?

Researchers from **Stanford University** and the **Arc Institute** used generative AI models **Evo 1** and **Evo 2**

to design complete genomes of **bacteriophages**—viruses that infect bacteria.

- Out of **285 AI-designed genomes** synthesised and tested in the laboratory, **16 produced viable phages** capable of infecting *E. coli* and overcoming bacterial resistance.
- The development represents a shift from AI merely **analysing biological information** to **designing functional biological systems from scratch**.

What are Bacteriophages?

- **Bacteriophages (phages)** are viruses that specifically infect and replicate inside **bacterial cells**.
- The term literally means “**bacteria eaters**.”
- They have been studied for **more than a century** and are among the most abundant biological entities.
- **ΦX174** is historically important because its complete DNA genome was the **first genome to be fully sequenced in 1977**.
- Phages are being explored as an alternative or complementary tool against **antibiotic-resistant bacteria**.

Limitation of Phage Therapy

- **High specificity:** A phage that attacks one bacterial strain may be ineffective against another.
- **Phage resistance:** Bacteria can evolve mechanisms to resist phage infection.
- Hence, developing effective therapies may require **customised phages** suited to particular bacterial strains.

What is Generative Biology?

Generative biology combines **Artificial Intelligence (AI)**, **machine learning** and **synthetic biology** to create novel biological entities.

- Biological AI models learn patterns—the functional “grammar” of **DNA, RNA and proteins**—and use them to propose new biological sequences and structures.
- Unlike conventional approaches that mainly study or modify existing biological systems, generative biology aims at **de novo design**, i.e. creating biological designs from scratch.

Evolution of Genomic Technology

Stage	Period	Major Development
Reading	1970s	Sequencing naturally occurring genomes
Writing	2000s	Chemical synthesis of known DNA sequences
Modifying	2010s	Targeted gene editing and gain-of-function research
Designing	Present	AI-generated biological blueprints with intended functions

Potential Applications

1. Tackling Antimicrobial Resistance

- AI could help design **customised bacteriophages** against multidrug-resistant bacteria.
- This could support the development of alternatives to conventional antibiotics.

2. Targeted Gene Delivery

- Generative biology can aid the design of **synthetic viral vectors**, including engineered **Adeno-Associated Viruses (AAVs)**.
- Such vectors could potentially deliver gene-editing tools such as **CRISPR** to specific tissues or organs.

3. Vaccine and Drug Development

AI-assisted biological design can accelerate the development of:

- **Optimised antigens**
- **Monoclonal antibodies**
- **Therapeutic proteins**
- Countermeasures against emerging pathogens

4. Precision Oncology

- AI-designed **oncolytic viruses** could potentially be engineered to preferentially target cancer cells while limiting damage to healthy tissues.

Implications for India

Generative biology could become important for India's:

- **Drug discovery**
- **Vaccine development**
- **Genomics**

- **Biomedical research**
- **AMR management**
- **Biotechnology ecosystem**

India needs to strengthen:

- **Biomedical AI capabilities**
- High-quality and secure **biological datasets**
- **Secure computing infrastructure**
- **Biosecurity and biosafety systems**
- AI capabilities through initiatives such as the **IndiaAI Mission**

The key policy challenge is to balance **technological and AI sovereignty** with robust **biosafety and biosecurity safeguards**.

Major Concerns

1. Dual-Use and Bioterrorism

- Generative biology has a strong **dual-use character**.
- Technologies developed for phage therapy, vaccines or gene therapy could potentially be misused to design harmful biological agents.
- AI could particularly act as a **capability amplifier** for individuals or laboratories that already possess biological expertise and laboratory infrastructure.

2. Ecological Uncertainty

- Accidental or deliberate release of an AI-designed organism could produce **unpredictable ecological effects**.
- Novel organisms could interact with ecosystems in unexpected ways, including potentially creating **species-barrier** or **zoonotic concerns**.

3. Rapid Expansion of Biological Design

- AI can examine and generate a far larger range of biological possibilities than humans can manually.
- Integration with automated laboratories could shorten the cycle between: AI design → biological synthesis → laboratory testing.

4. Limitations of Existing Biosecurity Screening

Traditional DNA-synthesis screening generally looks for sequences resembling **known pathogens or toxins**.

- AI-generated biological designs may be **novel** and therefore may not closely resemble known dangerous sequences.
- Future screening therefore needs to consider **potential biological function**, rather than relying only on sequence similarity.

5. Regulatory and Intellectual Property Gaps

- Existing patent and intellectual-property frameworks were not designed for **AI-generated biological entities**.
- This raises questions over **ownership, inventorship and patentability** when a biological design is generated substantially by an AI system.

Way Forward

- **Strengthen DNA-synthesis screening:** Introduce robust screening and **Know Your Customer (KYC)** requirements for commercial gene-synthesis providers.
- **Expand functional screening:** Biosecurity assessment should examine the **potential function and biological impact** of novel sequences, not merely their similarity to known pathogens.
- **Modernise international frameworks:** The **Biological Weapons Convention (BWC)** should account for emerging risks from AI-enabled synthetic biology.
- **Secure biological AI infrastructure:** Strengthen governance of sensitive biological datasets, computing infrastructure and AI models.
- **AI red-teaming:** Subject biological AI systems to rigorous safety testing to identify whether they can be induced to generate potentially harmful biological designs.
- **End-to-end governance:** Safeguards should cover the entire chain—from **AI model development and databases to DNA synthesis, laboratories and institutional biosafety mechanisms**.

3.5-Billion-Year-Old Evidence of Microbial Life in India



Why in News?

- A study published in the peer-reviewed journal **Proceedings of the National Academy of Sciences (PNAS)** has reported strong evidence of **microbial activity around 3.5 billion years ago** in the **Singhbhum Craton** of eastern India.
- The findings offer an important window into the **early evolution of life on Earth**.

Where Was the Evidence Found?

- The evidence comes from a **carbon-bearing banded chert** discovered at **Bhitardari** in the **Singhbhum Craton**.
- The Singhbhum Craton extends across parts of **Jharkhand and Odisha**.
- **Chert** is a hard, fine-grained, silica-rich rock capable of preserving organic signatures over extremely long geological periods.

How Was Ancient Life Identified?

- Scientists combined **geological, isotopic and organic-matter evidence** to establish the biological origin of the carbon.

1. Zircon Dating

- Researchers examined **eight zircon crystals** preserved within the rock.
- **Four zircons** indicated an age of approximately **3,497 million years**, or about **3.5 billion years**.
- The zircons were likely introduced through **volcanic ash** during the formation of the chert, helping establish the rock's age.

2. Carbon Isotope Signature

- The rock showed a **carbon-isotope pattern consistent with biological carbon fixation**.
- Such a signature supports the possibility that the carbon was produced or modified through **microbial activity**.

3. Organic Matter

- Analysis indicated that the carbon was **degraded organic material** rather than material introduced later through inorganic contamination.
- This provides an additional line of evidence supporting the presence of ancient life.

About Singhbhum Craton

- It is one of India's **oldest geological regions**.
- Its rocks preserve evidence of **Earth's early crustal evolution**.
- Some formations within the craton record geological processes dating back **more than 4 billion years**.

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



Why in News?

- The **Vice-President of India** launched the country's first indigenous **non-GMO, high-expansion popcorn maize hybrid seed** at the Gourmet Popcornica facility in **Musunuru, Eluru district, Andhra Pradesh**.
- The development is significant for **Aatmanirbhar Bharat in agriculture**, as it can reduce dependence on imported popcorn hybrid technology and help conserve foreign exchange.

Indigenous Development

- The hybrids were developed jointly by **ICAR–Indian Institute of Maize Research (ICAR-IIMR)** and **Gourmet Popcornica**.
- Important hybrids developed include:
 - **Krisna459**
 - **Godari234**
- These varieties are designed to deliver **high popping expansion**, a key commercial requirement in the popcorn industry.
- The larger the expansion after heating, the greater the **popped volume** obtained from the kernel.

Why is the Non-GMO Character Important?

- The hybrids have been produced through **conventional cross-breeding**.
- They do not involve insertion of **foreign genetic material**.
- This makes them suitable for markets and food-processing industries that specifically demand **non-GMO ingredients**.

What is Popcorn Maize?

- **Scientific name of maize: *Zea mays***
- **Family: Poaceae**
- Popcorn is a specialised form of **flint maize**.

How Does Popcorn Pop?

A popcorn kernel contains:

- A **hard outer hull** that restricts moisture loss
- **Starch**
- A small amount of **moisture**

When heated:

Moisture → Steam → Pressure builds inside kernel → Hull ruptures → Starch expands → Popcorn

Thus, the ability of the kernel to retain moisture and withstand pressure is central to its popping quality.

Maize in India

- Maize is India's **third-largest food crop**, after **rice and wheat**.
- It is used for:
 - **Human consumption**
 - **Animal feed**
 - **Fodder**
 - **Industrial processing**
- India's maize production reached a record **55.09 million tonnes in 2025–26**.

- Production benefited from favourable monsoon conditions, increased **Kharif sowing** and the **MSP regime**.
- Productivity has crossed **3.19 tonnes/ha**, but remains below the global average of around **5.5–5.6 tonnes/ha**.
- The **United States and China** are among the world's leading maize producers.

Major Maize-Producing States

1. **Madhya Pradesh**
2. **Karnataka**
3. **Maharashtra**
4. **Bihar**
5. **Telangana**

Changing Maize Cultivation Pattern

India's maize geography is gradually shifting from traditional northern **Kharif cultivation** towards **peninsular India**.

- Peninsular India now contributes:
 - **40%+ of maize area**
 - **Around 50% of total production**
- **Rabi maize cultivation** is also expanding in:
 - Andhra Pradesh
 - Bihar
 - Telangana
 - West Bengal



Ecology & Environment

Bagdara Wildlife Sanctuary



Why in News?

- The **Standing Committee of the National Board for Wildlife (SC-NBWL)** recently asked the **Madhya Pradesh Government** to explore **alternative areas for compensatory notification**.
- This came during discussions on the proposed **denotification of Bagdara Wildlife Sanctuary**.

About Bagdara Wildlife Sanctuary

- **Location:** Sidhi and Singrauli districts, Madhya Pradesh.
- **Area:** Approximately **478 sq. km**.
- **Established:** **1978**.
- **Purpose:** Established mainly for the conservation of **blackbuck** and other wildlife.
- **Boundary:** The **Son River** forms the southern boundary.
- **Landscape:** Contains **natural caves and rock shelters**.

Vegetation

- The sanctuary has very dense **dry deciduous mixed forests**.
- Important vegetation includes:
 - Lendia
 - Khair
 - Dhawda
 - Tendu
 - Teak
 - Mango groves
 - Orchids
 - Gigantic creepers

Fauna

The sanctuary supports a wide variety of wildlife, including:

- **Tiger**
- **Panther**
- **Blackbuck**
- **Chinkara**
- **Cheetal**
- **Sambar**
- **Deer**
- **Wild boar**
- **Hyena**
- **Jackal**

- Fox
- Porcupine
- A rich diversity of birds

Key Point

- The present issue concerns the proposed **denotification of Bagdara Wildlife Sanctuary**.
- The **SC-NBWL** has asked Madhya Pradesh to look for **alternative areas for compensatory notification**.
- The sanctuary is important for the conservation of **blackbuck and other wildlife** and contains **dry deciduous forests, natural caves and rock shelters**.

Pygmy Hog



Why in News?

- The **Standing Committee of the National Board for Wildlife (SC-NBWL)** has recommended including the **pygmy hog** in the list of **critically endangered species under the Integrated Development of Wildlife Habitats (IDWH)**.

About Pygmy Hog

- It is the **smallest and rarest species of wild pig**.
- It is one of the few mammals known to **build its own home or nest, including a roof**.
- It is an **indicator species**.
- Its presence indicates the health of its primary grassland habitat.

Habitat

- It prefers **undisturbed grassland patches**.
- Its main habitat consists of **early-succession riverine communities**.
- These areas generally have:

- Dense tall grasses.
- Herbs.
- Shrubs.
- Young trees.

Distribution

- According to the given source, pygmy hogs currently survive only in the grasslands of:
 - **Manas National Park, Assam**
 - **Orang National Park, Assam**

Diet

They feed on:

- Roots.
- Tubers.
- Shoots.
- Ground vegetation.
- Worms.
- Other invertebrates.

Ecological Role

1. Improves Soil Quality

- The pygmy hog digs while searching for roots, tubers, wild fruits, termites, earthworms, eggs and other food.
- This activity **aerates the soil** and improves its quality.

2. Seed Dispersal

- Its feeding and foraging activities also help in **dispersing seeds**.

Conservation Status

- **IUCN**: Critically Endangered.
- **Wildlife Protection Act, 1972**: Schedule I.

Integrated Development of Wildlife Habitats (IDWH)

- IDWH is a **Centrally Sponsored Scheme**.
- It provides financial assistance to States for protecting selected species and wildlife areas.
- It includes a **recovery programme for critically endangered species and habitats**.

Components of IDWH

1. Support to Protected Areas

Covers:

- National Parks.
- Wildlife Sanctuaries.
- Conservation Reserves.
- Community Reserves.

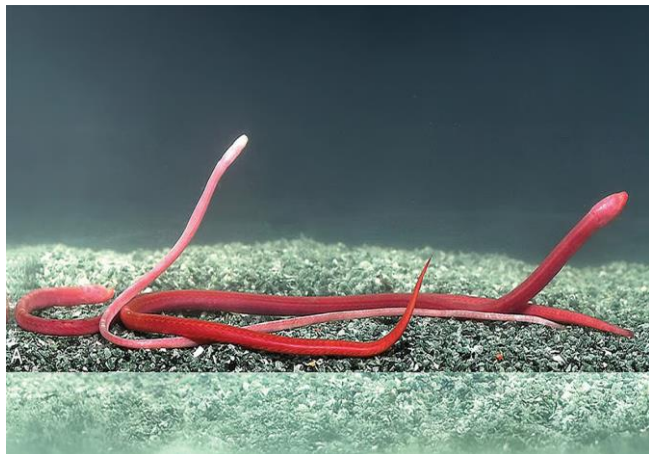
2. Protection of Wildlife Outside Protected Areas

- Provides support for conservation and protection of wildlife beyond formally protected areas.

3. Recovery Programme

- Focuses on saving critically endangered species and their habitats.

Rakthamichthys anchi



Why in News?

- Scientists have discovered a new species of blind and blood-red eel from two dug-out wells in a village in Goalpara district, Assam.
- The new species has been named *Rakthamichthys anchi*.

About *Rakthamichthys anchi*

- It is a new species of phreatobitic synbranchid eel.
- It was discovered in Assam.
- The word “anchi” is a Garo word meaning “blood”.
- It belongs to the genus *Rakthamichthys*.
- The genus consists of phreatobitic swamp eels belonging to the family Synbranchidae.
- The genus *Rakthamichthys* is endemic to India.
- It is now the second swamp eel of this genus discovered in Northeast India.

Key Characteristics

- The species is blind.
- Its body has no pigment.
- It appears blood red.
- The red colour is not due to body pigmentation.

- It is caused by blood vessels visible through its almost transparent skin.

Habitat

- *Rakthamichthys anchi* is phreatobitic.
- Phreatobitic organisms live exclusively within the phreatic zone of groundwater aquifers.
- The species was found in dug-out wells, highlighting its unusual groundwater habitat.

What are Eels?

- Eels are elongated and slender fish.
- There are more than 500 species of eels.
- They generally have long, worm-like bodies.
- They lack scales.
- Their dorsal and anal fins run continuously around the tail.

Habitat of Eels

- Eels are found in oceans across the world.
- Many species also live in freshwater habitats.

Diet of Eels

- Eels are mainly predatory and carnivorous fish.
- Some species can also be cannibalistic.
- Their diet commonly includes:
 - Smaller fish
 - Invertebrates
 - Crustaceans

Asiatic Wild Buffalo



Why in News?

- The Chhattisgarh Forest Department is planning to translocate wild buffaloes from Assam.
- They will be kept in enclosures at:
 - Pamed Wildlife Sanctuary

- Udanti Sitanadi Tiger Reserve
- Indravati Tiger Reserve (ITR)

About Asiatic Wild Buffalo

- It is the **largest wild bovine in the world**.
- Other names:
 - Asiatic buffalo
 - Wild water buffalo
 - Asian buffalo
 - Wild Asian buffalo

Habitat

- Swamps
- Flooded grasslands
- Wetlands
- Alluvial plains
- Densely vegetated river valleys

Distribution

- Southern Nepal
- Eastern and central India
- Southern Bhutan
- Western Thailand

Population in India

- India is home to **more than 90% of the global wild water buffalo population**.
- Global population: around **3,500–3,700 individuals**.
- Major population in India:
 - Assam: 3,000–3,500
 - Meghalaya
 - Chhattisgarh
 - Kolamarka forests of Maharashtra

Behaviour

- Wild buffaloes can be **diurnal as well as nocturnal**.

Reproduction

- **Male**: Reproductive maturity at around **1.5 years**.
- **Female**: Reproductive maturity at around **3 years**.

Diet

Wild buffaloes are **herbivorous**, mainly:

- Aquatic plants
- Crops
- Grasses
- Herbs
- Leaves
- Bark of trees

Major Threats

- Parasites and diseases
- Hunting
- Habitat loss
- **Interbreeding with domestic buffaloes**

Conservation Status

- **IUCN Red List**: Endangered
- **Wildlife Protection Act, 1972**: Schedule I

Amboseli National Park



Why in News?

- Wildlife authorities in **Kenya** have launched an investigation after **15 elephants died within a month in Amboseli National Park**.
- Preliminary tests detected a **potential toxic substance** in samples collected from the dead elephants.

About Amboseli National Park

- **Location**: Southern Kenya, near the **Kenya–Tanzania border**.
- The name “**Amboseli**” comes from the **Maasai word “Empusel”, meaning “salty, dusty place.”**
- **Area**: Approximately **392 sq. km**.
- Although the park is relatively small, it forms part of a **larger ecosystem extending across Kenya and Tanzania**.
- The ecosystem is connected with protected areas surrounding **Mount Kilimanjaro**.

Mount Kilimanjaro

- **Mount Kilimanjaro**, Africa’s highest peak, is located just beyond the park’s boundary.
- It provides a prominent backdrop to the Amboseli landscape.

Landscape

Amboseli consists of:

- Dry lakebeds
- Open savannas
- Acacia woodlands
- Lush wetlands

The wetlands are fed by **underground water flowing from the melting snow of Mount Kilimanjaro**.

- The central plains are formed from the remains of an **ancient lake basin**.
- These plains can remain **dry and dusty for much of the year**.

Wildlife

Amboseli is particularly famous for its **large herds of free-ranging African elephants**.

Other animals include:

- Lions
- Cheetahs
- Hyenas
- Zebras
- Wildebeest
- Buffalo
- Giraffes

Bird Diversity

- The wetlands support a large variety of bird species.
- Commonly observed birds include:
 - Flamingos
 - Pelicans
 - Migratory birds
- This makes Amboseli an important site for **birdwatching**.

UNESCO Biosphere Reserve

- The **Amboseli ecosystem** was officially designated a **UNESCO Biosphere Reserve in 1991**.

Clouded Leopard Conservation



Why in News?

- **International Clouded Leopard Day** is observed on **4 August**.
- India has reaffirmed its commitment to conserving the **clouded leopard**, one of Asia's most elusive wild cats.
- A new **Clouded Leopard Conservation Action Plan (CAP)** has been launched.
- International Clouded Leopard Day was established in **2018** by **The Aspinal Foundation**, a British charity.
- The day aims to create awareness about threats such as **habitat loss and illegal wildlife trade**.
- It is an **advocacy observance**, not a UN- or treaty-based observance.

Clouded Leopard Conservation Action Plan

- The **Clouded Leopard Conservation Action Plan (CAP)** was developed under the **Government of India–Global Environment Facility (GEF)–UNDP initiative**.
- It was officially released during the **91st meeting of the Standing Committee of the National Board of Wild Life (SCNBWL)** in **July 2026 at Coimbatore**.

Major Focus Areas

- **Habitat protection:** Protection and restoration of important clouded leopard habitats.
- **Landscape connectivity:** Maintaining wildlife corridors and improving connectivity between habitats.
- **Scientific monitoring:** Use of:
 - Camera traps
 - Occupancy surveys
 - Genetic studies
 - Environmental DNA (eDNA)
- **Anti-poaching:** Strengthening protection efforts through the **M-STripES** application.
- **Community participation:** Promoting sustainable livelihoods for local communities.
- **Climate resilience:** Developing conservation measures that can respond to climate-related changes.
- **Transboundary cooperation:** Cooperation with neighbouring countries within the species' range.

Priority Conservation Landscapes

- The plan identifies **14 priority conservation landscapes** across **Northeast India**.
- These areas will focus on:
 - Habitat restoration
 - Wildlife corridor conservation
 - Better population monitoring

Institutional Support

- The clouded leopard has been included in the **Species Recovery Programme** under the **Integrated Development of Wildlife Habitats (IDWH) Scheme**.
- This provides an institutional framework for its long-term conservation.

Key Facts About Clouded Leopard

- **Mainland clouded leopard:** *Neofelis nebulosa*
- **Sunda clouded leopard:** *Neofelis diardi*
- The Sunda clouded leopard is a **separate species** found in **Sumatra and Borneo**.

Distribution

- Found across:
 - Himalayan foothills
 - Southeast Asia
 - Southern China
- In India, it is mainly found in the **subtropical and tropical evergreen forests of Northeast India**.
- Its habitat can range from **mangrove swamps to high-altitude Himalayan forests**, generally up to **6,000–9,000 feet**.

Special Features

- It is the **smallest member of the Pantherinae subfamily**.
- It weighs around **11–20 kg**.
- It has the **largest canine teeth in proportion to skull and body size** among living cat species.
- Its canines are comparable in size to those of a tiger.
- It has a **hyoid bone** in its throat.
- This allows it to **purr like smaller cats**, but it cannot roar like lions and tigers.

Behaviour

- The clouded leopard is highly **arboreal** and can climb trees effectively.

- In areas with larger predators such as **tigers and common leopards**, it becomes more **strictly nocturnal and arboreal**.
- Where these competitors are absent, it may show greater **daytime activity**.

Conservation Status

- **IUCN Red List:** Vulnerable
- **CITES:** Appendix I
- **Wildlife Protection Act, 1972:** Schedule I
- **State Animal:** Meghalaya

Protected Areas

- **Clouded Leopard National Park, Tripura**
 - Located within **Sepahijala Wildlife Sanctuary**.
 - It is India's **first dedicated wildlife park for the species**.
- Other important areas where the species is found include:
 - **Manas Tiger Reserve, Assam**
 - **Dampa Tiger Reserve, Mizoram**
 - **Pakke Tiger Reserve, Arunachal Pradesh**

Asiatic Lion Conservation



Why in News?

On **World Lion Day 2026**, the Prime Minister highlighted India's **Asiatic lion recovery**, with the population increasing from **523 in 2015 to 891 in 2025**.

- The recovery has been supported by **scientific conservation, habitat expansion, prey availability and community participation**.
- **World Lion Day** is observed every year on **10th August**.

- It was established in **2013** by **conservationists Dereck and Beverly Joubert** to raise awareness about lion conservation and declining wild populations.
- The Jouberts are co-founders of the **Big Cats Initiative with National Geographic**.

Significance of Asiatic Lion Conservation in India

Historical Decline

- The Asiatic lion once had a much wider range across **Asia and the Indian subcontinent**.
- Overhunting and habitat loss drastically reduced its population.
- By the late 1890s, fewer than **50 lions** survived in a single population in the Gir forests of Gujarat.
- The **princely State of Junagadh** played an early role in its protection.
- The **Gir Wildlife Sanctuary** was established in **1965**.
- Conservation later expanded to landscapes such as:
 - Gir National Park
 - Girnar
 - Mitiyala
 - Pania
 - Barda

Population Recovery

- The Asiatic lion population increased from **523 in 2015 to 891 in 2025**.
- Key factors behind the recovery include:
 - Legal protection
 - Habitat expansion
 - Better prey availability
 - Community participation

Project Lion

- **Project Lion** was launched on **15th August 2020**.
- It follows a **landscape-level approach** for Asiatic lion conservation.
- Major components include:
 - Habitat improvement
 - Disease monitoring
 - Scientific tracking
 - Radio-collaring
 - Camera traps

- Prey management
- Human-wildlife conflict mitigation
- The **Gujarat Forest Department** leads its implementation and conducts regular lion censuses.
- The programme also focuses on **community participation and biodiversity protection**.

Landscape-Level Conservation

- Conservation has expanded beyond protected areas to include:
 - Forests
 - Grasslands
 - Coastal areas
 - Multi-use landscapes
- This provides lions with **larger and more connected habitats**.
- The lion distribution range expanded by about **59% between 2015 and 2025**.
- The range now covers around **35,000 sq km across 11 districts of Saurashtra**.
- **Barda Wildlife Sanctuary**, where lions had been absent since 1879, recorded **17 lions by 2025**.

Community-Based Conservation

- Local communities play an important role in **wildlife protection and human-wildlife conflict management**.
- The **Gir Gram Samiti initiative**, launched in **2019**, brings forest officials and villagers together.
- It is supported by:
 - Honorary wildlife wardens
 - Community leaders
 - Eco-guides
 - Eco-development committees

Technology in Lion Conservation

- **GPS-based tracking** is used to monitor lions and vehicles.
- **SIMBA (Software with Intelligent Marking Based Identification of Asiatic lions)** uses AI for individual lion identification.
- **Radio-collaring** enables real-time tracking.
- **GIS-based real-time monitoring** helps in:
 - Timely analysis
 - Report generation
 - Better conservation management

Key Facts About the Asiatic Lion

- **Scientific Name:** *Panthera leo persica*
- **Historical Range:** West Asia to eastern India.
- **Current Core Habitat:** The Saurashtra region of Gujarat.
- India's only wild Asiatic lion population occurs across the **Greater Gir Landscape**.

Habitat

- Dry deciduous forests
- Scrublands
- Grasslands
- Open landscapes

Barda as a Second Home

- Due to increasing **carrying-capacity pressure in Gir**, lions have naturally moved towards **Barda Wildlife Sanctuary** near Porbandar.
- Barda is therefore emerging as an important **second habitat** for the species.

Social Structure

- Male Asiatic lions are generally **solitary or form small coalitions**.
- Females form prides consisting mainly of **related females and cubs**.

Activity

- Mainly **nocturnal and crepuscular**.
- They generally rest during the day in shaded vegetation.

Diet

- Predominantly **carnivorous**.
- Asiatic lions in the Gir landscape also show a notable reliance on **scavenging**.

Niche Partitioning

- Asiatic lions coexist with **Indian leopards and striped hyenas**.
- Differences in:
 - Habitat use
 - Prey selection
 - Activity patterns
- help reduce competition.

Human Coexistence

- The **Maldhari pastoral community** has historically coexisted with lions in the Gir landscape.

Major Threats and Challenges

1. Genetic Bottleneck

- A small founding population has resulted in **low genetic diversity and inbreeding**.
- This can increase vulnerability to diseases.

2. Disease Risk

- Past outbreaks of **Canine Distemper Virus (CDV)** and **Babesiosis** have caused lion deaths.

3. Habitat Saturation

- Growing population pressure in Gir is pushing lions into **human-dominated areas**.
- This increases:
 - Human-wildlife conflict
 - Livestock depredation

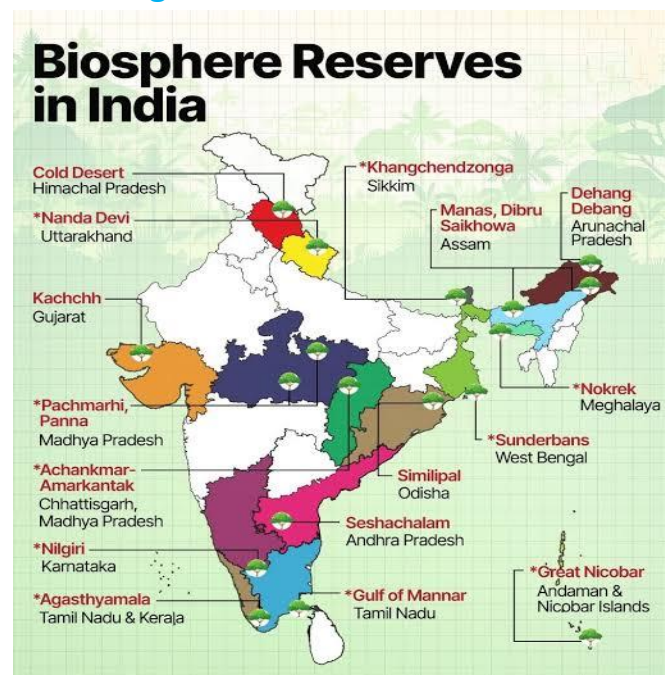
4. Infrastructure Threats

- **Open wells, railway lines and roads** in the Greater Gir landscape pose risks of accidental lion deaths.

Conclusion

India's Asiatic lion conservation story shows how **legal protection, scientific monitoring, habitat expansion and community participation** can help recover a threatened species. However, **genetic vulnerability, disease, habitat saturation and infrastructure-related risks** remain major challenges. Expanding secure habitats and strengthening landscape-level conservation will be important for the long-term survival of the Asiatic lion.

Agasthyamalai Biosphere Reserve and Forest Rights Act



Why in News?

The **Forest Department** has issued eviction notices to thousands of households in the **Agasthyamalai Biosphere Reserve (ABR)**, particularly in Tamil Nadu's **Theni district**, following a **Supreme Court directive based on the findings of the Central Empowered Committee (CEC)**.

- The move has raised concerns over whether the eviction process adequately protects the **forest rights guaranteed under the Forest Rights Act (FRA), 2006**.

What is the Background of the Eviction Orders?

- **Supreme Court Survey Direction:** In **March 2025**, the Supreme Court directed the CEC to conduct an extensive survey of the Agasthyamalai landscape.
 - The survey was meant to identify **non-forestry activities** violating the **Forest Conservation Act, 1980** and the **Wild Life (Protection) Act, 1972**.
- **Supreme Court Directives:** Based on the CEC findings, the Court ordered removal of:
 - Non-forestry activities
 - Commercial infrastructure
 - Encroachments
- from critical protected areas such as:
 - **Kalakkad-Mundanthurai** **Tiger Reserve**
 - **Srivilliputhur-Megamalai** **Tiger Reserve**
- Tamil Nadu was directed to prepare and implement a **time-bound, division-wise encroachment eviction plan**, along with:
 - Rehabilitation wherever applicable
 - Ecological restoration

The Main Conflict

The issue involves a balance between **forest conservation** and **rights of forest-dwelling communities**.

- Conservation authorities are focusing on removal of encroachments and ecological restoration.
- Forest-rights groups argue that eviction must follow the **legally mandated procedures under the FRA, 2006**.

Key Concerns Regarding the Eviction Orders

1. Ignoring Statutory Verification

- Under the FRA, claims to forest rights are verified through a **decentralised process**.
- The **Gram Sabha** plays the primary role in initiating the process.
- Multi-departmental committees are also involved in verification.
- Concerns have been raised that authorities may be treating occupants as **illegal encroachers without first determining whether they have recognised or claimable forest rights**.

2. Eviction Before Completion of Verification

- The FRA provides that forest dwellers should not be evicted **until the recognition and verification procedure is complete**.
- Therefore, eviction without completing this process can raise serious legal concerns.
- Wrongful dispossession of an **SC/ST person** from land or interference with forest rights may also attract provisions of the **SC/ST (Prevention of Atrocities) Act, 1989**.

3. Misinterpretation of Tenure Requirements

- A major issue concerns **Other Traditional Forest Dwellers (OTFDs)**.
- Authorities may require proof of occupation for **three generations or 75 years** before 13 December 2005.
- The concern is that this requirement should not be interpreted as demanding rigid proof of continuous occupation of the **exact parcel of land claimed** in every case.

4. Livelihood Restrictions

- Authorities have raised concerns about **commercial cultivation** in forest areas.
- However, the FRA recognises **bona fide livelihood needs** of forest dwellers.
- It also covers activities such as:
 - Collection and sale of surplus forest produce
 - Grazing

5. Role of Tribal-Welfare Authorities

- Forest-rights advocates have criticised the **limited visible intervention of State tribal-welfare authorities** in protecting the rights of forest-dwelling communities.

What is the Forest Rights Act, 2006?

Recognition of Rights

The **Forest Rights Act, 2006** recognises and vests forest rights and occupation rights in forest land with:

- **Forest Dwelling Scheduled Tribes (FDST)**
- **Other Traditional Forest Dwellers (OTFD)**

who depend on forests for their livelihood and have been residing in such areas for generations.

Eligibility

- OTFDs must have **primarily resided in and depended on forest land for bona fide livelihood needs for at least three generations (75 years) before 13 December 2005.**
- The Act also seeks to balance **forest conservation with livelihood and food security.**

Role of Gram Sabha

The **Gram Sabha** is the key authority for initiating the process of determining the nature and extent of:

- **Individual Forest Rights (IFR)**
- **Community Forest Rights (CFR)**

Four Major Categories of Forest Rights

1. Title Rights

- Provides ownership rights over land actually being cultivated by eligible forest dwellers.
- Subject to a maximum of **4 hectares.**
- No new land can be granted under this provision.

2. Use Rights

Includes rights related to:

- **Minor Forest Produce**
- **Grazing**
- **Other traditional forest-use activities**

3. Relief and Development Rights

- Provides for rehabilitation in cases of **illegal eviction or forced displacement.**

- Also covers access to certain basic amenities, subject to forest-protection restrictions.

4. Forest Management Rights

Communities have rights to:

- **Protect**
- **Regenerate**
- **Conserve**
- **Manage**

community forest resources that they have traditionally protected and conserved for sustainable use.

What are the Key Facts About Agasthyamalai Biosphere Reserve?

Geographical Location

- ABR covers around **3,500 sq. km.**
- It is located at the southern end of the **Western Ghats.**
- It spreads across **Tamil Nadu and Kerala.**

Protected Areas in Tamil Nadu

It includes:

- **Kalakkad-Mundanthurai Tiger Reserve**
- **Srivilliputhur-Megamalai Tiger Reserve**
- **Nellai Wildlife Sanctuary**
- **Kanyakumari Wildlife Sanctuary**

Protected Areas in Kerala

It includes:

- **Periyar Tiger Reserve**
- **Shendurney Wildlife Sanctuary**

Tribal Communities

- The reserve is home to indigenous communities including the **Kani tribe.**
- These communities depend on forests for their **livelihood, culture and traditional practices.**

UNESCO Recognition

- Agasthyamalai Biosphere Reserve was included in the **UNESCO World Network of Biosphere Reserves in 2016.**
- It is an important biodiversity region and also has significant cultural value for indigenous and forest-dwelling communities.

Conservation Vs. Forest Rights: The Core Issue

The Agasthyamalai case highlights the need to balance two important objectives:

- **Forest Conservation** : Protection of biodiversity, wildlife habitats and ecological systems
- **Forest Rights** : Protection of livelihood, land and traditional rights of forest-dependent communities

A sustainable approach requires that **ecological restoration and removal of genuine encroachments are carried out while following the FRA's recognition and verification process.**

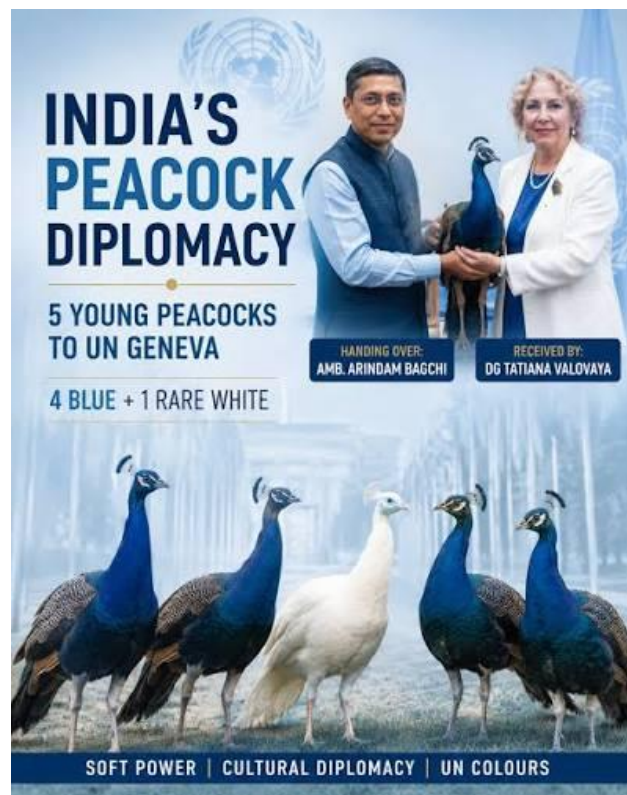
Way Forward

- **Complete FRA verification:** Ensure that eligible forest-right claims are properly examined before eviction.
- **Strengthen Gram Sabhas:** Give Gram Sabhas their legally prescribed role in identifying and verifying forest rights.
- **Differentiate encroachment from traditional occupation:** Genuine forest-right holders should not be treated in the same manner as commercial or illegal encroachers.
- **Ensure rehabilitation:** Where displacement is legally unavoidable, rehabilitation should be timely and fair.
- **Promote community-based conservation:** Involve local communities in forest protection, monitoring and ecological restoration.
- **Balance conservation with livelihood:** Protected-area management should combine biodiversity protection with the legitimate rights and livelihood needs of forest-dependent communities.

Conclusion

The Agasthyamalai eviction issue highlights the difficult balance between **environmental conservation and the rights of forest-dwelling communities.** Strong conservation is essential, but it must operate within the legal framework of the **Forest Rights Act, 2006.** A transparent verification process, meaningful participation of **Gram Sabhas,** fair rehabilitation and community-based conservation can help achieve both **ecological protection and social justice.**

India Donates Indian Peafowls to UN Geneva



Why in News?

India donated **five Indian male peafowls** to the **United Nations Office at Geneva (UNOG),** highlighting India's rich **biodiversity heritage** and its commitment to **multilateralism and international cooperation.**

What is the Significance of India's Peacock Donation?

- **Five Peacocks:** The group consists of:
 - **Four blue-feathered peafowls**
 - **One white-feathered male peafowl**
 - Together, they symbolically reflect the **blue and white colours of the United Nations.**
- **Second Diplomatic Gift:** This is the **second** such diplomatic gift from India to UN Geneva.
 - In **1981,** then Prime Minister **Indira Gandhi** sent a breeding pair of peafowls from the Delhi Zoo to Geneva.
- **Ariana Park:** The **46-hectare park** surrounding UN Geneva has hosted peacocks for **more than a century.**

- The park was originally owned by Swiss art collector **Gustave Revilliod**.
- He donated the estate to Geneva in **1890**.
- **Peacock Diplomacy:** The gesture represents India's use of **soft power** to promote its cultural and natural heritage.
 - It is sometimes referred to as "**Peacock Diplomacy**", similar to China's "**Panda Diplomacy**".
 - It reinforces India's image as a **peaceful and committed participant in the UN system**.
- **Biodiversity and Culture:** The **Indian peacock is India's National Bird** and represents:
 - Grace
 - Beauty
 - Resilience
 - Its presence at UN Geneva showcases India's **natural and cultural heritage** and commitment to **biodiversity conservation and environmental stewardship**.

Indian Peafowl

Taxonomy

- **Scientific Name:** *Pavo cristatus*
- **Family:** Phasianidae
- The family also includes **pheasants and partridges**.
- **Male:** Peacock
- **Female:** Peahen

Physical Characteristics

The Indian Peafowl shows strong **sexual dimorphism**, meaning males and females have clear physical differences.

Male

- Metallic **blue plumage**
- Long, colourful **train**
- Train contains distinctive **eyesspots or ocelli**
- Mainly used during **courtship displays**

Female

- Mostly **muted brown plumage**
- Provides better **camouflage**
- Helps protect the female while **nesting on the ground**

Habitat and Distribution

- Native to the **Indian subcontinent**.
- It is highly adaptable and can live in:
 - Dry deciduous forests
 - Scrublands
 - Semi-desert areas
 - Agricultural landscapes
 - Human-dominated areas
- The species is mainly **ground-dwelling during the day**.
- It usually **roosts in trees at night**.

Food and Ecological Role

The Indian Peafowl is **omnivorous**.

Its diet includes:

- Seeds
- Fruits
- Insects
- Small mammals
- Reptiles
- Small snakes

Ecological Importance

- By feeding on insects and other small organisms, the peafowl can contribute to **natural pest control**, particularly in agricultural ecosystems.

Conservation Status

Organisation / Law	Status
IUCN Red List	Least Concern (LC)
Wildlife (Protection) Act, 1972	Schedule I
CITES	Appendix III

Why is Peacock Diplomacy Important?

India's donation goes beyond a symbolic gesture. It combines **culture, biodiversity and diplomacy**.

- **Indian Biodiversity**
- **Cultural Heritage**
- **Soft Power**
- **Multilateral Engagement**
- **International Cooperation**

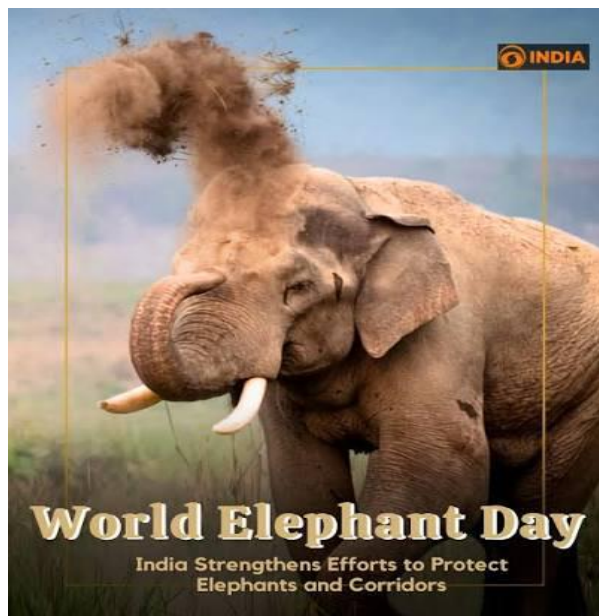
It also shows how **wildlife and cultural symbols can become instruments of diplomatic goodwill**, while promoting awareness about India's biodiversity.

Conclusion

India's donation of five peafowls to **UN Geneva** combines **diplomacy with biodiversity conservation**.

The gesture highlights India's commitment to **multilateralism, environmental stewardship and cultural heritage**. The Indian Peafowl, as India's National Bird, serves not only as a symbol of national identity but also as a bridge between **nature, culture and international diplomacy**.

World Elephant Day 2026: India's Elephant Conservation Efforts



Why in News?

India reaffirmed its commitment to **elephant conservation during World Elephant Day 2026** celebrations in Visakhapatnam. The focus was on **technology-based conservation, habitat protection, community participation and reducing human-elephant conflict**.

What is World Elephant Day?

- **Observed:** Every year on **12 August**.
- **Established:** In **2012** by **Patricia Sims of Canada** and the **Elephant Reintroduction Foundation of Thailand**.
- **Theme 2026:** “Bringing the world together to help elephants.”
- **Main Objective:**
 - Create awareness about elephant conservation.
 - Address **habitat loss and fragmentation**.
 - Prevent **poaching and illegal ivory trade**.
 - Reduce **human-elephant conflict**.

- Protect traditional **elephant migration routes**.
- Improve the welfare of captive elephants.

Key Initiatives Announced in 2026

- **Regional Action Plan for Southern India**
 - A **₹500-crore plan** covering **Karnataka, Kerala, Andhra Pradesh and Tamil Nadu**.
 - Focus areas include:
 - Elephant **corridor conservation**
 - **Habitat restoration**
 - **Early-warning systems**
 - **Conflict mitigation**
 - **Community participation**
- **Model Elephant Conservation Plan**
 - A model plan was released for the **Nilgiri Elephant Reserve**.
 - It aims to promote scientific and coordinated conservation.
- **Captive Elephant Welfare**
 - The publication “**Captive Elephant Husbandry: Science, Welfare and Practice**” was released.
 - It focuses on improving standards for captive elephant care.
- **Gaj Gaurav Awards 2026**
 - Awards were given to individuals for their contribution to **elephant conservation and management**.
- **“30 Giant Steps”**
 - A publication documenting **30 major milestones and conservation initiatives under Project Elephant from 2020 to 2026**.
- **Human-Elephant Conflict Research**
 - **Phase II** of the study was launched in **Kerala, Karnataka, Tamil Nadu, Odisha and West Bengal**.

Key Facts About Elephants

Three Living Species

There are **three species of elephants**:

- **African Savanna Elephant**
- **African Forest Elephant**

- **Asian Elephant**

African vs Asian Elephants

- African elephants generally have **larger ears**, roughly resembling the shape of Africa.
- Asian elephants have **smaller ears**, broadly resembling the Indian subcontinent.
- African elephants have **two finger-like projections at the tip of the trunk**.
- Asian elephants have **one**.
- The **African Savanna Elephant** is the **largest land animal in the world**.

Reproduction and Social Structure

- Elephants can live for around **65 years**.
- Females generally reach puberty at around **11 years**.
- Pregnancy lasts about **22 months**.
- Under favourable conditions, elephant populations can grow by around **7% annually**.
- Elephant families are generally led by a **matriarch**, usually the oldest and most experienced female.

Tusks

- Tusks are **enlarged incisor teeth** that continue growing throughout life.
- They are used for:
 - Digging
 - Feeding
 - Defence
- Ivory from tusks makes elephants vulnerable to **poaching**.

Communication

Elephants communicate through:

- Sounds
- Body language
- Touch
- Scent
- **Seismic vibrations**

Elephant Population in India

- India is home to nearly **60% of the world's wild Asian elephant population**.
- The **Synchronous All India Population Estimation of Elephants (SAIEE) 2021–25** estimated India's wild elephant population at **22,446**.

- They are protected across:
 - **33 Elephant Reserves**
 - **150 identified elephant corridors**.

Project Elephant

- **Project Elephant** is India's flagship programme for elephant conservation.
- It is implemented by the **Ministry of Environment, Forest and Climate Change**.
- It provides financial and technical support to States for:
 - Habitat protection
 - Captive-elephant conservation
 - Human-elephant conflict mitigation
- It also promotes:
 - AI-based monitoring
 - Radio-collaring
 - Genetic databases
 - Early-warning systems

DNA-Based Elephant Census

The **SAIEE 2021–25** used India's first **DNA-based synchronised elephant census**.

- Dung samples were analysed through **genetic fingerprinting**.
- This helped:
 - Identify individual elephants.
 - Detect repeated samples.
 - Improve population estimates.
- DNA analysis was combined with **block counts and line-transect surveys**.

Elephant Corridors in India

Elephant corridors are important because they connect **fragmented habitats** and allow elephants to move safely between different landscapes.

Why are Corridors Important?

- **Ecological Connectivity**
 - Connect fragmented habitats.
- **Population Viability**
 - Help maintain healthy and genetically diverse elephant populations.
- **Conflict Reduction**
 - Allow elephants to follow traditional routes while reducing encounters with settlements and infrastructure.

National Corridor Network

- India has identified and validated **150 elephant corridors** across **14 elephant-range States**.
- Regional distribution:
 - **East-Central:** 52
 - **North-East:** 48
 - **Southern:** 32
 - **Northern:** 18
- **West Bengal** has the highest number, with **26 corridors**.
- The network includes:
 - **19 inter-State corridors**
 - **6 transboundary corridors** connecting India and Nepal.

Corridor Usage

Monitoring showed:

- **59 corridors:** Increased elephant use
- **29 corridors:** Stable use
- **29 corridors:** Declining use
- **15 corridors:** Impaired

The government is working on **scientific monitoring, boundary identification and integration of corridors into State management plans**.

Expansion of Elephant Reserves

- Elephant Reserves now cover around **80,777 sq. km** across **14 major elephant-range States**.
- The expansion has added around **8,610 sq. km** to the reserve network.
- Larger reserves help:
 - Protect critical habitats.
 - Improve connectivity.
 - Support safer elephant movement.
 - Strengthen scientific conservation planning.

Together, **Project Elephant, population estimation, Elephant Reserves and corridors** have created a more integrated **landscape-level conservation approach**.

Management Effectiveness Evaluation

- The **Management Effectiveness Evaluation framework for Elephant Reserves** was launched in **2023**.

- It measures conservation performance using **transparent and measurable indicators**.

Pilot Reserves

The framework was initially tested in:

- Shivalik
- Kaziranga–Karbi Anglong
- Mayurbhanj
- Nilgiri
- The government is now expanding the framework nationwide with **CAMPA funding**.
- The approach promotes **adaptive management**, where conservation measures are regularly assessed and improved.

Regional Action Plans

- Regional Action Plans have been prepared for **all elephant-bearing regions**.
- They recognise that elephant movement often crosses State boundaries.
- Therefore, issues such as:
 - Habitat connectivity
 - Human-elephant conflict
 - Landscape management
- require **Inter-State coordination**.

Preventing Elephant-Train Collisions

Railway infrastructure is another major threat to elephants.

- Surveys identified **127 sensitive railway stretches** covering **3,452.4 km**.
- **77 stretches across 14 States**, covering **1,965.2 km**, have been recommended for mitigation measures.

Proposed Infrastructure

Around **705 structures** have been proposed, including:

- Underpasses
- Overpasses
- Ramps
- Modified level crossings
- Bridge modifications

Technology-Based Protection

Technology is also being used through:

- Optical-fibre intrusion detection systems
- Seismic sensors
- Thermal cameras
- AI-enabled monitoring

Distributed Acoustic Sensing can provide real-time alerts to:

- Loco pilots
- Station masters
- Railway control rooms

These measures have helped reduce elephant deaths due to train collisions from **26 in 2013 to 12 in 2024**, a decline of more than **50%**.

Genetic Monitoring of Captive Elephants

India is also using **DNA technology and digital records** to prevent illegal trade and movement of captive elephants.

Gajah Suchana Application

The **Gajah Suchana mobile application** maintains a national genetic database containing:

- DNA profiles
- Morphological characteristics
- Ownership details

This helps authorities:

- Verify an elephant's identity before movement.
- Detect irregularities.
- Provide forensic evidence in legal cases.

Captive Elephant Rules, 2024

- The **Captive Elephant (Transfer or Transport) Rules, 2024** regulate the transfer and transportation of captive elephants.
- A **High-Powered Committee**, constituted following a Supreme Court order, examines inter-State transfers of captive elephants.

Community Compensation and Conflict Management

Human-elephant conflict can cause loss of life, injuries, crop damage and property damage.

Ex-Gratia Assistance

Government assistance includes:

- **₹10 lakh** for death or permanent incapacitation.
- **₹2 lakh** for grievous injury.
- Up to **₹25,000** for treatment of minor injuries.

Compensation for **crop and property damage** is provided according to the norms of the respective States and Union Territories.

Human-Wildlife Conflict Advisory

The government recommends:

- Hotspot mapping
- Rapid-response teams
- State and district-level review committees
- Faster compensation

Specific **elephant conflict-mitigation guidelines issued in 2023** also aim to improve coordination between stakeholders.

Major Threats to Elephants

- **Habitat Loss**
 - Expansion of agriculture, settlements, roads and other infrastructure reduces elephant habitat.
- **Habitat Fragmentation**
 - Fragmented forests disrupt traditional movement routes.
- **Human-Elephant Conflict**
 - Increasing overlap between human settlements and elephant habitats can result in crop damage, livestock loss and human casualties.
- **Poaching**
 - Elephants are targeted mainly for their **ivory**.
- **Railway and Road Accidents**
 - Transport infrastructure can cut through traditional elephant corridors.
- **Captive Elephant Welfare**
 - Poor management and illegal movement can threaten the welfare and conservation of elephants.

Satkosia Tiger Reserve: Village Relocation and Conservation Challenges



Why in News?

The **Odisha Government** has constituted a **high-level inquiry committee** to examine the relocation of villages from the **Satkosia Tiger Reserve (STR)**.

- Residents have alleged that they were **forcibly displaced from their ancestral villages**.
- They also claimed that local communities had **coexisted with wildlife for a long period**.
- The committee will examine whether the relocation process followed the relevant legal and conservation provisions.

What will the Committee Examine?

The committee will verify compliance with:

- **Wildlife (Protection) Act, 1972**
- **Forest Rights Act, 2006**
- Applicable **National Tiger Conservation Authority (NTCA) guidelines**

Satkosia Tiger Reserve (STR)

Location and Formation

- **Satkosia Tiger Reserve** is located in **Odisha** around the **Mahanadi Gorge**.
- It was notified as a **Tiger Reserve in 2007**.
- The reserve was formed by combining:
 - **Satkosia Gorge Sanctuary**
 - **Baisipali Sanctuary**

Important Timeline

- **1976:** Satkosia Gorge Sanctuary was established.
- **1981:** Baisipali Sanctuary was notified.
- **2007:** Both areas were brought together to form the **Satkosia Tiger Reserve**.

Geographical Significance

- Satkosia lies at the meeting point of the **Deccan Peninsula** and **Eastern Ghats biogeographic regions**.
- This location gives the reserve **high ecological diversity**.
- The reserve contains a combination of:
 - **Forests**
 - **Riverine habitats**
 - **Wetlands**

Mahanadi Gorge

- The reserve is characterised by a **22.5-km-long gorge**.

- The **Mahanadi River** flows through this gorge.
- The gorge creates a diverse landscape of **riverine, forest and wetland habitats**.

Biodiversity of Satkosia

Flora

- The reserve is mainly covered by **mixed deciduous and riverine forests**.
- Important vegetation includes **Sal (*Shorea robusta*)** and other deciduous species.

Fauna

Satkosia supports a wide range of wildlife, including:

- **Leopard**
- **Elephant**
- **Gaur**
- **Gharial**
- **Mugger crocodile**
- **Reptiles**
- **Amphibians**
- **Diverse bird species**
- **Diverse fish species**

Importance for Elephants

- Satkosia forms part of the **Mahanadi Elephant Reserve**.
- It is therefore important for:
 - **Elephant conservation**
 - **Habitat connectivity**
 - Maintaining larger wildlife landscapes

Tiger Status of Satkosia

- Satkosia historically supported a tiger population.
- However, the tiger population declined significantly:
 - **2007:** 12 tigers
 - **2018–19:** 1 tiger
 - **2022:** No tigers recorded in the reserve

Tiger Reintroduction Programme

- In **2018**, Satkosia became the site of India's first **inter-State tiger relocation programme**.
- Tigers were brought from **Madhya Pradesh**.
- However, the programme **failed**.

- The State is now considering **renewed tiger supplementation**.

Major Conservation Challenges

1. Village Relocation

- Villages located inside and around protected areas can create challenges for wildlife conservation.
- At the same time, relocation can affect:
 - Traditional livelihoods
 - Ancestral land
 - Community rights
 - Local relationships with the landscape

2. Rights of Forest-Dwelling Communities

- The allegations of forced displacement highlight the need to ensure that conservation measures comply with the **Forest Rights Act, 2006**.
- Relocation must also follow applicable **wildlife laws and NTCA guidelines**.

3. Creating Inviolate Habitat

- Creating **inviolate habitat** is an important management objective for tiger conservation.
- However, achieving this objective requires balancing **wildlife protection with the rights and interests of local communities**.

4. Declining Tiger Population

- The absence of tigers in the **2022 census** highlights the serious conservation challenge faced by the reserve.
- The failure of the earlier tiger relocation programme adds another layer of complexity to tiger recovery efforts.

Khijadiya Bird Sanctuary: Breeding Stronghold of the Black-necked Stork



Why in News?

- A scientific study published in the *Journal of Threatened Taxa* has identified **Khijadiya Bird Sanctuary in Jamnagar, Gujarat** as an important breeding site for the **Black-necked Stork**.
- The study provides useful insights into the species' **breeding ecology, nesting behaviour and reproductive success**.

Black-necked Stork

- **Scientific name:** *Ephippiorhynchus asiaticus*
- It is one of India's **largest wetland birds**.
- Its breeding populations are **scattered across India**.
- The sanctuary recorded a **peak seasonal population of 21 birds**, comprising breeding pairs as well as non-breeding adults.
- The species faces threats mainly from **habitat loss and declining populations**.

Conservation Status

Framework	Status
IUCN Red List	Near Threatened
Wild Life (Protection) Act, 1972	Schedule II
2022 Amendment	Schedule II classification follows the Wild Life (Protection) Amendment Act, 2022

About Khijadiya Bird Sanctuary

- **Location:** Jamnagar, Gujarat
- Declared a **Wildlife Sanctuary:** 1981
- Designated a **Ramsar Site:** February 2022
- Recognised for its rich **wetland biodiversity** and importance for resident as well as migratory birds.
- The sanctuary contains a combination of **freshwater and saline wetland habitats**.
- It lies along the **Central Asian Flyway**, making it important for migratory waterbirds.

Why is the Sanctuary Important for Black-necked Storks?

Khijadiya provides suitable wetland conditions that support both **breeding and non-breeding populations**.

The study is particularly valuable because it helps document:

- **Breeding patterns**
- Nesting behaviour
- Reproductive success

- Seasonal population dynamics

Such information can guide **site-specific conservation measures** for the species.

Conservation Significance

- Establishes Khijadiya as an important **breeding habitat** for the Black-necked Stork.
- Strengthens the scientific understanding of the species in **Gujarat**.
- Highlights the importance of protecting **mixed freshwater-saline wetland ecosystems**.
- Reinforces the need to conserve wetlands that support both **resident and migratory avifauna**.
- Scientific information on breeding success can help design more effective **species and habitat management strategies**.

UNCCD COP17: Global Action on Land Degradation and Drought



Why in News?

- The **17th Conference of the Parties (COP17) to the United Nations Convention to Combat Desertification (UNCCD)** concluded in **Ulaanbaatar, Mongolia**, with discussions centred on **desertification, land degradation, drought resilience, rangelands, pastoral communities, nature-based solutions and innovative financing**.
- **Egypt** will host **UNCCD COP18** in **Sharm El-Sheikh** in **2028**.

Key Highlights of UNCCD COP17

Theme

- Theme: **“Restoring Land. Restoring Hope.”**
- Land restoration was recognised as crucial not only for environmental protection but also for:
 - Food security

- Livelihoods
- Drought resilience
- Preventing forced displacement

- COP17 coincided with the **UN International Year of Rangelands and Pastoralists (IYRP 2026)**, highlighting the dependence of pastoral communities on healthy rangelands.

Global Land Degradation Crisis

- Land degradation affects up to **40% of the world's land surface**.
- It threatens **water availability, agricultural productivity and economic stability**.
- Nearly **40–45% of global rangelands** are degraded, putting around **one-sixth of global food supply** and **one-third of the planet's carbon reservoir** at risk.

Mongolia's Leadership

- Nearly **77% of Mongolia's land** is degraded.
- Mongolia launched the **“Billion Trees” campaign in 2021**, targeting the plantation of **1 billion trees by 2030**.

Major Initiatives Announced at COP17

1. Drought Resilience Index (DRI)

- Described as the world's first comprehensive technical tool for assessing **drought resilience**.
- Uses **AI-based analytics and vulnerability mapping**.
- Helps countries evaluate their ability to:
 - Anticipate drought
 - Prepare for its impacts
 - Adapt to changing conditions
- Promotes a shift from **post-disaster relief to anticipatory preparedness**.

2. Drought Resilience Investment Facility (DRIF)

- Launched by **UNCCD and Luxembourg**.
- Designed as a global catalytic financing mechanism.
- Uses public funding to **de-risk investments** and attract private and institutional capital.
- Focus areas include:
 - Drought resilience
 - Water security
 - Climate-resilient agriculture
 - Land restoration

3. Financing for Drought Resilience

- COP17 announced **USD 1.3 billion** in new and pipeline financing.
- Intended to support **land restoration and drought resilience**, particularly in vulnerable countries.

4. Global Drought Agreement

Countries **could not reach consensus on a legally binding global drought treaty**.

- The issue was deferred to future negotiations.
- The financing gap for drought resilience is estimated at **USD 278 billion annually**.
- A future global framework could require:
 - National drought-management plans
 - Shared early-warning systems
 - Monitoring of rainfall and soil moisture
 - Vulnerability and risk assessment
 - Data-sharing mechanisms
 - Financing for drought resilience and land restoration
- From **COP18 onwards, drought will have a standalone agenda item** under the UNCCD.

India's Position at UNCCD COP17

Open Natural Ecosystems (ONEs)

India launched its first “**Guide to Grasslands and Other Open Natural Ecosystems (ONEs)**”.

It seeks to change the conventional perception of grasslands, savannas, ravines and deserts as “**wastelands**” merely because they have limited tree cover.

Important landscapes include:

- **Thar**
- **Banni**
- **Deccan savannas**

The approach emphasises their importance for **biodiversity, pastoral livelihoods and ecological functions**.

Progress under Bonn Challenge

- India has brought **21.76 million hectares** of degraded and deforested land under restoration.
- Target: **26 million hectares by 2030**.

India's Key Demands

India emphasised:

- **Adequate, predictable and sustained international climate finance**
- Community participation in land restoration
- Recognition of **pastoralists as custodians of rangelands**
- Protection of **grazing rights**
- Integration of **traditional knowledge with modern science**

India cited **Orans of Rajasthan**—community-protected sacred landscapes—as examples of local conservation systems supporting **biodiversity, vegetation and water resources**.

UNCCD: United Nations Convention to Combat Desertification

Origin

- Adopted in **1994**.
- One of the three **Rio Conventions**, along with:
 - **UNFCCC** – Climate Change
 - **UNCBD** – Biodiversity
- These emerged from the **1992 Earth Summit at Rio de Janeiro**.

Mandate

- UNCCD is the **only legally binding international framework specifically addressing desertification and drought**.
- It connects **environmental protection with sustainable development and land management**.

Land Degradation Neutrality (LDN)

- The principal operational framework of UNCCD.
- Linked with **SDG Target 15.3**.
- Aim: maintain or improve the **quantity and quality of land resources** so that ecosystem functions are sustained.

Conference of Parties (COP)

The **COP is the principal decision-making body** of UNCCD.

It:

- Reviews implementation by Parties.
- Monitors LDN commitments.
- Can amend the Convention.

- Can adopt new implementation annexes.

Membership

- **197 Parties**
 - 196 countries
 - European Union
- **India is a Party.**
- India hosted **UNCCD COP14 in New Delhi in 2019**, where the **New Delhi Declaration** was adopted.

Other Important UNCCD Initiatives

Riyadh Global Drought Resilience Partnership

- Launched at **COP16 in Riyadh in 2024**.
- Initial commitments: **USD 2.15 billion**.
- Supported by **Saudi Arabia, Islamic Development Bank and OPEC Fund**.
- Target: **80 vulnerable and drought-affected countries**.

Business4Land Initiative

- UNCCD's principal platform for involving the **private sector** in sustainable **land and water management**.

Challenges in Combating Land Degradation and Drought

1. Ecological Challenges

- **Misguided afforestation** can damage native ecosystems.
- Treating grasslands and scrublands as wastelands may lead to unsuitable plantations.
- Such plantations can negatively affect:
 - Native biodiversity
 - Groundwater
 - Pastoral livelihoods
- Excessive cultivation and fertiliser use reduce **Soil Organic Carbon (SOC)**.
- Poor irrigation practices can cause **soil salinisation**.

Rangeland Degradation

In India:

- Rangelands cover about **1.21 million sq. km**.
- **Less than 5% of grasslands** are protected.
- Grassland area declined from **18 million hectares in 2005 to 12 million hectares in 2015**.

2. Agrarian and Market Distortions

- Agricultural incentives may encourage **water-intensive crops** such as paddy and sugarcane in water-stressed regions.
- This accelerates **groundwater depletion**.
- Encroachment and shrinking **Common Property Resources (CPRs)** such as *Gochars* and *Orans* increase pressure on grazing lands.
- **Insecure land tenure**, particularly for women managing farms because of male migration, can limit access to:
 - Credit
 - Insurance
 - Subsidies
 - Extension services

3. Governance Deficiencies

- Responsibilities are divided among **forestry, agriculture, water and rural-development institutions**.
- Lack of coordination weakens landscape-level planning.
- Drought management remains largely **reactive**, concentrating on relief after drought rather than preparedness.
- Remote sensing detects vegetation stress, but insufficient **ground-level soil-moisture monitoring and ground-truthing** can delay response.

4. Finance and Climate-Related Constraints

- Land degradation and drought receive less financing than many climate and biodiversity interventions.
- Private investment faces:
 - Long gestation periods
 - Land-tenure uncertainty
 - Weak **Measurement, Reporting and Verification (MRV)** systems
- Climate change is increasing rainfall variability, with intense rainfall followed by prolonged dry spells causing:
 - Higher runoff
 - Lower groundwater recharge
 - Soil erosion
 - Reservoir siltation

India's Initiatives Against Desertification and Land Degradation

Initiative	Major Focus
National Action Plan to Combat Desertification (NAPCD)	Umbrella framework for land restoration; launched in 2001 and revised in 2023
PMKSY & Watershed Development	Rainwater harvesting, soil-moisture conservation and vegetation regeneration
Green India Mission	Forest restoration and carbon sequestration under NAPCC
Soil Health Card Scheme	Crop-specific nutrient and fertiliser recommendations
ISRO's Desertification and Land Degradation Atlas	Remote sensing and GIS-based mapping of degraded land
Mission Amrit Sarovar	Creation/rejuvenation of water bodies and groundwater recharge
Aravalli Green Wall Initiative	Restoration of degraded Aravalli landscapes and combating desertification

Way Forward

1. Align Agricultural Policies with Ecology

- Implement **Agro-Ecological Zoning (AEZ)**.
- Align **subsidies, MSP and electricity support** with locally suitable crops.
- Discourage water-intensive cultivation in water-stressed regions.
- Replace blanket incentives with **region-specific agricultural planning**.

2. Move from Relief to Anticipatory Action

- Introduce **trigger-based anticipatory financing**.
- Use satellite observations and soil-moisture data to release funds **before drought conditions become severe**.

3. Adopt Landscape-Level Planning

- Promote **district-level Ridge-to-Valley planning**.
- Integrate agriculture, forestry, water and rural-development programmes rather than treating land degradation sector-wise.

4. Restore Ecosystems According to Their Natural Character

- Recognise **grasslands, savannas and scrublands** as distinct ecosystems.
- Prioritise **native species and invasive-species removal** over indiscriminate tree plantation.

- Promote:
 - Regenerative agriculture
 - Biochar
 - Soil-carbon restoration
 - Drought-resilient farming

5. Build Circular Rural Economies

Use crop residues for **biomass pellets and bio-CNG**, helping reduce stubble burning while retaining soil organic carbon.

6. Use Technology for Hyper-Local Monitoring

Combine:

Satellite data + IoT soil sensors + AI-based early-warning systems

to improve:

- Local drought forecasting
- Precision irrigation
- Crop planning
- Timely government intervention

7. Mobilise Private Finance

Use **blended finance and public de-risking mechanisms** to attract private capital towards:

- Land restoration
- Sustainable agroforestry
- Drought-resilient agriculture



Crux of The Hindu & Indian Express

Ecology & Environment

Glaw Lake Becomes India's 101st Ramsar Site



Why in News?

- **Glaw Lake** in **Arunachal Pradesh** has been designated as **India's 101st Ramsar Site** and the **State's first Wetland of International Importance**.
- With this addition, **India's Ramsar network has expanded from 26 sites in 2014 to 101 sites in 2026**.

Key Facts About Glaw Lake

Location

- A **pristine freshwater lake** located within the **Kamlang Tiger Reserve and Wildlife Sanctuary** in the **Eastern Himalayas**.

Physical Features

- The lake is fed by **perennial mountain streams**.
- It is surrounded by **dense natural vegetation**.

Biodiversity

- The wetland and its catchment area support rich biodiversity, including:
 - **More than 150 tree species**
 - **49 orchid species**
- It is recognised as an important **biodiversity hotspot**.

Significance

- Ramsar designation will promote:
 - **Biodiversity conservation**
 - **Climate resilience**
 - **Water conservation**
 - **Sustainable livelihoods** of communities dependent on the wetland ecosystem.

Ramsar Convention

About

- The **Ramsar Convention**, officially known as the **Convention on Wetlands**, is an **intergovernmental treaty** adopted at **Ramsar, Iran, in 1971**.
- It provides a framework for the **conservation and wise use of wetlands and their resources**.
- **UNESCO** serves as the **depository** of the Convention.

India and the Ramsar Convention

- The Convention **entered into force for India on 1 February 1982**.

- Under the Convention, eligible wetlands can be designated for inclusion in the **List of Wetlands of International Importance (Ramsar List)**.

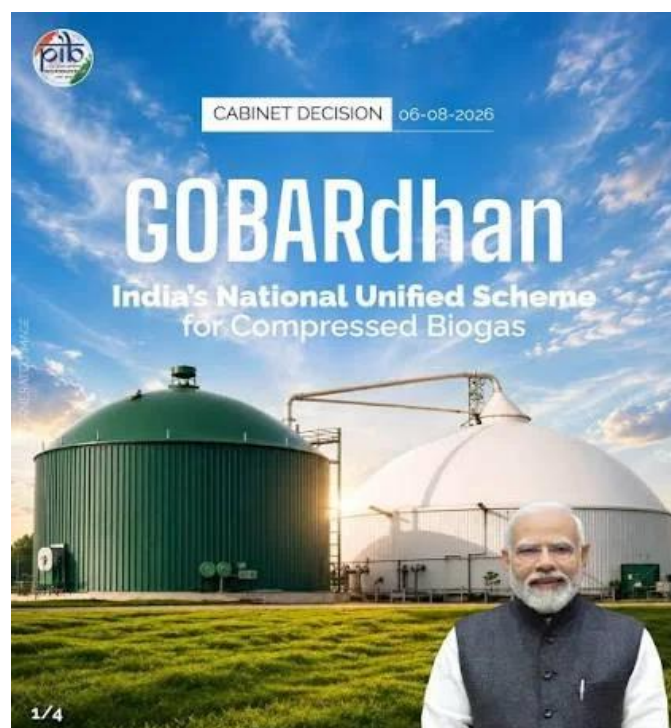
Montreux Record

- The **Montreux Record** is a register of **Ramsar Sites** where:
 - Ecological changes have occurred,
 - Are occurring, or
 - Are likely to occur due to technological developments, pollution, or other human interference.
- It is maintained as part of the **Ramsar List**.

Designation Criteria

- A wetland can be designated as a **Ramsar Site** if it satisfies **at least one of the nine criteria** related to:
 - Ecology
 - Botany
 - Zoology
 - Limnology
 - Hydrology
 - Protection of threatened species and biodiversity.

GOBARdhan: National Circular Bioenergy Scheme



Why in News?

- The **Union Cabinet**, chaired by Prime Minister **Narendra Modi**, has approved **GOBARdhan – the National Circular Bioenergy Scheme**.
- The scheme has a total outlay of **₹23,731 crore**.
- It will be implemented from **FY 2026–27 to FY 2035–36**.
- The scheme aims to make **Compressed Biogas (CBG)** a major part of India's future energy mix.
- It seeks to convert **agricultural residue, cattle dung, press mud, municipal organic waste and other biomass** into:
 - Clean fuel
 - Organic manure
 - Rural income
 - Economic value

Key Objectives

- Increase domestic **CBG production** nearly **ten-fold**.
- Provide a predictable framework for the CBG industry.
- Mobilise large-scale **private investment**.
- Strengthen India's **energy security**.
- Create rural employment and income opportunities.
- Promote **waste-to-wealth** and a **circular bioeconomy**.
- Support the vision of **Atmanirbhar Bharat** and **Viksit Bharat**.

What is Compressed Biogas (CBG)?

- **CBG** is produced by processing organic waste and biomass.
- It is **chemically equivalent to natural gas** and can be integrated into India's existing gas ecosystem.
- It can be produced from resources such as:
 - Agricultural residue
 - Cattle dung
 - Press mud
 - Municipal organic waste
 - Other biomass

- CBG can help reduce dependence on **imported fossil fuels** while creating value from organic waste.

From Existing Schemes to GOBARdhan

- The government has already developed the foundation of India's CBG sector through several initiatives:
 - **SATAT (Sustainable Alternative Towards Affordable Transportation)** initiative
 - **Market Development Assistance (MDA) Scheme** for organic manure
 - **Biomass Aggregation Machinery (BAM) Scheme**
 - **Development of Pipeline Infrastructure (DPI) Scheme**
 - **Central Financial Assistance (CFA)** for CBG plants under the **National Bioenergy Programme**
- These initiatives have helped commission **more than 200 CBG plants** and establish production, offtake and organic manure value chains.
- **GOBARdhan** now brings these efforts together under one integrated national framework administered by the **Ministry of Petroleum and Natural Gas**.

Six Growth Engines under GOBARdhan

1. Assured CBG Offtake

- The scheme creates a dedicated **CBG Offtake Assurance framework**.
- It will provide producers with a reliable and predictable market.
- City Gas Distribution (**CGD**) entities will support the notified **CBG Obligation**.

CBG Obligation trajectory:

- **3%** in FY 2026–27
- **4%** in FY 2027–28
- **5%** from FY 2028–29 onwards

The obligation applies to the **CNG (Transport)** and **PNG (Domestic)** segments.

Significance:

- Creates long-term demand.
- Improves project bankability.
- Supports capacity utilisation.
- Encourages private investment.

2. Stable CBG Pricing Framework

- GOBARDhan introduces an administered CBG price of **₹2,110 per MMBTU**.
- It will be supported through a **government-backed pricing framework**.
- The framework has a minimum **10-year horizon**.

Significance:

- Provides revenue visibility.
- Improves investment certainty.
- Supports commercially attractive returns.
- Encourages capacity expansion.

3. Capital Assistance

- Eligible **greenfield CBG projects** can receive capital assistance of up to **₹2 crore per TPD** of installed CBG capacity.
- Support can cover:
 - Core plant machinery
 - Feedstock aggregation
 - Organic manure processing
 - Value addition
- **Brownfield projects** expanding their production capacity will also be eligible.

Expected benefit:

- Lower initial capital burden.
- Easier financial closure.
- Greater participation by **private developers, MSMEs, cooperatives and rural entrepreneurs**.

4. Development of Pipeline Infrastructure

- The scheme supports:
 - **Cluster-based pipeline infrastructure**
 - **Standalone pipeline infrastructure**
- These pipelines will connect CBG plants with **trunk pipelines and CGD networks**.

Benefits:

- Lower evacuation costs.
- Better reliability.
- Wider market access.
- Higher utilisation of domestic CBG.

5. Credit Guarantee Support

- A dedicated **Credit Guarantee mechanism** will improve access to institutional finance.

- It will strengthen lender confidence in eligible **MSME-based CBG projects**.
- By sharing part of the lending risk, it can:
 - Reduce collateral requirements.
 - Improve access to affordable finance.
 - Speed up project development.

It will particularly support **MSMEs, women entrepreneurs and first-time developers**.

6. CBG Ecosystem Challenge Fund

- A dedicated **CBG Ecosystem Challenge Fund** will support district-level implementation.
- It will strengthen local CBG value chains through:
 - Feedstock resource assessment and mapping
 - Feedstock aggregation infrastructure
 - District-level CBG development plans
 - Technology adoption
 - Process improvement
 - Organic manure value addition
 - Capacity building
 - Stakeholder awareness

Strategic Importance for India

Energy Security

- India's demand for natural gas is rising in:
 - Transport
 - Households
 - Industry
 - Commercial sectors
- Domestic CBG production can reduce dependence on **imported fossil fuels**.
- It can strengthen India's **energy resilience**.

Rural Economy

CBG plants can create local economic activity through:

- Biomass collection
- Feedstock transportation
- Plant operations
- Organic manure production
- Waste management

This can provide additional income opportunities for **farmers, cooperatives, feedstock aggregators and rural entrepreneurs**.

Circular Economy

- GOBARDhan converts waste into useful economic resources.
- Organic waste → CBG + Organic Manure + Rural Income
- This promotes a **circular bioeconomy** while reducing waste accumulation.

Environmental Benefits

The scheme can:

- Reduce greenhouse gas emissions.
- Promote productive utilisation of agricultural and organic waste.
- Reduce dependence on fossil fuels.
- Expand the production and use of **organic manure**.

Expected Impact

GOBARDhan is expected to deliver:

- Nearly **ten-fold growth in domestic CBG production**.
- Greater **energy security**.
- Increased **private investment**.
- Stronger **rural livelihoods**.
- Better **scientific waste management**.
- Lower **greenhouse gas emissions**.
- Expansion of the **organic manure economy**.
- Faster project implementation through an **integrated national framework**.

Significance of GOBARDhan

- The scheme brings together **assured demand, stable pricing, capital assistance, pipeline connectivity, credit support and ecosystem development** under one framework.
- It aims to transform India's large organic resource base into:
- Waste → Clean Energy → Organic Manure → Rural Income → Economic Growth
- Thus, GOBARDhan can become an important pillar of India's **clean energy transition, circular economy, rural development and energy security**, while supporting the broader goals of **Atmanirbhar Bharat** and **Viksit Bharat**.



Geography

Heatwaves and Lightning Included as Notified Natural Calamities



Why in News?

- The Union Government has included **heatwaves and lightning** in the list of **notified natural calamities** under the operational guidelines of:
 - **State Disaster Response Fund (SDRF)**
 - **National Disaster Response Fund (NDRF)**
- The inclusion is applicable for the **2026–31 award period**.
- States can now use SDRF funds to provide **relief and assistance** to people affected by heatwaves and lightning.

Basis for Inclusion

- The decision follows the recommendation of the **16th Finance Commission (2026–31)**.
- The recommendation recognised the increasing **frequency and intensity of extreme weather events** due to **climate change**.

Financial Assistance

- States can utilise **SDRF funds** for relief to people affected by:
 - Heatwaves
 - Lightning
- **NDRF assistance** may supplement state resources as per applicable guidelines.
- Heatwave mitigation projects are also eligible under **Disaster Mitigation Funds**.

Notified Natural Calamities

- With the addition of heatwaves and lightning, the list has increased from **12 to 14** categories.

The 14 categories are:

1. **Cyclone**
2. **Drought**
3. **Earthquake**
4. **Fire**
5. **Flood**
6. **Tsunami**
7. **Hailstorm**
8. **Landslide**
9. **Avalanche**
10. **Cloudburst**
11. **Pest Attack**
12. **Frost and Cold Wave**
13. **Heatwave**
14. **Lightning**

Significance

- Strengthens India's **disaster risk financing framework**.
- Allows states to provide financial relief for heatwave and lightning-related disasters.
- Recognises the growing impact of **climate change and extreme weather events**.
- Improves India's capacity for **climate adaptation and disaster response**.

Heatwaves

- A **heatwave** is a prolonged period of abnormally high temperatures compared with the normal climate of a region.
- In India, heatwaves mainly occur from **March to June**.
- They may occasionally extend into **July**.
- **May** is generally the peak month.
- The **India Meteorological Department (IMD)** declares a heatwave based on **region-specific temperature thresholds**.

Lightning

- **Lightning** is a rapid atmospheric electrical discharge caused by the **separation and accumulation of opposite electrical charges**.
- It can occur:
 - Within a cloud
 - Between clouds
 - Between a cloud and surrounding air
 - Between a cloud and the ground

- Lightning is most commonly associated with **thunderstorms**.
- It can also occur in:
 - Volcanic ash plumes
 - Wildfire-generated storm clouds
 - Intense snowstorms

Lightning and Path of Least Resistance

- Lightning generally follows the **path of least resistance**.
- It usually strikes the nearest object with the **highest electric potential**.

Lightning Rod

- A **lightning rod** is a pointed metallic conductor, usually made of **copper**, installed on buildings.
- It:
 - Intercepts lightning strikes
 - Safely conducts electrical current into the ground
 - Protects buildings from damage
- Its pointed design creates a **strong electric field**, helping safely dissipate electrical charges through an **earthing wire**.

Arunachal Pradesh: India's Cartographic Assertion



Why in News?

- India has **formally identified 27 locations in Arunachal Pradesh** on the official **Survey of India map**.
- The move comes in response to China's repeated attempts to assign **alternative names to places in Arunachal Pradesh**.

China's "Cartographic Aggression"

- China has repeatedly attempted to **rename places in Arunachal Pradesh**.

- It issued lists of alternative names in **2017, 2021 and 2023**.
- China refers to Arunachal Pradesh as “**Zangnan**” (**South Tibet**) to reinforce its territorial claims.
- **Strategic Assertion of Sovereignty:**
 - India's official identification of these locations strengthens its **territorial claims and administrative authority** over Arunachal Pradesh.
 - It also improves awareness of the State's **border geography**.

Key Border Locations

- **Long Ju:**
 - An early India-China border flashpoint from **1959**.
- **Thag La:**
 - Fighting began here during the **1962 India-China War**.
- **Strategic Passes:**
 - **Bisa**
 - **Dzo La**
 - **Riza La**
 - **Pukur La**
 - **Thag La**
- **Jairampur:**
 - An important logistics hub in **Changlang district**.
 - It is significant for movement towards **eastern Arunachal Pradesh and the Myanmar border**.
- **Cultural and Historical Sites:**
 - **Jaswant Garh** – commemorates **Jaswant Singh Rawat**.
 - **Sher-e-Thapa Memorial** – honours 1962 war hero **Trilok Singh Thapa**.
 - **Sambho Sarovar** – a high-altitude lake.

Strategic Significance of Arunachal Pradesh

- **Location:**
 - Arunachal Pradesh shares international borders with:
 - **China (Tibet Autonomous Region)** – North

- **Bhutan** – West
- **Myanmar** – East

- **Assam and Nagaland** lie to its south.

● Geopolitical Buffer:

- It is the **largest northeastern state** and acts as a major geographical shield for the **Brahmaputra Valley**.

● Water Security:

- Arunachal Pradesh is the upper catchment area for important tributaries of the **Brahmaputra River**, including:

- **Subansiri**
- **Kameng**
- **Lohit**

- Control over the region has implications for **water and food security** in Northeast India and Bangladesh.

● Military Significance:

- High-altitude passes such as **Thag La and Bum La** have major strategic importance.
- Control over these passes can influence **military dominance** in the region.

The Tawang Factor

- **Tawang** is the birthplace of the **6th Dalai Lama**.
- China's interest in Tawang is also linked to the importance of the region in **Tibetan Buddhist geopolitics** and the future succession of the Dalai Lama.

McMahon Line

- India follows the **McMahon Line**, drawn during the **1914 Simla Convention**, as the basis of its boundary in this sector.
- China rejects the McMahon Line and considers it a legacy of **British imperialism**.

Key Point

India's identification of 27 locations strengthens its cartographic and administrative assertion over Arunachal Pradesh amid China's repeated attempts to rename places in the State.

PACIFIC RING OF FIRE

Eurasian Plate

North American Plate

Pacific Plate

Antarctic Plate

Indian-Australian Plate

Philippine Plate

South American Plate

Caribbean Plate

Nazca Plate

Cocos Plate

South East Indian Rise

Pacific-Antarctic Ridge

Aleutian Trench

Japan Trench

Philippine Trench

Java Trench

South China Sea Trench

East Pacific Rise

Chile Rise

Equator

Volcanic arcs

Major active volcanoes

Pacific Ring of Fire

Scale is true only on the Equator

0 1000 2000 3000 mi

0 2000 4000 km

© Encyclopædia Britannica, Inc.

Recently, **Colombia declared a national state of emergency** after a **magnitude 7.4 earthquake** struck western parts of the country.

- ## Why is Colombia Highly Prone to Earthquakes?

- Along Colombia's Pacific coast, the **Nazca Plate converges with and subducts beneath the South American Plate.**
- This generates significant tectonic stress and frequent seismic activity.

- Colombia lies in a highly deformed region influenced by the interaction of the:
 - **Nazca Plate**
 - **South American Plate**

- Major cities such as:

- are located within or near active Andean seismic zones.

- This increases the number of people and infrastructure exposed to earthquake hazards.

- Movement along an active fault can **redistribute stress within the surrounding crust.**
- This may influence activity on nearby faults.

- However, establishing a direct relationship between separate earthquakes requires detailed **seismological analysis**.

Pacific Ring of Fire

About

- The **Pacific Ring of Fire**, also called the **Circum-Pacific Belt**, is a horseshoe-shaped zone around the Pacific Ocean.
- It is characterised by frequent **earthquakes and volcanic activity**.

Geographical Extent

- It extends for approximately **40,000 km** around the Pacific Ocean.
- It broadly follows the boundaries of several major tectonic plates.

Global Significance

- The Ring of Fire is commonly estimated to account for around:
 - **90% of the world's earthquakes**
 - **75% of the world's active volcanoes**

Major Plates Involved

The region involves interactions among plates such as:

- Pacific Plate
- Nazca Plate
- Cocos Plate
- Juan de Fuca Plate
- North American Plate
- Philippine Plate
- Indo-Australian Plate

It also involves several smaller plates.

Spatial Distribution

The Ring of Fire extends:

- Along the **western coasts of North and South America**
- Through **Alaska and the Aleutian region**
- Across **East and Southeast Asia**
- Towards **New Zealand**

Major Countries

Countries associated with the Ring of Fire include:

Chile, Peru, Ecuador, Colombia, Mexico, United States, Canada, Russia, Japan, Philippines, Indonesia, Papua New Guinea and New Zealand.

Why Does Volcanic Activity Occur?

- In many parts of the Ring of Fire, one tectonic plate is **subducted beneath another**.
- The descending slab promotes **magma generation**.
- The magma can rise towards the surface and produce volcanic activity.

Why Are Earthquakes Common?

- Continuous **plate convergence, subduction and fault movement** cause tectonic stress to accumulate.
- The sudden release of this stress produces frequent earthquakes across the circum-Pacific region.

Colombia

- Colombia is the **only South American country with coastlines on both the Pacific Ocean and Caribbean Sea**.
- Its eastern tropical grasslands are known as **Los Llanos** and form part of the **Orinoco Basin**.
- Colombia occupies less than **1% of Earth's land area** but contains nearly **10% of global biodiversity**, making it a **megadiverse country**.
- It is also a major global centre of **coca cultivation and cocaine production** and one of the principal source countries for international cocaine trafficking.

Zaskar Glaciers and Regional Water Security



Why in News?

A study published in *The Cryosphere*, covering **12 glaciers in the Zaskar Basin during 1992–2023**, found that the glaciers are **slowing down and thinning**, mainly due to climate change.

- The changes have important implications for **water availability in Zaskar and the wider Upper Indus Basin**.

What are the Key Findings of the Study?

- **Decelerating Glacier Velocity:** Glaciers in the Zaskar region have slowed by an average of **2.4 metres/year per decade** over the past 30 years.
- **Accelerated Thinning:** The rate of surface ice thinning increased from around **0.22 m/year during 2000–2005** to about **0.57 m/year during 2015–2020**.
- **Why are Glaciers Slowing?**
 - Global warming causes glaciers to lose mass and become thinner.
 - Thinner ice produces **less driving stress**, reducing the glacier's ability to flow and transport ice from higher accumulation zones towards lower elevations.
- **Non-Uniform Response:** Different glaciers respond differently to warming depending on factors such as:
 - Glacier geometry
 - Debris cover
 - Conditions at the glacier terminus or snout

Impact on Regional Water Security

1. Dependence on Glacial Meltwater

- The **Indus Basin** depends heavily on glacier meltwater to maintain river flows during the **dry summer months**.
- Continued glacier loss can therefore directly affect water availability.

2. Peak Water Phenomenon

- Rapid glacier melting may initially **increase river runoff**. This is known as the “**peak water**” phenomenon.
- However, once glaciers lose a significant amount of their stored ice, their contribution to river flows is expected to **decline sharply**.
- An earlier projection cited by the study suggests that peak water in the region could occur around **2028**.

3. Long-Term Water Security

Persistent glacier thinning and slowing indicate a decline in **long-term freshwater storage**.

This could affect:

- Agriculture
- Drinking-water availability
- Hydropower generation
- Downstream ecosystems
- Regional water security

4. Glacial Lake Outburst Floods

- As glaciers retreat and thin, meltwater can accumulate behind natural dams made of **rocks and moraines**.
- Failure of these dams can cause **Glacial Lake Outburst Floods (GLOFs)**.
- GLOFs can severely damage downstream **infrastructure, settlements and communities**.

The **South Lhonak Lake GLOF in Sikkim in 2023** is an example of this risk.

What are the Key Facts About Zaskar Valley?

- **Location:** Zaskar Valley is situated in the **Union Territory of Ladakh**, on the northern side of the **Great Himalayan Range**.
- It is a **high-altitude semi-desert**.
- The Himalayas create a **rain-shadow effect**, resulting in a cold and dry climate.
- The valley covers around **5,000 sq. km** and has preserved many traditional **Ladakhi and Tibetan cultural practices**.

Important Geographical Features

Penzi La Pass

- Located at around **4,400 metres**.
- It is the highest point on the **Kargil–Zaskar road**.
- It connects Zaskar with the **Suru Valley and Kargil**.
- Heavy snowfall often cuts off the valley for around **eight months a year**.

Chadar Trek

- During winter, the frozen **Zaskar River** historically served as a route into and out of the valley.
- This winter route is now famous as the **Chadar Trek**.

Drang-Drung Glacier

- One of the largest glaciers in Ladakh outside the Karakoram.
- It is an important source of freshwater for regional river systems.

Rivers of Zaskar

- **Doda (Stod) River:** Originates near the **Drang-Drung Glacier**, close to Pensi La, and flows towards Padum.
- **Zaskar River:** Formed by the meeting of the **Doda and Lungnak rivers near Padum**.
- It flows through a deep gorge before joining the **Indus River at Nimmu near Leh**.

Cultural Significance of Zaskar

- Zaskar is often regarded as a **microcosm of Tibetan culture**, with geographical isolation helping preserve traditional practices.
- **Polyandry**, which has largely disappeared from other parts of Ladakh, still survives in some remote areas.
- **Padum** is the administrative headquarters and main town of Zaskar and is an important centre for tourism and trekking.

Monastic Circuit of Zaskar

Monastery	Key Features
Sani Gonpa	Near Padum; associated with Kanishka and contains the Kanishka Stupa.
Karsha Gompa	Largest monastic establishment in Zaskar; founded in the 14th century.
Phugtal Gompa	Cave monastery in the Lungnak Valley, built into a cliffside cave.
Stongde Monastery	Located on a hill overlooking the valley; associated with Tibetan Yogi Marpa .
Burdan Monastery	Located in the Lungnak Valley and built on a rock above the river.
Zangkul Gompa	Known as the meditation retreat of Indian Yogi Naropa .

What Measures Can Strengthen India's Himalayan Cryosphere Resilience?

1. Strengthen Cryosphere Monitoring

- Increase **high-altitude weather stations**.
- Improve ground-based monitoring of:
 - Ice thickness
 - Glacier mass balance
 - Subglacial hydrology
- Combine ground observations with **satellite data**.

2. Reduce Black Carbon

- Regulate emissions from **brick kilns and diesel transport**.
- Promote **clean cooking fuels** in Himalayan areas.
- This can reduce black-carbon deposition on glaciers and slow melting.

3. Adopt Glacier-to-Basin Management

Move from managing individual glaciers to **Integrated River Basin Management**.

It should connect:

Glaciers → Snow → Groundwater → Rivers → Agriculture → Hydropower → Downstream Water Demand

4. Reduce GLOF Risks

- Map **GLOF-prone glacial lakes**.
- Develop effective **Early Warning Systems (EWS)**.
- Use structural measures such as controlled siphoning of expanding lakes where appropriate.

5. Promote Climate Adaptation

- Support **climate-resilient agriculture** for mountain communities.
- Promote local innovations such as **Ladakh's Ice Stupas**, which store winter water and make it available during spring.

Conclusion

The changing glaciers of Zaskar are not only a **climate-change indicator** but also a warning for the future of the **Upper Indus Basin**. Their continued thinning may reduce long-term water storage while simultaneously increasing risks such as GLOFs. India therefore needs a combination of **better glacier monitoring, black-carbon reduction, basin-level water management, disaster preparedness and climate-resilient livelihoods** to protect the Himalayan cryosphere and the communities dependent on it.

Nepal Floods: Why Rescue Operations in Hydropower Tunnels Are So Challenging



Why in News?

- Severe **flash floods and landslides in northern Nepal** have created a major rescue challenge at several hydropower projects along the **Trishuli River**.
- According to Nepal's National Disaster Risk Reduction and Management Authority, as of **31 August 2026**:
 - **903 people have died**
 - **4,247 people remain missing**
 - Among those missing are **933 hydropower workers**
 - **592 foreign nationals** are also reported missing
- Many of the missing workers are feared to be trapped beneath **mud and debris inside hydropower tunnels**.
- Rescue teams, including specialists from abroad, are working to reach these difficult locations. However, damaged infrastructure, bad weather, water, mud and unstable tunnels are making the operation extremely risky.

Why Are Rescue Operations Inside Hydropower Tunnels So Difficult?

1. Heavy Mud and Debris

Flash floods can carry huge quantities of:

- Mud
- Rocks
- Sludge
- Trees
- Other debris

This material can enter underground tunnels and completely block access.

Rescue teams may have to:

- Remove thick layers of mud and debris.
- Break through tunnel doors or walls.
- Bore through blocked sections.
- Use explosives where necessary.

At the **Trishuli 3A hydropower plant**, army personnel had reportedly managed to enter only about **seven yards** into a blocked tunnel.

Another major problem is uncertainty about how much of the tunnel has been filled with **mud or water**.

2. Risk of Sudden Water Ingress

- Flooded hydropower tunnels can contain large quantities of trapped water.
- A major concern is the possible failure of **emergency shutdown systems**. If this happens, water could enter the turbine room and potentially drown people trapped inside.

Rescue drilling itself can also create danger.

- Drilling may open a path for trapped water.
- Sudden water release can flood areas where rescue workers are operating.
- This makes every attempt to breach a tunnel potentially hazardous.

3. Long and Complex Tunnels

- Hydropower projects often have underground tunnels extending for several kilometres.
- This means workers may be located **far away from the tunnel entrance**.
- For example, the tunnel leading to the underground powerhouse at **Trishuli 3A is more than 4 km long**.
- Rescue teams therefore face the difficult task of clearing a long underground passage while dealing with:

- Mud
- Water
- Structural damage
- Poor visibility
- Limited air supply

4. Bad Weather

Weather conditions can quickly change the situation. Continuous or overnight rainfall can:

- Raise river levels.
- Flood areas already cleared by rescue teams.
- Trigger fresh landslides.
- Increase the risk around damaged roads and bridges.
- Stop or delay rescue operations.

This creates a serious problem because even after rescuers clear one section, fresh flooding or landslides can make it inaccessible again.

5. Damaged Roads and Bridges

Flash floods and landslides have damaged critical infrastructure around the affected hydropower projects.

This makes it difficult to transport:

- Rescue personnel
- Heavy equipment
- Medical supplies
- Food and water
- Drilling equipment

Remote Himalayan terrain makes the problem even more serious.

6. Problems with Helicopters and Drones

- Helicopters and drones are extremely important for reaching remote hydropower sites.
- However, their operation is affected by:
 - Heavy rain
 - Strong winds
 - Poor visibility
 - Damaged landing areas
 - Fresh landslides
- At the **Chilime hydropower plant**, damaged infrastructure reportedly made helicopter landing difficult.
- Drones equipped with **thermal cameras** are also being used to search for possible survivors.
- But bad weather can force these operations to stop until conditions improve.

7. Limited Air Supply Inside Tunnels

- Air supply can become a critical issue when tunnels are blocked.
- If a tunnel is filled with mud and debris, normal ventilation may be disrupted.
- On **29 August 2026**, Nepal's Home Minister **Sudan Gurung** said that rescue teams had

reached the mouth of the Trishuli 3A tunnel and were **supplying air through a small opening**.

- This highlights the difficulty of maintaining breathable air while trying to reach people trapped underground.

8. Uncertain Condition of Trapped Workers

One of the biggest challenges is the lack of information about the actual condition of people inside the tunnels.

Rescuers may not know:

- The exact location of workers.
- How much mud or water is inside.
- Whether sections of the tunnel have collapsed.
- Whether survivors have access to air.
- Whether further flooding could occur.

Therefore, rescuers have to balance **speed with safety**.

Moving too slowly can reduce the chances of survival, while rushing into an unstable tunnel can put rescuers themselves at serious risk.

Why Are Hydropower Projects Important in the Himalayan Region?

The Himalayan region has enormous hydropower potential because of its:

- Steep terrain
- High river gradients
- Large river systems
- Significant seasonal water flow

Countries such as **Nepal, India and China** have therefore invested heavily in hydropower development.

The **Trishuli River** and other Himalayan rivers support several hydropower projects.

However, the same mountainous environment that provides hydropower potential also creates exposure to:

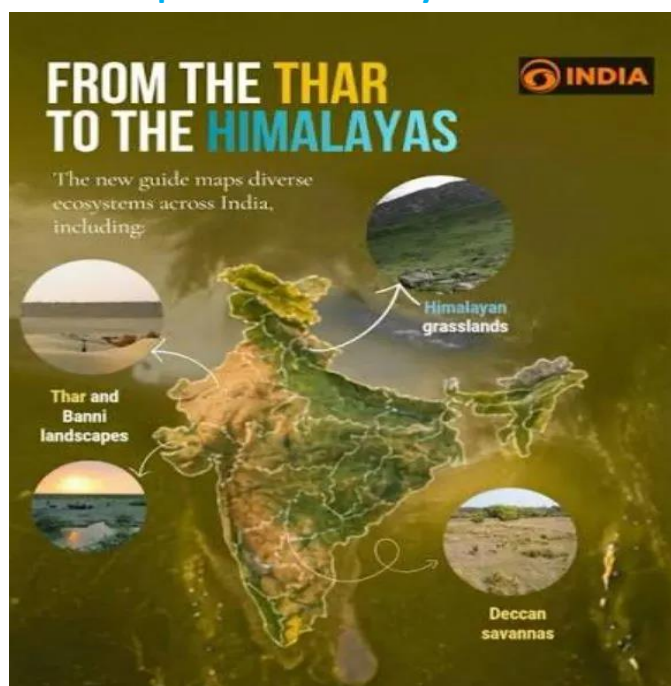
- Flash floods
- Landslides
- Earthquakes
- Glacial hazards
- Sudden changes in river levels

This makes disaster preparedness and safety planning particularly important for hydropower infrastructure.

International Assistance

- The scale and complexity of the rescue operation has led to international technical assistance.
- Nepal's government has said that teams from **India and China** would provide technical support.
- This is significant because both countries have substantial experience and investments in **Himalayan hydropower development**.

India's First Guide to Grasslands and Other Open Natural Ecosystems



Why in News?

India has launched its **first-ever Guide to Grasslands and Other Open Natural Ecosystems (ONEs)** of India at the **17th Conference of the Parties (COP17)** to the **United Nations Convention to Combat Desertification (UNCCD)** in Ulaanbaatar, Mongolia.

What is the Guide to Open Natural Ecosystems?

- The guide provides a detailed account of India's **Open Natural Ecosystems (ONEs)**.
- It covers:
 - Grasslands
 - Savannas
 - Deserts
 - Scrublands
 - Ravines
 - Rocky plateaus

- Other naturally occurring open ecosystems

- It documents their:

- **Geographical settings**
- **Ecological characteristics**
- **Biodiversity**
- **Associated communities and livelihoods**

Which Ecosystems are Covered?

The guide covers diverse open ecosystems across India, including:

- **Himalayan and Terai grasslands**
- **Thar Desert**
- **Banni landscapes**
- **Deccan savannas**
- **Aravalli scrublands**
- **Yamuna-Chambal ravines**
- **Western Ghats rocky plateaus**
- **Central Nicobar grasslands**
- **Tamil Nadu's Theri Kaadu**

Why is the 'Wasteland' Perception a Concern?

- Grasslands, scrublands and ravines are often treated as **"wastelands"** simply because they have limited tree cover.
- The guide highlights that this approach is misleading because these landscapes are:
 - **Naturally occurring ecosystems**
 - Ecologically distinct
 - Rich in biodiversity
 - Important for local communities and livelihoods
- Therefore, the absence of trees should **not be considered a sign of ecological degradation**.

Importance of Science-Based Restoration

The guide calls for a more scientific approach towards the conservation and restoration of ONEs.

Key Requirements

- Strengthening **scientific knowledge** about open ecosystems.
- Improving **land-degradation assessment**.
- Adopting **landscape-level planning**.
- Developing better strategies for **conservation and restoration**.

- These measures can also support India's **Land Degradation Neutrality (LDN) targets**.

Institutional Collaboration

The guide was developed under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

Major partners include:

- **Ashoka Trust for Research in Ecology and the Environment (ATREE)**
- **International Union for Conservation of Nature (IUCN)**
- Other collaborating institutions

Ecological Importance of Open Natural Ecosystems

ONEs play an important role in maintaining ecological balance.

Major Ecological Functions

- Support **rich biodiversity**.
- Contribute to **soil processes**.
- Support **water-related ecological processes**.
- Help in **carbon sequestration**.
- Improve **climate resilience**.
- Provide important habitats for several wildlife species.

Important Species Associated with ONEs

These ecosystems support species such as:

- **Great Indian Bustard**
- **Lesser Florican**
- **Bengal Florican**
- **Indian Wolf**
- **Blackbuck**

Livelihood Significance

Open natural ecosystems are closely linked with the livelihoods of many communities.

They support:

- **Pastoral communities**
- **Livestock-based communities**
- **Agricultural communities**
- **Traditional grazing systems**

Orans and Gauchars

- **Orans** and **gauchars** are examples of traditional landscapes associated with community-based management.
- They reflect long-standing practices of **managing and conserving grazing lands**.

Thus, conserving ONEs is important not only for biodiversity but also for **local livelihoods and traditional community practices**.

Global Significance

- Launching the guide at **UNCCD COP17** gives India an opportunity to highlight the importance of its open ecosystems at the international level.
- It can strengthen the representation of ONEs in global discussions on:
 - **Land restoration**
 - **Rangelands**
 - **Land Degradation Neutrality**
 - Sustainable management of open ecosystems

Significance for India

- The guide marks an important shift from viewing open landscapes simply as areas lacking trees to recognising them as **valuable natural ecosystems in their own right**.
- It connects three important areas:
- **Open Natural Ecosystems → Biodiversity & Livelihoods → Land Restoration & Climate Resilience**
- The initiative can help India develop **better conservation, restoration and land-management strategies** while protecting both **ecological systems and community livelihoods**.

Oil Spill Threatens Hara Mangroves of Qeshm Island



Why in News?

The Hara mangrove forests of Iran's Qeshm Island are facing an environmental threat after oil residues reached the island and parts of its protected mangrove ecosystem. The contamination comes amid continuing conflict and shipping-related oil spills in the Persian Gulf.

Hara Forests

- **Location:** The Hara forests are found around Qeshm Island and the Khuran Strait, close to the Strait of Hormuz.
 - They are among the largest and most ecologically significant mangrove ecosystems in the Persian Gulf.
- **Dominant Vegetation:** The forests are mainly made up of the grey mangrove (*Avicennia marina*).
 - Its specialised root system helps the plant filter salt from its surroundings, allowing it to survive in highly saline coastal waters.
- **Biodiversity:** Hara forests provide important habitat for several marine and terrestrial species.
 - Their waters and wetlands act as breeding, nursery and feeding areas for fish, shrimp, crabs and other marine organisms.
 - The ecosystem also supports migratory birds, marine mammals and critically endangered hawksbill sea turtles.
- **UNESCO Recognition:** The Hara forests are part of the UNESCO-designated Hara Biosphere Reserve.
 - This status highlights the ecological importance of the mangrove ecosystem.
 - Qeshm Island is also recognised for its globally important geological and ecological heritage.
- **Livelihood Importance:** The surrounding marine ecosystem is an important source of livelihood for local fishing communities.
 - The mangrove waterways also support sustainable tourism, especially boat tours and other nature-based activities.

- Thus, the Hara forests are important for biodiversity, local livelihoods and sustainable tourism.

Himalayan Disasters: Growing Vulnerability and the Need for Risk-Sensitive Development



Why in News?

- Recent devastating flash floods in Nepal have killed more than 150 people, with hundreds reported missing and major infrastructure damaged.
- Scientists suspect that an ice-rock avalanche, possibly interacting with an unusual Western Disturbance, contributed to the sudden flooding. Since rivers such as the Bhote Koshi, Gandak and Karnali originate in or pass through the Himalayas before entering India, such disasters can also create downstream risks for India.

Why is the Himalayan Region Highly Disaster-Prone?

The Himalayas face a combination of natural fragility and human-induced pressures, making them particularly vulnerable to compound disasters.

1. Geological Fragility

- The Himalayas are young, actively rising fold mountains.
- Major active tectonic structures include:
 - Main Central Thrust (MCT)
 - Main Boundary Thrust (MBT)
 - Himalayan Frontal Thrust (HFT)

- Large parts of the Indian Himalayan Region fall within **Seismic Zone VI**.
- Fractured rocks and seismic gaps increase susceptibility to **earthquakes, landslides and mass wasting**.
- The **2015 Nepal Gorkha earthquake** triggered thousands of landslides across the region.

2. Climate Change and Cryospheric Instability

Elevation-Dependent Warming (EDW) is accelerating changes in high-altitude environments.

It contributes to:

- **Permafrost thawing**, weakening the ice that binds mountain slopes.
- Expansion of **moraine-dammed glacial lakes**.
- Greater possibility of **Glacial Lake Outburst Floods (GLOFs)**.
- Increased risk of **ice-rock avalanches**.

Examples:

- **2021 Chamoli disaster**: Associated with the collapse of a hanging glacier and unstable rock/permafrost conditions.
- **2023 South Lhonak Lake disaster, Sikkim**: A GLOF caused by breaching of a moraine dam devastated downstream areas.

3. Extreme Hydrological Events

- Changing monsoon behaviour can produce intense **localised cloudbursts**.
- Steep Himalayan gradients rapidly convert intense rainfall into **flash floods and debris flows**.
- The **2013 Kedarnath disaster** was intensified by a cloudburst and breaching of **Chorabari Lake**.

Human Factors Increasing Disaster Risk

1. Unsuitable Infrastructure Development

- **Vertical cutting of mountain slopes** without adequate stabilisation can trigger landslides.
- Rapid urbanisation and mass tourism have increased construction on **unstable debris and flood-prone areas**.

- Highway widening under the **Char Dham Pariyojana** has been associated with recurring landslides in vulnerable locations such as Lambagarh.
- The Supreme Court-appointed **High Powered Committee** had warned about the potential ecological consequences of such development.

2. Damage to Hydrogeological Systems

- Tunnelling and blasting for hydropower projects can disturb underground aquifers.
- Alteration of groundwater pathways and pore-water pressure may contribute to **land subsidence and instability**.
- The **Joshimath crisis** illustrates the risks associated with such geological and hydrogeological disturbances.

3. Poor Debris Management

- Excavated material from roads and tunnels is often dumped near river channels.
- During floods, this material can be mobilised into destructive **debris flows**.
- Such flows can severely damage downstream infrastructure, including dams such as **Teesta-III**.

Governance and Regulatory Challenges

1. Project-by-Project Environmental Assessment

- Individual projects are often evaluated separately.
- This can overlook the **combined impact of roads, hydropower projects and urbanisation** within an entire river basin.
- Greater use of **Strategic Environmental Assessments (SEAs)** is therefore required.

2. Construction on Floodplains

Despite restrictions, illegal construction continues on **active river terraces and designated No-Development Zones**.

3. Weakening of Ecological Safeguards

Relaxations relating to the **Bhagirathi Eco-Sensitive Zone** and provisions under the **Forest Conservation (Amendment) Act, 2023** have raised concerns about adequate ecological and slope-stability scrutiny for large infrastructure projects.

Important Committee Recommendations

Committee	Major Recommendations
Mishra Committee, 1976	Restrict construction in unstable/landslide-prone areas; prevent indiscriminate tree cutting and boulder removal
J.C. Pant Committee, 1999	Strengthen disaster-management institutions, building codes, financing, training, preparedness and coordination

The **J.C. Pant Committee** also recommended integrating disaster management into the **Seventh Schedule** and establishing appropriate national and State-level legal frameworks.

Way Forward

1. Adopt Carrying-Capacity-Based Development

- Make **Strategic Environmental Assessment** and cumulative-impact studies mandatory for major Himalayan projects.
- Implement **River Regulation Zones** to restrict permanent construction on active floodplains.

2. Protect Springs and Groundwater

- Expand **springshed management** using hydrogeological mapping.
- Identify recharge zones and avoid disruptive tunnelling in sensitive areas.

3. Promote Nature-Based Slope Stabilisation

Move beyond excessive dependence on rigid concrete structures by using:

- Deep-rooted vegetation such as **Vetiver**
- Hydroseeding
- Geo-textiles
- Vegetated terraces

4. Strengthen Multi-Hazard Early Warning

Integrate:

- **InSAR satellite monitoring**
- High-altitude **Automated Weather Stations**
- **Doppler weather radars**
- Real-time monitoring of glaciers, slopes and river systems

This can increase the warning time available to downstream communities.

5. Regulate Mountain Tourism

Shift towards **low-impact, regulated eco-tourism** through:

- Tourist carrying-capacity limits
- Pre-registration systems
- Better waste-management requirements
- Conservation-linked tourism charges

6. Integrate Disaster Risk into Development Planning

Infrastructure and urban planning in the **Indian Himalayan Region (IHR)** should incorporate:

- **Disaster Risk Reduction**
- Climate adaptation
- Geological and hydrological assessments
- **Sendai Framework** principles

Coconut Sector in India: Towards Sustainable Growth and Higher Value Addition



Why in News?

- The **Coconut Promotion Scheme**, announced in **Union Budget 2026–27**, aims to strengthen India's coconut economy through **sustainable cultivation, productivity enhancement, value addition and farmer-income growth**.
- India is already the **world's largest coconut producer**, while the sector is increasingly becoming important for agricultural exports.

India's Position in the Global Coconut Economy

- **1st** in global coconut production.
- **3rd** in terms of area under coconut cultivation.
- India contributes around **31.24% of global production** and **17.90% of global cultivation area**.

- During **2024–25**:
 - Production: **20,301.22 million nuts**
 - Cultivation area: **2.19 million hectares**
 - Productivity: **9,249 nuts/ha**
- **Keralam** has the largest cultivated area.
- **Tamil Nadu** is the leading producer.
- **Andhra Pradesh** has the highest productivity, followed by **West Bengal and Tamil Nadu**.

Growing Export Potential

- Coconut-product exports reached **₹7,038.35 crore (USD 794.70 million) in 2025–26**.
- This represented a **62% rise** over the previous year's ₹4,349.03 crore.
- India's export basket has moved beyond traditional products such as:
 - Coconut oil
 - Copra
 - Desiccated coconut
 - Coconut-shell charcoal
- Increasingly exported **value-added products** include:
 - Virgin coconut oil
 - Coconut milk
 - Coconut water
 - Activated carbon
- Major markets include the **USA, UAE, Sri Lanka, Germany, Russia, Turkey, Belgium, UK and Netherlands**.

Government Support for the Coconut Sector

Coconut Development Board (CDB)

- Established on **12 January 1981** under the **Ministry of Agriculture and Farmers Welfare**.
- Headquarters: **Kochi**.
- Works across **22 States/UTs**.
- Major functions include:
 - Improving production and productivity
 - Supplying quality planting material
 - Managing pests and diseases

- Promoting processing and technology
- Expanding product diversification and markets

MSP Support for Copra

Copra, the dried coconut kernel, is among the **22 mandated crops covered by the MSP system**.

Types of Copra

Type	Major Use
Milling Copra	Primarily used for coconut oil extraction
Ball Copra	Used as an edible dry fruit and for religious purposes

NAFED and **NCCF** function as the Central Nodal Agencies for copra procurement.

Major Coconut Development Initiatives

1. Quality Planting Material

The programme focuses on improving the availability of healthy and genuine seedlings through:

- Seed production farms
- Seed gardens
- Nurseries
- Quality certification systems

Demonstration-cum-Seed Production Farms

- **DSPFs** demonstrate scientific cultivation practices while producing quality planting material.
- New DSPFs receive **₹30 lakh** during the first two years.
- From the third year, maintenance support can reach **₹1 lakh/ha/year** until yield stabilisation.

Other measures include:

- Nucleus coconut seed gardens
- Small coconut nurseries
- Nursery accreditation and rating
- Support to public-sector nurseries, **SAUs, PSUs, KVKs and CDB farms**

2. Expansion of Coconut Cultivation

- Financial assistance: **₹56,000/ha**
- Released in **two equal annual instalments**.

- Maximum area: **2 hectares**
- Minimum area: **0.08 hectare (20 cents)**
- Around **2,175 hectares** were brought under new coconut cultivation during **2025–26**.
- Major areas include **Keralam, Tamil Nadu, Karnataka, Andhra Pradesh, Odisha, West Bengal, Gujarat, Assam and Arunachal Pradesh**.

3. Productivity Improvement in Existing Plantations

The **Productivity Improvement Through Coconut-Based Cropping System (PICCS)** promotes integrated farming in existing coconut gardens.

- Implemented through State Agriculture/Horticulture Departments and CDB.
- **100% subsidy** of up to **₹42,000/ha**
- Maximum **2 hectares per beneficiary**
- Assistance provided in two instalments.
- Major participating regions include **Tamil Nadu, Andhra Pradesh, Keralam, Assam, Goa and Puducherry**.

Other components include:

- **Community tanks, farm ponds and reservoirs**
- Organic farming and certification
- Farm mechanisation
- Modern post-harvest and processing technologies

4. Replanting and Rejuvenation

The programme targets **old, diseased, senile and low-yielding coconut palms**.

Key interventions:

- Removal of unproductive palms
- Plantation of quality seedlings
- Scientific rejuvenation of existing gardens
- Project-based implementation according to State-specific conditions
- Financial support of up to **₹54,000/ha over two years**

5. Technology and Worker Protection

Technology Mission on Coconut (TMOC)

Supports technological solutions for:

- Pest and disease control

- Processing
- Product diversification
- Other technology-driven interventions

Kera Suraksha Insurance Scheme

Provides accident insurance to workers such as:

- Coconut tree climbers
- Neera technicians
- Hybridisation workers
- Other coconut-sector labourers

Coconut Promotion Scheme, 2026–27

The scheme specifically addresses problems such as **pest attacks, root wilt disease and ageing plantations**.

Major Focus Areas

1. **Quality planting material**
2. Expansion into suitable new areas
3. Replanting and rejuvenation of ageing plantations
4. **Integrated crop-health management**
5. Integrated processing and value addition
6. Export promotion

The scheme forms part of the **₹350-crore allocation for high-value agriculture**, covering **coconut, cashew and cocoa**.

Long-Term Objective

The broader aim is to build a **resilient coconut economy**, raise farmer incomes and help India emerge as a leading global supplier of **coconut and coir products during the 2030s**.

Skill Development and Rural Entrepreneurship

- CDB runs skill programmes covering:
 - Coconut harvesting
 - Processing
 - Value addition
- **Kera Kaushal Kendra** promotes coconut-based micro-enterprises and rural entrepreneurship.
- During **2025–26**, CDB organised **414 awareness and training programmes** covering scientific cultivation, government schemes and value addition.

Ice-Rock Avalanche and Formation of Barrier Lakes in Nepal



Why in News?

- A massive **ice-rock avalanche** triggered devastating flash floods in Nepal's **Bhote Koshi–Trishuli river system**. Following the event, satellite imagery detected **new barrier/glacial lakes** near the **avalanche source along the Nepal–Tibet (China) border**.
- These unstable water bodies have increased the possibility of **Landslide Lake Outburst Flood (LLOF)** or **Glacial Lake Outburst Flood (GLOF)**, while also disrupting rescue operations along the **Gyirong–Rasuwagadhi corridor**.

Formation of New Lakes

- At least **two new glacial/barrier lakes** have been identified:
 - **19.80 hectares**
 - **7.28 hectares**
- The lakes have been created behind large accumulations of **moraines**—rock, soil and other debris deposited by moving glaciers.
- Their temporary nature makes them potentially hazardous, particularly if the natural debris barriers become unstable.

What is a Barrier Lake?

- A **barrier lake**, also called a **landslide lake**, develops when a major **landslide, rockfall or avalanche blocks a river or stream** in a mountainous valley.

Formation Process

- Avalanche/Landslide → River blocked by debris → Natural dam forms → Water accumulates → Dam becomes unstable → Sudden breach → Outburst flood

Key characteristics:

- The debris acts as a **temporary natural dam**.
- There may be **little or no natural outlet** for the trapped water.
- Continuous inflow can cause rapid accumulation and increasing pressure against the barrier.

Major Triggers

Barrier lakes can form due to:

- **Earthquakes**
- **Intense rainfall**
- **Glacier collapse**
- Rockfalls and avalanches
- Instability of steep mountain slopes

Landslide Lake Outburst Flood (LLOF)

- An **LLOF** occurs when the natural debris barrier holding a landslide lake fails.

How Does an LLOF Occur?

- Water accumulation → Rising hydraulic pressure/overflow → Breach of debris dam → Sudden release of water and sediment → Downstream flash flood
- The released flow may contain enormous quantities of **water and debris**, making the event highly destructive.

LLOF Vs. GLOF

Feature	LLOF	GLOF
Water body formed by	Landslide, rockfall or avalanche debris	Glacial processes, commonly a retreating glacier/terminal moraine
Natural dam	Landslide/avalanche debris	Glacier or glacial moraine
Main hazard	Sudden release of impounded water and debris	Sudden release of glacial lake water and debris
Typical terrain	Steep mountainous valleys	Glaciated mountain regions
Potential impact	Catastrophic downstream flooding	Catastrophic downstream flooding

Both can produce **rapid and highly destructive floods** in downstream valleys.

Bhote Koshi–Trishuli River System

Bhote Koshi

- The **Bhote Koshi** forms the upper course of the **Sun Koshi River**.
- It belongs to the larger **Koshi River basin**.
- It originates in **Tibet**, where it is known as **Poiqu**.
- It then flows steeply through the Himalayas into Nepal.
- Its **steep gradients** make the river system particularly vulnerable to:
 - Flash floods
 - GLOFs
 - Sudden high-volume flows

Trishuli River

- The **Trishuli** is an important transboundary river of the **Narayani (Gandaki) river system**.
- It originates in **Tibet** and flows southward through **central Nepal**.

Why is the Situation Particularly Dangerous?

- The newly formed lakes represent an **additional downstream hazard** after the initial avalanche and flooding.
- If the temporary barriers fail:
- Barrier-lake breach → Sudden water/debris release → Downstream flooding → Additional damage to settlements, infrastructure and transport corridors
- The presence of unstable lakes can therefore transform a **single mountain hazard into a cascading disaster**.

Strategic Importance of the River Corridors

The **Gyirong–Rasuwadhi corridor** is strategically important because the region serves as a:

- **Trade corridor**
- **Transit route**
- **Hydropower zone**
- **Link between Nepal and China**

The formation of unstable lakes has therefore affected not only disaster response but also **transport and cross-border connectivity**.

Arctic Warming and Transformation of Tundra Ecosystems



Why in News?

- Studies show that **Arctic warming is rapidly transforming tundra vegetation**, with plants becoming taller and greener and shrubs expanding into previously colder areas. This provides important evidence of **Arctic amplification, climate change and ecosystem responses to warming**.

Arctic Tundra: Natural Characteristics

- **Harsh climatic conditions**
 - Extremely cold winters
 - Strong winds
 - Short growing season
- **Permafrost**
 - Permanently frozen subsoil restricts **deep root penetration**.
 - This historically favoured **small, low-growing vegetation**.

Arctic Amplification

- **Meaning:** The Arctic is warming considerably faster than the global average.
- **Rate:** Around **4 times faster** than the rest of the planet.
- **Example:** Alaska's North Slope has warmed by approximately **2.7°C over the past 40 years**.
- **Major driver:** Fossil-fuel emissions.

Shrubification

- **Meaning:** Expansion of taller shrubs into areas previously dominated by low-growing tundra vegetation.
- **Cause:**
 - Rising temperatures
 - More favourable growing conditions
 - Expansion of species into previously colder regions
- **Significance:** It is an important **indicator of climate change in the Arctic**.

How Shrubification Accelerates Warming?

1. Reduced Albedo

- Snow-covered tundra has **high albedo**, reflecting much of the incoming solar radiation.
- Taller, darker shrubs rise above the snow and **reduce surface reflectivity**.
- This results in:
**Lower albedo → Greater solar absorption
→ More heat → Further Arctic warming**

2. Increased Methane Emissions

- Shrubs trap more snow around the ground.
- Snow acts as an **insulating layer**, keeping the underlying soil warmer during winter.
- Warmer soil allows microbes to remain active for longer.
- This can increase **methane emissions**.

Shrub expansion → More snow trapping → Warmer soil → Greater microbial activity → More methane

Impact on Carbon Balance

Effect	Impact
Increased vegetation	Greater CO₂ absorption
Reduced albedo	Greater solar heat absorption
Increased methane release	Stronger greenhouse effect

- Although additional vegetation can increase the **natural carbon sink**, this benefit may be offset by **reduced albedo and increased methane emissions**.

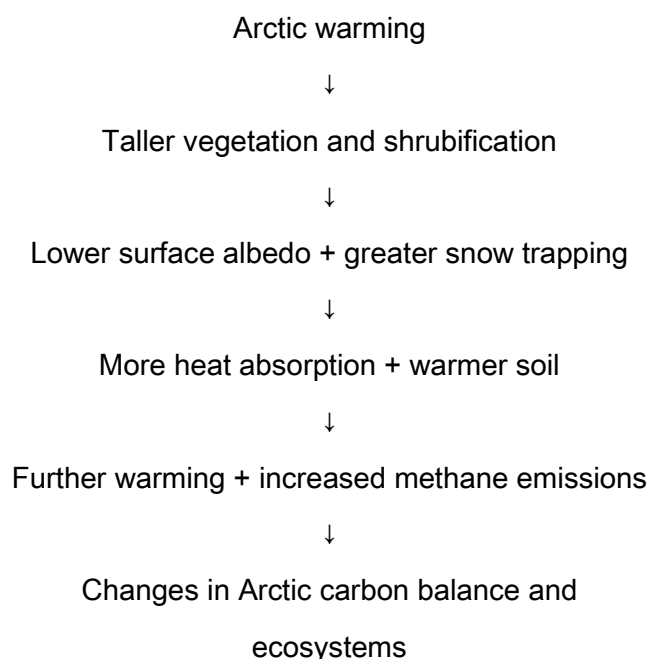
Ecological Consequences

- **Habitat modification**
 - Shrub expansion, including **willows**, increases shade over streams.
 - This changes local environmental conditions.
- **Impact on biodiversity**
 - Altered stream habitats can affect:
 - **Fish**
 - **Insects**
 - **Birds**
- Thus, Arctic warming can cause changes across the **entire ecosystem**, rather than affecting vegetation alone.

Adaptation and Mutualism

- Climate stress is prompting scientists to reconsider how Arctic species survive changing conditions.
- **Mutualism**—beneficial cooperation between species—may play an important role in adaptation.
- This suggests that survival under severe climate stress may depend not only on **competition**, but also on **inter-species cooperation**.

Climate Feedback Loop





Crux of The Hindu & Indian Express

Geography

Petermann Glacier Calving Creates New Ice Island



Why in News?

- **Petermann Glacier** in northwest Greenland calved a massive **76.4 sq. km** ice island on **4 August 2026**.
- It is the glacier's **largest loss of floating ice since 2012**.
- It is also described as the **largest Arctic calving event since 2020**.
- The event was reported by an international research team partly led by the **University of Ottawa**.

Key Features of the New Ice Island

- The newly formed ice island is a **tabular iceberg** that detached from the glacier's **floating ice tongue**.
- It is estimated to be up to **150 metres thick**.
- Its area of **76.4 sq. km** is roughly comparable to **Manhattan Island**.
- The ice island provides scientists with an opportunity to study how large Arctic ice masses:
 - Form
 - Drift
 - Fracture
 - Break apart over time

Petermann Glacier

- Petermann Glacier is located in **northwest Greenland**.
- It has one of Greenland's major remaining **floating ice tongues**.
- Scientists have been monitoring its ice tongue and developing fractures for several years.
- Long-term satellite observations have tracked changes in the glacier since **2019**.

How Was the Calving Detected?

- Researchers had been monitoring the glacier through **satellite imagery** and other observations.
- On **3 August 2026**, imagery from the **European Space Agency's Sentinel-1 mission** showed significant deterioration along the centreline of the ice tongue.
- By **20:00 UTC on 4 August**, the new ice island had detached from the eastern side of the glacier.
- The event was detected by **Adam Garbo**, a doctoral student in glaciology at the University of Ottawa.

International Research Collaboration

The research involves scientists and institutions from:

- **University of Ottawa**
- **University of Stirling**
- **Environment and Climate Change Canada**
- **Lancaster University**
- **University of Leeds**

Researchers have been studying the glacier's floating ice tongue, including the development of **fractures and signs of instability**.

Why Are Arctic Ice Islands Important?

- Large **tabular icebergs** are relatively common around Antarctica.
- Similar large ice islands are **much rarer in the Arctic**.
- Because large ice islands can remain intact for several years, they provide valuable opportunities to study:
 - **Glacier retreat**
 - **Ocean conditions**
 - **Ice dynamics**
 - **Polar-region hazards**

- Processes responsible for the formation and breakup of large ice masses

Research on Arctic ice islands can also provide knowledge that may be useful for understanding **ice processes in other polar regions**.

More Calving Events Expected

- Researchers expect the recent event may **not be the last major calving event** from Petermann Glacier.
- Two additional large ice islands are expected to detach as existing **rifts continue to spread across the ice tongue**.
- Their projected areas are approximately:
 - 94 sq. km
 - 84 sq. km

If all three events occur, the combined loss could reach around **254 sq. km**, equivalent to about **22% of the Petermann ice tongue**.

Impact on Arctic Navigation

The event also has important implications for **marine safety**.

- Large ice islands can drift for years after separating from glaciers.
- As they move, they gradually **fracture into smaller pieces**.
- These smaller pieces can become difficult to track and create hazards for:
 - Ships
 - Offshore infrastructure
 - Resource operations
 - Arctic navigation

The **Canadian Ice Service** under Environment and Climate Change Canada is monitoring the movement of the newly formed ice island and assessing possible risks to **Arctic navigation and offshore infrastructure**.

How Will Scientists Monitor the Ice Island?

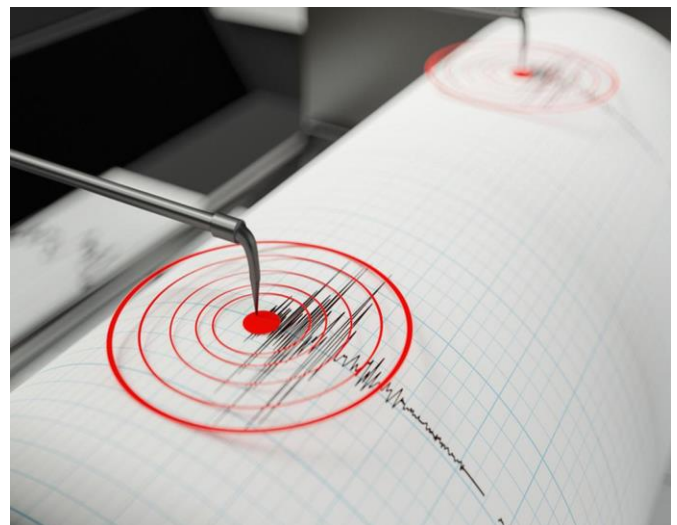
- Researchers will continue studying the aftermath using:
 - Satellite imagery
 - Aerial observations
 - Tracking data

- These observations will help scientists understand the mechanisms responsible for **ice-tongue instability, calving and Arctic glacier retreat**.

Significance

- The Petermann Glacier event is important because it combines **climate science, glacier dynamics and Arctic maritime safety**.
- The newly formed ice island provides a rare natural laboratory for studying the behaviour of large Arctic ice masses. At the same time, its movement and eventual fragmentation could create new challenges for **shipping and offshore activities** in the Arctic.

Maharashtra Earthquake Swarm: Causes and Significance



Why in News?

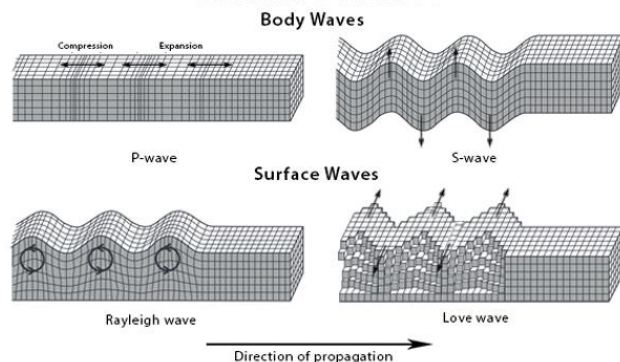
- Maharashtra has experienced a **series of small earthquakes** over the last fortnight.
- Around **29 tremors** were reported:
 - 24 in and around **Nashik**
 - 4 in **Palghar**
 - 1 in **Nagpur**
- The strongest tremor was recorded in **Nagpur on 8 August**, with a magnitude of **4.3**.
- Most of the earthquakes were **shallow**, occurring at depths of around **5–8 km**.
- Since there was no clear mainshock and several earthquakes of comparable magnitude occurred over a period of time, seismologists describe this pattern as an **earthquake swarm**.

What is an Earthquake?

- An earthquake is the **sudden movement of rocks along a fault or zone of weakness in the Earth's crust.**
- Rocks can remain locked because of **friction** even when forces are acting on them.
- As stress continues to build, the rocks may eventually slip and release stored energy as **seismic waves.**

Major Types of Seismic Waves

Seismic Waves



- **P Waves:** Compress and stretch rocks in the direction in which the waves travel.
- **S Waves:** Move rocks sideways through a shearing motion.
- **Surface Waves:** Travel along the Earth's surface.
- The combined movement of these waves produces the **shaking experienced at the surface.**

What is an Earthquake Swarm?

- In a normal earthquake sequence, a major **mainshock** is usually followed by smaller **aftershocks.**
- In an **earthquake swarm**, there is **no clearly identifiable mainshock.**
- Instead, several earthquakes of relatively comparable magnitude occur over **days or even longer periods.**
- Their magnitudes can fluctuate during the swarm.

Important Point

- An earthquake swarm **does not necessarily mean that a larger earthquake is about to occur.**
- Different earthquake swarms can have **different causes.**

Examples

- **Palghar, Maharashtra:** Experienced a major earthquake swarm beginning in **November 2018**, with thousands of earthquakes continuing for more than a year.
- More short-duration seismic activity has also been recorded in the region in subsequent years.
- **Campi Flegrei, Italy:** A major seismic swarm occurred in mid-2024. On **20 May**, more than **150 earthquakes** were recorded within a few hours, including a **magnitude 4.4** earthquake, the strongest in the region in four decades.

Why Does Maharashtra Experience Earthquake Swarms?

1. Intraplate Location

- Maharashtra lies far from a major **tectonic plate boundary.**
- Therefore, many earthquakes occurring in the State are classified as **intraplate earthquakes.**
- Such earthquakes occur **within a tectonic plate**, rather than at its boundary.

2. Deccan Traps

- Much of Maharashtra lies on the **Deccan Plateau.**
- Its bedrock mainly consists of extensive **basaltic lava flows**, known as the **Deccan Traps.**
- These formations were created around **66 million years ago** when huge quantities of lava erupted through fissures in western-central India.
- Thousands of individual lava flows accumulated over time, in some places reaching **hundreds of metres in thickness.**
- After solidification, these basalt layers developed **fractures and other weaknesses.**
- Such structures can transmit accumulated tectonic stress in ways similar to faults.

3. Continuing Movement of the Indian Plate

- The **Indian Plate** continues to move and deform.
- This movement generates and accumulates stresses even in the interior of the plate.

- Since the Deccan Plateau lies within the Indian Plate, these stresses can activate existing fractures and structures.

4. Local Geological Structures

- Studies around **Nashik** have identified geological structures such as:
 - **Shear zones**
 - **Fractures**
- These structures can contribute to local seismic activity.

What Role Does Water Play in Earthquakes?

Rainfall-Triggered Seismicity

- Water can move deeper underground through:
 - Soil
 - Fractures
 - Permeable rocks
- If water reaches a network of cracks connected to a fault, it can increase **pore pressure**.
- Increased pore pressure can reduce the stability of rocks and contribute to fault movement.
- When rainfall-induced water movement triggers earthquakes, the phenomenon is called **rainfall-triggered seismicity**.

Evidence from Palghar

- Researchers studying the **2018 Palghar earthquake swarm** using satellite data found evidence of **land subsidence**.
- They suggested that rainwater entering the subsurface could have helped trigger faults.
- A detailed study of more than **21,000 earthquakes recorded between January 2019 and October 2020** found that seismic activity increased following rainfall.
- The study suggested that water migrated through **cracks and fissures**, increasing pore pressure and helping drive the earthquake swarm.

But Rainfall Is Not the Only Explanation

- Other studies have given different views about the importance of rainfall.
- Possible contributing factors include:
 - **Normal faulting**
 - **Aseismic deformation**

- **Tectonic stresses**
- Existing **geological structures and fractures**

Aseismic deformation refers to gradual movement or deformation of the Earth's crust that does not produce a detectable earthquake.

Koyna: Reservoir-Triggered Seismicity

- Maharashtra's **Koyna-Warna reservoir region** is a famous example of **reservoir-triggered seismicity**.
- Scientists have observed earthquakes in the region for decades.

1967 Koyna Earthquake

- On **10 December 1967**, a **magnitude 6.3 earthquake** occurred southwest of the Koyna Dam.
- It caused extensive damage in **Koynanagar**.
- Houses were destroyed and **more than 200 people were killed**.
- Such a major earthquake was unprecedented in the region.

Link with the Reservoir

- There was reportedly no recorded seismicity in the region before construction of the dam began in **1956**.
- The Koyna reservoir was filled in **1962**.
- Seismic activity began after the reservoir was filled and could be detected at the seismological station in **Pune**, around 120 km away.
- Minor seismic activity eventually culminated in the **1967 Koyna earthquake**.

Shompen Tribe and the Great Nicobar Island Development Project



Why in News?

- Tribal leaders have accused the **Andaman and Nicobar Islands administration** of trying to push the **Shompen tribe**, an isolated indigenous community, towards a “modern lifestyle” as part of the controversial **Great Nicobar Island (GNI) development project**.
- The project includes a proposed **power plant at Galathea**, located near Shompen settlements.
- The controversy has raised concerns over **tribal rights, displacement, consent, cultural preservation and development in ecologically sensitive areas**.

What is the Great Nicobar Island Project?

- The **Great Nicobar Island (GNI) development project** is a large infrastructure project with an estimated cost of around **₹91,000 crore**.
- The project includes major infrastructure development, including a proposed **power plant at Galathea**.
- The project is located in an area inhabited by indigenous tribal communities, including the **Shompen and Nicobarese**.
- The proximity of planned infrastructure to tribal settlements has raised concerns about possible impacts on their traditional way of life.

What Did the Tribal Council Allege?

- The **Tribal Council of Great and Little Nicobar** raised concerns about the possible impact of the GNI project on the Shompen.
- At a meeting held on **16 July 2026**, Council members reportedly raised concerns about the Shompen being disturbed by the project.
- According to the Council, then-Chief Secretary **Chandra Bhushan Kumar** said that the Shompen could not continue living in their existing way and would have to “**adopt a modern lifestyle**” associated with the development project.
- The Council also alleged that a **settlement for the Shompen** could be constructed when the project comes up.
- Mr. Kumar, who was appointed **Union Labour Secretary** two weeks after the meeting, did not respond to *The Hindu's* queries regarding these allegations.

Who are the Shompen?

- The **Shompen** are an **isolated indigenous hunter-gatherer community** living on **Great Nicobar Island**.
- Their population is estimated at **less than 300 people**.
- They have traditionally depended on the island's natural environment and forests for their livelihood.
- The Shompen are recognised as a **Particularly Vulnerable Tribal Group (PVTG)**.
- Their relatively isolated way of life makes the protection of their **land, livelihood, culture and traditional practices** particularly important.

Government's Earlier Position

- Two years ago, Environment Minister **Bhupendra Yadav** stated in a written response that the Great Nicobar infrastructure project “**will not disturb or displace**” the Shompen people.
- The present allegations by the Tribal Council have therefore raised questions about how the project's implementation may affect the community.

Concerns Raised by the Tribal Council

1. Impact on Shompen Way of Life

- Tribal leaders fear that large-scale infrastructure development could disturb the traditional lifestyle of the **Shompen**.
- The alleged proposal to shift them towards a “modern lifestyle” has raised concerns about **cultural assimilation and loss of traditional practices**.

2. Possible Settlement

- The Council alleged that the administration discussed the possibility of creating a **settlement for the Shompen** when the project is developed.
- Such a move has raised concerns about whether an isolated community could be affected by changes to its traditional habitat.

3. Lack of Consultation

- The Tribal Council says its concerns raised during the **16 July meeting** were not properly reflected in subsequent administrative directions.

- It alleges that several concerns raised during the meeting were omitted from later instructions issued by the administration.

Concerns of the Nicobarese Community

- The **Nicobarese** are another major indigenous community of the Nicobar Islands.
- The July 16 meeting was primarily intended to discuss concerns of the **Nicobarese tribe** regarding the GNI project.
- Council members reiterated their demand to **relocate to their ancestral villages along the western coast of Great Nicobar**.
- They also questioned why their **consent had not been sought** regarding the notification of wildlife reserves in the Nicobar group of islands.

Concerns Over Administrative Records

- In a recent letter to the administration, the Tribal Council stated that directions issued by the **Tribal Welfare Department** referring to the July 16 meeting did not mention several of the concerns raised.
- Instead, the directions reportedly referred mainly to issues raised by the Nicobarese in:
 - A **2017 letter**
 - A **2019 representation**
- The Tribal Council therefore argued that its more recent concerns were not adequately reflected.
- Officials of the Tribal Welfare Department did not respond to requests for comment.

Wildlife Sanctuaries and Tribal Consent

- The Tribal Council also raised concerns regarding the notification of **new wildlife sanctuaries** in the Nicobar Islands.
- Administration officials reportedly assured the Council that **Nicobarese hunting rights would be retained** in islands where the new wildlife sanctuaries were notified.
- However, Council members argued that retaining hunting rights does not resolve the larger issue that the sanctuaries were allegedly notified **without their consent**.

Relocation and Project-Affected Villages

- The Council said that there were **contradictory versions** regarding:

- Relocation
- Project-affected villages

- These differences were reportedly found between statements attributed to the **Chief Secretary** and a member of the **Andaman Adim Janjati Vikas Sangathan**.
- This has added to uncertainty regarding how tribal communities will be affected by the development project.

Pending Development Needs

- The Tribal Council had raised several developmental and infrastructure-related demands in its **2017 and 2019 communications**.
- According to the Council, many of these requirements **remain pending**.
- The Council therefore argues that existing developmental needs of tribal communities should also be addressed alongside the proposed large-scale infrastructure development.

Key Issues Involved

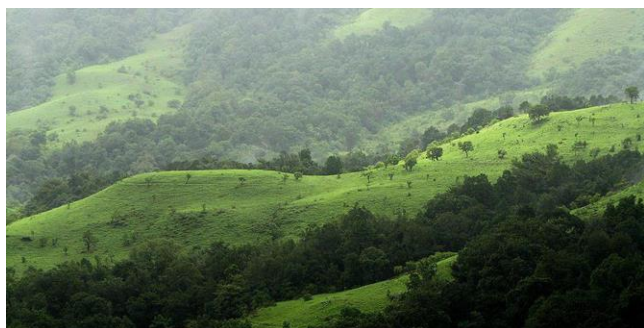
- **Tribal rights and protection of indigenous communities**
- **Protection of Particularly Vulnerable Tribal Groups**
- **Cultural preservation**
- **Consent and consultation**
- **Relocation and displacement**
- **Traditional livelihood and hunting rights**
- **Wildlife conservation**
- **Infrastructure development**
- **Environmental and social impact of mega projects**
- **Balance between development and protection of indigenous communities**

Way Forward

- Ensure **meaningful consultation** with affected tribal communities before major decisions are taken.
- Protect the **traditional habitat and livelihood practices** of the Shompen and Nicobarese.
- Any relocation or settlement proposal should be considered only after proper consultation and safeguards.

- Ensure that tribal concerns are **accurately recorded in official proceedings and administrative directions.**
- Clearly establish the impact of the GNI project on **tribal settlements and project-affected villages.**
- Balance infrastructure development with **cultural rights, ecological protection and tribal welfare.**
- Development should improve access to essential services without forcing isolated communities to abandon their **traditional way of life.**

Climate Change and Western Ghats Forests



Why in News?

- The **Nilgiris** has received **deficient rainfall** this year, raising concerns over **water security.**
- Researchers have warned that climate change is changing the **seasonal cycle of forests.**
- This can affect flowering, pollination, seed production and forest regeneration.

Study on Nilgiri Biosphere Reserve

- Study: **"Mapping forest phenological shift in Nilgiri Biosphere Reserve, Western Ghats: Response to Climate Change"**
- Published in **2024** in *Remote Sensing*.
- Study period: **2000–2020**
- Researchers used **satellite imagery** to study forest changes.

Climate Changes Recorded

- Between **1950 and 2018:**
 - Temperature increased by **0.01°C per year.**
 - Rainfall decreased by **3.97 mm per year.**

What is Forest Phenology?

- It means the **timing of biological activities in plants.**

Researchers studied:

- **Start of Season (SOS):** Beginning of vegetation growth.
- **End of Season (EOS):** End of active vegetation growth.
- **Length of Season (LOS):** Period between SOS and EOS.

Four forest types were studied:

- Moist deciduous
- Dry deciduous
- Semi-evergreen
- Wet evergreen

Major Findings

2001–2010

- Start of Season was **delayed** in all four forest types.
- Seasons became shorter in:
 - Dry deciduous
 - Semi-evergreen
 - Wet evergreen forests
- Moist deciduous forests showed an increase of **4.37 days/year** in season length.

2011–2020

- The pattern changed.
- Start of Season became **earlier** in all four forest types.
- Overall season duration also increased.

Key Point

- Climate change is not simply making forests greener or less green.
- It is changing **when forests start growing, stop growing and how long they remain active.**

Main Factors Affecting Forest Seasons

Temperature is important, but it is **not the only factor.**

Other factors include:

- Rainfall
- Soil moisture
- Drought
- Photoperiod
- Extreme weather events

For example:

- Higher temperature + enough moisture → Earlier vegetation growth
- Higher temperature + water stress → Delayed or reduced growth

Impact on Shola Forests

- **Shola forests** are high-altitude tropical montane forests of the Western Ghats.

Researchers have observed:

- Drying of mosses
- Decline in ferns
- Decline in orchids
- Reduction in epiphytes
- Yellowing of vegetation
- Changes in temperature and moisture inside forest patches

Shola forests normally maintain a **cool and moist microclimate**. Increasing heat and reduced moisture are disturbing this system.

Impact on Dry Forests

In drier areas near **Thengumarahada**:

- Ground remained dry during the expected growing season.
- Normal grass cover did not appear.
- Invasive species such as *Prosopis juliflora* and *Lantana camara* have spread.

So, both ends of the landscape are being affected:

- **Wet Sholas → Losing moisture-dependent species**
- **Dry forests → Failing to green up**

Impact on Plants

Magnolia nilagirica

- Endemic to the Western Ghats.
- Normally flowers towards the end of the monsoon.
- It was observed flowering as early as **June**.

Impatiens clavicornu

- Also called **Club-spur balsam**.
- An endemic grassland plant.
- Its flowering has reduced significantly.

Reduced flowering can mean:

- **Less flowering → Fewer seeds → Smaller seed bank → Poor regeneration → Higher extinction risk**

Impact on Pollinators and Birds

- Changes in flowering and fruiting can disturb the relationship between plants and animals.
- For example:
 - **Early flowering → Pollinators may not be active → Less pollination**
- Similarly:
 - **Changed fruiting season → Animals become out of sync → Less seed dispersal**
- This can ultimately slow down **forest regeneration**.

Phenological Desynchronisation

This means the normal timing between different species gets disturbed.

It can affect:

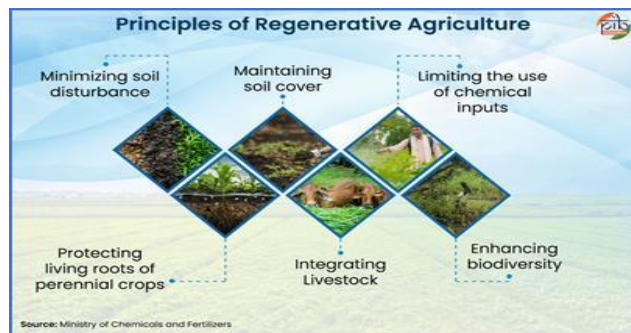
- Plants and pollinators
- Plants and seed dispersers
- Fruiting plants and birds
- Animal breeding and food availability

Researchers suggest that similar changes are being seen elsewhere in the Western Ghats as well.

Way Forward

- Regularly monitor forest phenology using **satellite data and field observations**.
- Identify forests and species that are most vulnerable.
- Protect **Shola forests and grasslands**.
- Control invasive species.
- Strengthen conservation and restoration programmes.
- Study changes in rainfall, temperature and soil moisture together.
- Protect pollinator and seed-disperser communities.

Rebuilding Farming Systems: Regenerative Agriculture for a Resilient India



Why in News?

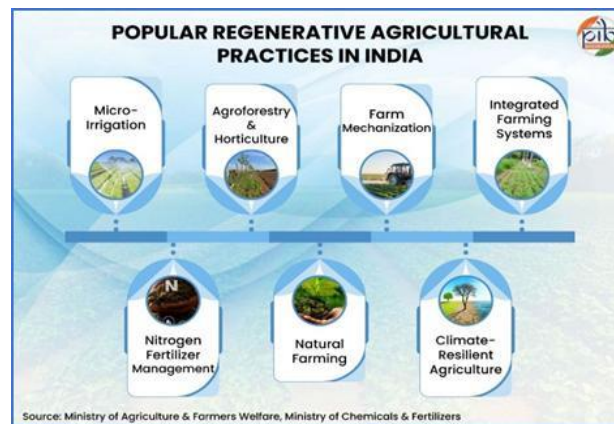
- The Government highlighted **Regenerative Agriculture** as a way to improve soil health, biodiversity and climate resilience.
- India's agriculture and allied sectors recorded **4.45% decadal growth during FY16–FY25**, the highest among previous decades.
- As of 2026:
 - **Natural farming:** 8.80 lakh hectares
 - **Farmers enrolled:** 18.19 lakh
 - **Per Drop More Crop:** About 109 lakh hectares
 - **Soil Health Cards:** 25.89 crore

What is Regenerative Agriculture?

- It is a **holistic farming approach** focused on:
 - Restoring soil health
 - Improving biodiversity
 - Increasing long-term productivity
 - Building resilience against climate change
- Unlike sustainable farming, which mainly tries to **maintain existing conditions**, regenerative agriculture aims to **actively improve them**.

Main Principles

- Minimise soil disturbance
- Maintain soil cover
- Protect living roots of perennial crops
- Integrate livestock
- Reduce chemical inputs
- Increase biodiversity



Major Regenerative Agriculture Practices

1. Micro-Irrigation

- Includes **drip, sprinkler and fogger systems**.
- Delivers water directly to plants.
- Reduces water wastage.
- Improves water-use efficiency.
- Helps farmers deal with drought and water stress.

2. Farm Mechanisation

- Uses machines and equipment to improve farm operations.
- Helps reduce wastage of:
 - Water
 - Fuel
 - Fertilisers
- Enables timely and precise farming.
- Can reduce the environmental impact of agriculture.

3. Nitrogen Fertiliser Management

- Improves **nitrogen-use efficiency**.
- Reduces nitrous oxide emissions.
- Focuses on:
 - Correct fertiliser
 - Correct dosage
 - Correct timing
- Includes deep placement of supergranular urea.
- Uses leaf colour charts to assess nitrogen requirements.
- Promotes biological inputs such as cyanobacteria and legume intercropping.

4. Natural Farming

- A **chemical-free agricultural approach** based on traditional Indian knowledge.

- Uses on-farm biological inputs such as:
 - Beejamrut
 - Jeevamrut
 - GhanJeevamrut
 - Neemastra
 - Dashparni
- Also promotes:
 - Traditional seeds
 - Multicropping
 - Mulching
 - Cover cropping
 - Minimal soil disturbance
 - Livestock integration
 - Trees along farm boundaries

5. Soil Health Management

Important practices include:

- **Green manuring:** Adds organic matter and nutrients to soil.
- **Cover cropping:** Protects soil from erosion and supports nutrient cycling.
- **Mulching:** Covers soil with materials such as leaves and straw.

Benefits include:

- Better soil fertility
- Improved soil structure
- Moisture conservation
- Weed control
- Better microbial activity
- Carbon sequestration

Integrated and Climate-Resilient Farming

Integrated Farming System (IFS)

Combines multiple farm activities such as:

- Crops
- Livestock
- Fisheries
- Horticulture
- Agroforestry
- Apiculture

It promotes:

- Crop rotation
- Intercropping
- Multicropping
- Mixed farming

Benefits:

- Diversifies farmer income.
- Reduces risk of crop failure.
- Improves resource use.
- Increases resilience to floods and droughts.

Agroforestry

- Combines **trees with crops and plantation/fruit crops.**
- Provides additional income.
- Improves soil moisture.
- Regulates local temperature.
- Stores carbon.
- Helps restore degraded land, particularly in rainfed areas.

Climate-Resilient Agriculture

Important components include:

- Balanced nutrient and fertiliser use
- Better pest management
- Efficient water use
- Soil-moisture conservation
- Appropriate land preparation
- Water-sharing groups
- Seed and fodder systems
- Community nurseries
- Collective marketing

Benefits of Regenerative Agriculture

Environmental Benefits

- **Soil restoration:** Improves soil organic matter, structure and fertility.
- **Biodiversity:** Supports pollinators, beneficial insects and soil microorganisms.
- **Climate mitigation:** Helps absorb and store carbon.
- **Water efficiency:** Improves water retention and reduces runoff and soil erosion.

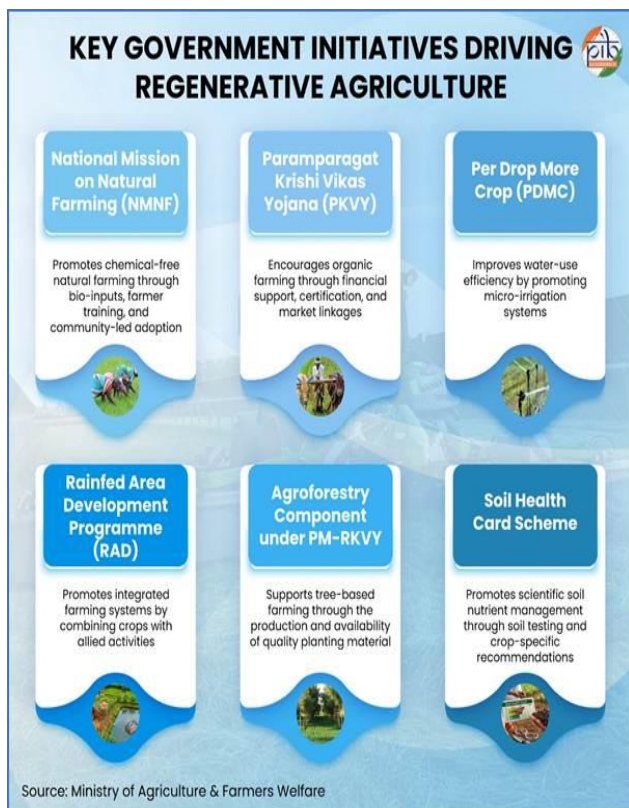
Economic and Social Benefits

- Lower dependence on synthetic fertilisers and pesticides.
- Lower input costs.
- More stable yields.
- Better farm income.
- New employment opportunities.
- Greater resilience against climate and market shocks.

Link with SDGs

- Regenerative agriculture supports **SDG 13 – Climate Action**.
- It contributes particularly to **Target 13.1**, which focuses on strengthening resilience and adaptive capacity to climate-related risks and natural disasters.

Government Initiatives



1.

1. National Mission on Natural Farming (NMNF)

- Launched in **2024**.
- Supports farmers shifting towards natural farming.
- Provides **₹4,000 per acre per year for two years**, up to one acre per farmer.
- Provides for **10,000 need-based Bio-input Resource Centres**.
- Promotes natural farming clusters.
- Each cluster is supported by **2 Community Resource Persons (CRPs)**.

As of **5 March 2026**:

- **18,786 clusters**
- **8.80 lakh hectares**
- **18.19 lakh farmers**
- **33,676 CRPs trained**

2. Paramparagat Krishi Vikas Yojana (PKVY)

- Launched in **2015**.
- Promotes **organic farming**.
- Supports organic certification and market access.
- Provides **₹31,500 per hectare for three years**.

As of **31 October 2025**:

- **16.90 lakh hectares** covered.

3. Per Drop More Crop (PDMC)

- Implemented since **2015–16**.
- Promotes:
 - Drip irrigation
 - Sprinkler irrigation
- Improves on-farm water-use efficiency.

Financial assistance:

- **55%** for small and marginal farmers.
- **45%** for other farmers.

As of **May 2026**:

- About **109 lakh hectares** covered.
- **₹26,325 crore** central assistance released.

4. Rainfed Area Development Programme (RAD)

- Implemented since **2014–15**.
- Promotes **Integrated Farming Systems** through an area-based cluster approach.
- Supports:
 - Multicropping
 - Crop rotation
 - Intercropping
 - Mixed cropping
 - Horticulture
 - Livestock
 - Fisheries
 - Apiculture

Financial Support

- **₹30,000 per family** for adopting IFS.
- **₹10,000 per cluster** for training and capacity building.

Since inception:

- **₹2,251.98 crore** Central Assistance
- **9.53 lakh hectares** covered
- **15.73 lakh farmers** benefited

During **2024–25**, KVKs:

- Conducted **4,416 demonstrations**
- Trained **96,013 farmers**

5. Agroforestry Component under PM-RKVY

- Earlier known as the **Sub-Mission on Agroforestry (SMAF)**.
- Restructured under **PM-RKVY from 2023–24**.
- Supports:
 - Agroforestry nurseries
 - Quality Planting Material
 - Tissue culture units
 - Skill development
 - Research and development
 - Monitoring
 - Carbon-market projects

Financial assistance:

- **100%** for government agencies.
- **50% back-ended credit-linked assistance** for private beneficiaries.

During **2025–26**:

- **₹78.31 crore** sanctioned.
- **27 States/UTs** covered.
- **135 new nurseries** established.
- **614 existing nurseries** produced saplings.
- **176.59 lakh saplings** raised.
- Around **25,693 farmers** benefited.

6. Soil Health Card Scheme

- Launched in **2015**.
- Provides **plot-wise soil test reports**.
- Covers **12 soil-health parameters**.
- Cards are issued every **2 years**.
- Provides crop-specific recommendations for:
 - Chemical fertilisers
 - Bio-fertilisers
 - Organic inputs
 - Soil treatments

As of **13 March 2026**:

- **25.89 crore Soil Health Cards** generated.
- Around **7.17 lakh demonstrations** conducted.
- **70,002 Krishi Sakhis** trained for soil-health advisories.

□□□

Internal Security

Digital Arrest Scams



Why in News?

- The **Supreme Court** recently directed the Centre, States/UTs, RBI, telecom authorities and investigating agencies to adopt **coordinated measures** to curb “**digital arrest**” scams.
- The Court also stressed the need for **timely recovery of victims’ money**.

Supreme Court Directions

- **RBI SOP:**
 - The Supreme Court directed the **RBI** to issue an **Standard Operating Procedure (SOP)** within four weeks.
 - It will provide for **temporary debit holds on mule accounts** linked to cyber fraud or money laundering.
 - The SOP will also be shared with the **Registrars General of High Courts**.
- **Grievance Redressal:**
 - States and UTs were directed to establish **grievance-redressal and money-restoration mechanisms** for cyber-fraud victims.
 - These mechanisms should follow the **Ministry of Home Affairs’ SOP** for the National Cyber Crime Reporting Portal and Cyber RMS.

What is Digital Arrest?

- **Digital arrest** is a **cyber scam** where fraudsters impersonate law-enforcement agencies to extort money by creating **fear and urgency**.

- **Modus Operandi:**

- Scammers contact victims and falsely connect them with criminal cases.
- They threaten victims with **arrest or freezing of bank accounts**.
- They use **spoofed phone numbers and fake documents** to appear genuine.
- Victims are pressured to pay a **fake fine or security deposit** to avoid the fabricated legal action.

Decline in Digital Arrest Complaints

According to the **Indian Cyber Crime Coordination Centre (I4C)**:

- **2024:** 1,23,672 complaints
- **2025:** 58,249 complaints
- **By June 2026:** 16,377 complaints

This shows a sharp decline in reported digital-arrest complaints.

Initiatives to Tackle Digital Arrest

- **Money Restoration Mechanism:**
 - Supported by a data-sharing MoU between **RBI Innovation Hub and I4C**.
 - Covers **1,23,590 branches of 69 banks**.
 - **57 banks** are participating nationwide.
 - **₹18.05 crore** has been restored in **36,290 cases**.
- **e-Zero FIR Mechanism:**
 - Operational in **19 States**.
 - Only **14 States** have notified Cyber Crime Coordination Centres.
 - The Supreme Court directed the remaining States/UTs to implement both mechanisms within **four weeks**.
- **Telecom Rules:**
 - **Telecommunications (Radio Equipment Possession Authorisation) Rules, 2025** have been notified.
 - **Telecommunications (User Identification) Rules, 2025** are in the final stage of notification.
- **Committee Recommendations:**
 - The **Inter-Departmental Committee** asked the CBI to consider lowering the **₹10 crore threshold**.

- It also recommended taking up cases where multiple frauds by the same organised network **cumulatively exceed the threshold**.

Key Point

The Supreme Court's directions aim to strengthen coordination among banks, police, telecom authorities and investigating agencies to prevent digital-arrest scams and speed up the recovery of victims' money.

National Security Guidelines for Renewable Energy Projects Near Borders



Why in News?

The **Ministry of Home Affairs (MHA)** has issued **national security guidelines for solar, wind and hybrid renewable-energy projects** located near India's **International Border, Line of Control (LoC) and Line of Actual Control (LAC)**.

- The framework aims to balance the expansion of **renewable energy** with concerns related to:
 - Border surveillance
 - Military mobility
 - Foreign participation
 - Protection of sensitive infrastructure

What are the Key Provisions of the Guidelines?

1. Prohibited Zone

- No solar, wind or hybrid renewable-energy project activity will be permitted **within 1 km** of the:
 - International Border
 - LoC
 - LAC

2. Mandatory MHA Security Clearance

- Projects located between **1 km and 50 km** from these sensitive borders will require **MHA security clearance**.
- Clearance will be provided **on a case-by-case basis**.

3. Defence Ministry NOC

- Projects located within the **1–20 km zone** will additionally require a **No Objection Certificate (NOC)** from the **Ministry of Defence**.
- The NOC will be subject to security assessment.

How will the Approval Process Work?

- Developers and State governments **cannot directly approach the MHA or Ministry of Defence**.
- Proposals must be routed through the **Ministry of New and Renewable Energy (MNRE)**.
- Before submitting the proposal, the concerned State government must provide **in-principle land-allotment approval**.
- Project proposals must also include their **latitude and longitude**.
- The MHA is expected, as far as possible, to decide security-clearance applications within **60 days**.

Restrictions on Foreign Participation

- Developers cannot employ **engineers, workers or other personnel from countries sharing a land border with India** without prior permission from the Central Government.
- This is particularly relevant to personnel from countries such as:
 - **Pakistan**
 - **Bangladesh**
 - **China**
- Foreign nationals entering sensitive project areas will also be subject to **security monitoring**.

Land-Security Safeguards

- Project land cannot be **transferred or allotted to a foreign company** without prior Central Government approval.

- Such approval will include **MHA security clearance**.
- Projects involving foreign investment must also comply with applicable:
 - **FDI rules**
 - **DPIIT requirements**

Anti-Drone Security

- Developers will have to establish comprehensive security infrastructure, including **anti-drone systems**.
- These systems will be operated by:
 - **Central Industrial Security Force (CISF)**, or
 - **State Police**
- The **project developer will bear the cost** of the security infrastructure.

Security-Sensitive Project Design

Renewable-energy projects near borders will also have to consider defence requirements during their planning and construction.

- Project layouts should avoid **long construction stretches running parallel to the border**.
- Project roads should be designed so they can potentially be used by:
 - **Armed forces**
 - **Border-security personnel**

during emergencies.

Restrictions on Supporting Infrastructure

- **Residential facilities and hotels** should generally be located at least **5 km from the border**.
- Other establishments that generate large crowds are also discouraged in sensitive areas.

Height Restrictions

The guidelines prescribe different height limits for **civil and operational infrastructure** based on distance from the border:

Distance from Border	Maximum Height
1–8 km	3 metres
8–20 km	5 metres
20–50 km	15 metres

- These height restrictions **do not apply to core project infrastructure** such as wind turbines.

What About Existing Renewable-Energy Projects?

- Projects that had already obtained **MHA security clearance** before the guidelines were issued will **not require fresh MHA clearance**.
- Similarly, projects that had already received a **Defence Ministry NOC** will **not need to obtain the NOC again**.

Why are These Guidelines Important?

National Security

- Large renewable-energy installations near sensitive borders can affect **surveillance, movement of security forces and protection of strategic areas**. The guidelines provide a common security framework for such projects.

Renewable Energy Expansion

- India is rapidly expanding solar and wind power. The framework allows renewable projects to continue in border regions while ensuring that **security considerations are included from the planning stage**.

Foreign Investment

- The guidelines create additional safeguards for **foreign participation, foreign personnel and land ownership**, particularly in strategically sensitive areas.

Defence Mobility

- The requirement to design roads and project layouts with emergency military use in mind can improve **operational flexibility** for security forces.

Drone and Infrastructure Security

- The mandatory **anti-drone measures** and restrictions on supporting infrastructure aim to reduce potential security vulnerabilities around sensitive installations.

Key Distance-Based Restrictions at a Glance

Distance	Major Requirement
0–1 km	Renewable-energy project activity prohibited
1–8 km	MHA clearance + Defence NOC; 3 m height limit for applicable infrastructure
8–20 km	MHA clearance + Defence NOC; 5 m height limit
20–50 km	MHA clearance; 15 m height limit
Within 5 km	Residential facilities and hotels generally discouraged
1–50 km	Foreign participation subject to specified security restrictions

Conclusion

The new MHA guidelines seek to create a **balance between India's clean-energy goals and national-security requirements**. By introducing clear distance-based restrictions, centralised security clearance, foreign-participation safeguards, anti-drone measures and defence-friendly project design, India can expand renewable-energy infrastructure in border areas while protecting **strategic and sensitive locations**.

India's Defence Transformation: Towards Self-Reliance and Global Capability



Why in News?

- As India marks its **80th Independence Day**, the Government has highlighted the transformation of the country's defence sector into a more **self-reliant, technologically capable and globally credible force**.
- The focus is increasingly shifting towards **indigenous defence production, domestic innovation, private-sector participation, defence exports and advanced military technologies**.

How Is India Strengthening Its Defence Capabilities and Industrial Base?

Defence Investment and Military Modernisation

- **Growth in Defence Budget:**
 - India's defence budget increased from **₹2.53 lakh crore in 2013–14 to ₹7.85 lakh crore in 2026–27**.
 - This represents nearly **3.1-fold growth**.
- **Higher Capital Expenditure:**
 - Defence capital expenditure increased from **₹94,587.95 crore in 2014–15 to ₹2.19 lakh crore in 2026–27**.

- This represents around **2.3-fold growth** and supports long-term modernisation of the Armed Forces.

Indigenous Defence Production

- **Record Defence Production:**
 - Domestic defence production reached a record **₹1.78 lakh crore in FY 2025–26**.
 - This reflects the expansion of indigenous manufacturing under **Atmanirbhar Bharat**.
- **Private-Sector Participation:**
 - Public-sector entities contributed around **76%** of defence production in FY 2025–26.
 - The private sector contributed **24%**, showing its growing role in defence manufacturing.

Defence Exports

- India's defence exports increased from **₹686 crore in FY 2013–14 to ₹38,424 crore in FY 2025–26**.
- This represents nearly **56-fold growth**.
- Indian defence products are now exported to **more than 80 countries**.
- Defence export value has increased by more than **5,500% over 12 years**.
- In FY 2025–26:
 - **Private sector:** ₹17,353 crore or **45.16%**
 - **Defence PSUs:** ₹21,071 crore or **54.84%**
- **Government Target by 2029:**
 - Annual defence production: **₹3 lakh crore**
 - Defence exports: **₹50,000 crore**

Strengthening Defence Research and Innovation

Defence R&D

- Defence R&D allocation increased from **₹13,716.14 crore in 2014–15 to ₹29,100.25 crore in 2026–27**.
- This represents growth of more than **112%**.
- Since **2022–23**, **25% of the defence R&D budget** has been opened to:
 - Industry
 - Start-ups

- Academia

- This aims to encourage wider participation in indigenous defence innovation.

Defence Testing Infrastructure

- Testing facilities across **24 DRDO laboratories** are available through the **Defence Testing Portal (DTP)**.
- The portal allows domestic manufacturers, start-ups and industries to obtain **paid access to specialised government testing facilities**.

Defence Acquisition and Procurement Reforms

Defence Acquisition Council

- The **Defence Acquisition Council (DAC)** is India's apex defence procurement body.
- It has accorded **Acceptance of Necessity (AoN) worth more than ₹6 lakh crore** for DRDO-designed systems to be manufactured by Indian industry.

Major Indigenous Acquisitions

- **97 Tejas Mk-1A fighter aircraft**
 - Value: **₹62,000 crore**
- **156 LCH Prachand helicopters**
 - Value: **₹62,700 crore**

These acquisitions strengthen India's domestic aerospace and defence manufacturing capabilities.

Major Procurement Frameworks

- **Defence Procurement Procedure, 2016**
 - Streamlined defence acquisitions.
 - Helped advance the **Make in India** initiative.
- **Defence Acquisition Procedure, 2020**
 - Strengthened indigenous procurement and domestic manufacturing.
 - Created greater opportunities for Indian companies in defence design, development and production.
- **Defence Procurement Manual, 2025**
 - Streamlined nearly **₹1 lakh crore of revenue procurement**.
 - Introduced faster approvals.
 - Relaxed penalties for indigenous projects.
 - Provided greater certainty through long-term orders.

- **Draft Defence Acquisition Procedure, 2026**
 - Seeks to simplify acquisition categories.
 - Strengthen indigenous design and development.
 - Raise indigenous-content requirements to as much as **60%**.

Promoting Defence Innovation

iDEX

- The **Innovations for Defence Excellence (iDEX)** scheme has an outlay of **₹498.78 crore**.
- As of March 2026, it had engaged:
 - **676 start-ups, MSMEs and innovators**
 - **551 design and development contracts**

ADITI Scheme

- The **ADITI Scheme** was approved with an outlay of **₹750 crore for 2023–24 to 2025–26**.
- It provides financial support to accelerate the development of **innovative and critical defence technologies**.

Technology Development Fund

- The **Technology Development Fund (TDF)** provides grants of up to **₹50 crore** for critical defence technology development.
- As of June 2026:
 - **80 projects worth ₹334 crore** were under implementation.
 - An additional **₹500 crore corpus** had been sanctioned for deep-tech and emerging technologies.

Technology Transfer and Industry Participation

- **Development-cum-Production Partners:**
 - DRDO has transferred technologies to **134 partner companies**.
- **Technology Transfer Agreements:**
 - Around **2,180 agreements** have been signed.
 - These help move defence technologies from laboratories to domestic production.

- **DRDO Intellectual Property:**
 - More than **2,780 DRDO intellectual property rights** had been opened for industry use by March 2026.
 - This supports wider commercialisation and indigenous innovation.

Indigenisation and Domestic Manufacturing

Positive Indigenisation Lists

- By May 2026, **10 Positive Indigenisation Lists** had been notified.
- Five lists were issued each by:
 - Department of Military Affairs
 - Department of Defence Production
- Together, they cover **5,521 items**.
- The objective is to promote **domestic sourcing and reduce import dependence**.

Srijan-DEEP Platform

- The **Srijan Defence Equipment Empowerment Platform** acts as a digital repository for indigenous defence sourcing.
- By May 2026, it listed:
 - More than **41,000 vendors**
 - Around **2.7 lakh products**

Defence Industrial Corridors

Uttar Pradesh Defence Industrial Corridor

- By April 2026:
 - Investment commitments: **₹42,057 crore**
 - Grounded investment: around **₹4,409 crore**

Tamil Nadu Defence Industrial Corridor

- Investment commitments: around **₹32,699 crore**
- Investment realised: approximately **₹6,446 crore**

BrahMos Facility, Lucknow

- The **BrahMos Integration and Testing Facility in Lucknow** has started manufacturing missiles.
- It adds advanced weapons-production capability to India's domestic defence industrial base.

Ease of Doing Business and Defence Trade

- **Longer Industrial Licence Validity:**
 - Validity increased from **7 years + 3 years** to **15 years + 3 years**.
 - This allows validity of up to **18 years**.
 - Lifetime validity is now available under the **Arms Act**.
- **Revamped Defence Exim Portal:**
 - Provides:
 - End-to-end application processing
 - Automated company verification
 - Simplified registration
 - Real-time tracking
 - Secure payment integration
- **Higher FDI Limit in Defence:**
 - **74% under the Automatic Route**
 - Up to **100% under the Government Route**
 - Cumulative FDI inflows reached around **₹6,670.59 crore by March 2026**.

How Is India Advancing Defence Self-Reliance in FY 2025–26?

Ammunition and Strategic Systems

- **Ammunition Self-Sufficiency:**
 - The Indian Army achieved around **91% self-sufficiency in ammunition**.
 - It indigenised **159 of 175 ammunition variants**.
- **Strategic Missile Capability:**
 - India successfully tested:
 - Agni-4 Intermediate Range Ballistic Missile
 - Agni-5 Long Range Surface-to-Surface Ballistic Missile
- **Precision-Strike Systems:**
 - **TARA Glide Weapon**
 - **RudraM-II air-to-surface missile**
 - These demonstrated indigenous precision-strike capabilities against ground targets.
- **Indigenous Air Defence:**
 - DRDO advanced:

- Kusha Long Range Air Defence Missile
- Very Short-Range Air Defence System (VSHORADS)

- **Hypersonic Technology:**
 - DRDO conducted a **12-minute ground test of an actively cooled scramjet combustor**.
 - This advances future hypersonic missile capabilities.
- **Integrated Air Defence:**
 - An indigenous system combining **missile interceptors, short-range weapons and laser technologies** was successfully tested.

Maritime Defence and Indigenous Naval Capability

Expansion of the Naval Fleet

- The Indian Navy commissioned **12 warships and submarines**.
- These included:
 - **INS Surat**
 - **INS Nilgiri**
 - **INS Vaghsheer**
- These platforms strengthen India's **surface and underwater combat capabilities**.

Indigenous Stealth Frigate

- **INS Mahendragiri** entered service.
- It has more than **75% indigenous content**.
- It demonstrates greater domestic value addition in complex naval platforms.

Next-Generation Patrol Vessels

- **SHACHI**, the first of **11 Next Generation Offshore Patrol Vessels**, was launched.
- It will strengthen:
 - Maritime surveillance
 - Coastal and offshore patrol
 - Maritime security

Indigenous Naval Platforms

The commissioning of:

- **INS Dunagiri**
- **INS Sanshodhak**
- **INS Agray**

has further expanded India's indigenous naval capabilities and strengthened **survey, surveillance and operational readiness**.

Sandhayak-Class Survey Fleet

- **INS Sanshodhak** contributed to the completion of the indigenous **Sandhayak-class survey fleet**.
- This strengthens India's:
 - Hydrographic survey capability
 - Maritime-domain awareness

Naval Strike Capability

- DRDO successfully tested the **Naval Anti-Ship Missile–Medium Range**.
- It strengthens India's indigenous ability to engage **hostile maritime targets**.

Overall Significance

India's defence transformation is being driven by a combination of:

- **Higher defence investment**
- **Indigenous manufacturing**
- **Private-sector participation**
- **Defence exports**
- **R&D and innovation**
- **Defence acquisition reforms**
- **Technology transfer**
- **Positive indigenisation**
- **Defence industrial corridors**
- **Advanced missile and air-defence systems**
- **Indigenous naval platforms**

Together, these measures are helping India move from **import dependence towards greater defence self-reliance**, while also building the capacity to emerge as a **credible global defence manufacturer and exporter**.

Exercise Udara Shakti 2026: India–Malaysia Air Force Cooperation



Why in News?

- The **Indian Air Force (IAF)** participated in **Exercise Udara Shakti 2026**, a bilateral air exercise with the **Royal Malaysian Air Force (RMAF)** at **Subang Airbase, Malaysia**.
- The exercise highlights the expanding **India–Malaysia defence partnership** and India's wider engagement with Southeast Asia under the **Act East Policy** and **Indo-Pacific strategy**.

Exercise Udara Shakti 2026

- **Nature:** Bilateral air exercise between the **IAF and RMAF**.
- **Objective:** Improve:
 - **Air combat skills**
 - **Operational interoperability**
 - **Tactical coordination**
 - Mutual understanding between the two air forces

Participating Aircraft

Indian Air Force	Royal Malaysian Air Force
4 Rafale fighters from 101 Squadron	Su-30MKM fighters
2 C-17 Globemaster III strategic airlifters	F/A-18D Hornets
—	A400M transport aircraft

Major Training Activities

The exercise focused on realistic and demanding air-combat scenarios, including:

- **High-intensity combat sorties**
- **Dissimilar Air Combat Training (DACT)**
- **Dissimilar Basic Fighter Manoeuvres**
- **Air-to-air refuelling**

These activities help pilots train against different aircraft types and improve **combat preparedness and tactical effectiveness**.

Subject Matter Expert Exchanges

Personnel from both air forces exchanged experience in areas such as:

- **Training doctrines**
- **Integrated air operations**
- **Mission planning**
- **Aircraft maintenance**
- **Operational best practices**

Such exchanges strengthen institutional understanding beyond actual flying operations.

Strategic Significance

- Deepens **India–Malaysia defence relations**.

- Improves the ability of Indian and Malaysian aircraft and personnel to **operate together effectively**.
- Supports India's **Act East Policy** and greater engagement with Southeast Asian countries.
- Contributes to **security and stability in the Indo-Pacific**.
- Adds to India's expanding multilateral and bilateral air-force engagement, including participation in **Exercise Pitch Black 2026 in Australia**.

Other India–Malaysia Military Exercises

Service	Exercise
Indian Navy – Royal Malaysian Navy	Samudra Laksamana
Indian Army – Malaysian Army	Harimau Shakti
Indian Air Force – Royal Malaysian Air Force	Udara Shakti

Significance for India

Exercise Udara Shakti demonstrates India's effort to build **interoperable defence partnerships in Southeast Asia**, combining operational training, military exchanges and strategic cooperation to support a **free, open and secure Indo-Pacific**.

EDITORIALS

Crux of The Hindu & Indian Express

Internal Security

Agni-4 Medium-Range Ballistic Missile Test-Fired from Odisha

AGNI MISSILE SERIES BREAKDOWN

AGNI-IV
Advanced IRBM

RANGE: 3,500–4,000 km

PURPOSE | Tactical nuclear deterrence against neighbouring threats

TECHNOLOGY | Ring laser gyro and composite rocket motor

CAPABILITY | Nuclear-capable precision strike missile

AGNI-V
INTERCONTINENTAL BALLISTIC MISSILE (ICBM)

RANGE: 5,000+ km

STAGES | Three-stage solid-fuel missile

TECHNOLOGY | Canister launch system and MIRV capability

KEY FEATURE | Faster launch readiness and multiple warhead delivery

STATUS | Successfully tested with MIRV technology in 2024 and 2025

AGNI-P (Prime)
NEXT-GENERATION BALLISTIC MISSILE

RANGE: 1,000–2,000 km (estimated)

PURPOSE | Replacement for Agni-I and Agni-II

TECHNOLOGY | Lighter composite body with advanced guidance

KEY FEATURE | High accuracy and dual-canister launch capability

Why in News?

- The **Agni-4 medium-range ballistic missile (MRBM)** was successfully test-fired from the **Integrated Test Range (ITR), Chandipur, Odisha**, on **6 August 2026**.
- The test was conducted under the aegis of the **Strategic Forces Command (SFC)**. According to the **Ministry of Defence**, the launch successfully validated the missile's operational and technical parameters.
- The successful test demonstrated the **operational readiness** of the missile and confirmed that its critical systems performed according to the expected parameters.

What is Agni-4?

- **Agni-4** is an **indigenously developed medium-range ballistic missile** of India.
- It is capable of carrying both:
 - **Conventional payloads**
 - **Nuclear payloads**
- The missile forms an important component of India's **strategic deterrence capability**.
- Agni-4 has been **inducted into the Strategic Forces Command**, which is responsible for managing India's strategic weapons assets.

Key Features of Agni-4

Feature	Details
Type	Medium-Range Ballistic Missile (MRBM)
Development	Indigenous
Strike Range	About 4,000 km
Payload	Conventional and nuclear
Guidance	Advanced navigation and guidance systems
Accuracy	High accuracy
Launch Site	Integrated Test Range, Chandipur, Odisha
Strategic Command	Strategic Forces Command
Role	India's strategic deterrence

Significance of the Test

1. Demonstrates Operational Readiness

- The successful launch confirmed that the missile remains **operationally ready** and capable of performing its intended role.
- The test also validated important operational and technical parameters.

2. Strengthens Strategic Deterrence

- Agni-4 contributes to India's **credible strategic deterrence**.

- Its ability to carry a nuclear payload gives India an important capability for maintaining a secure and effective strategic force.

3. Indigenous Defence Capability

Agni-4 is an **indigenously developed missile**, reflecting India's growing capabilities in:

- Missile technology
- Navigation systems
- Guidance technology
- Strategic weapons development

This supports India's broader objective of achieving greater **self-reliance in defence technology**.

4. Advanced Navigation and Guidance

- The missile is designed to provide **high accuracy** through advanced navigation and guidance systems.
- Such systems are important for ensuring that the missile can accurately reach its intended target over long distances.

Strategic Forces Command (SFC)

- The test was conducted under the aegis of the **Strategic Forces Command**.
- The SFC is responsible for India's strategic assets, particularly those associated with the country's **nuclear deterrence capability**.
- The successful Agni-4 test therefore has significance beyond a routine missile trial. It demonstrates the operational preparedness of an important component of India's strategic forces.

Integrated Test Range, Chandipur

- The missile was launched from the **Integrated Test Range (ITR) at Chandipur in Odisha**.
- The ITR is an important facility for the testing and evaluation of India's missile systems.
- Testing at such facilities allows various missile parameters and systems to be assessed under actual flight conditions.

Agni-4 and India's Strategic Deterrence

- India follows a policy of maintaining a **credible strategic deterrence**.
- Missiles such as Agni-4 form an important part of this capability.
- Agni-4 provides a strike range of approximately **4,000 km**, allowing it to serve

as a significant medium-range component of India's strategic missile capability.

- Its ability to carry both **conventional and nuclear payloads** further increases its strategic importance.

Why is Agni-4 Important for India?

The Agni-4 programme is significant because it combines:

- **Indigenous missile technology**
- **Long-range strike capability**
- **Advanced navigation**
- **Advanced guidance**
- **High accuracy**
- **Conventional and nuclear payload capability**
- **Operational readiness**

Together, these capabilities strengthen India's overall strategic preparedness.

Indian Navy–US Navy Explosive Ordnance Disposal Exercise 2026



Why in News?

- The **Indian Navy–US Navy Explosive Ordnance Disposal (EOD) Exercise 2026** is being conducted at the **Southern Naval Command, Kochi**.
- The exercise is scheduled from **10 to 14 August 2026**.

- It aims to enhance **interoperability** and strengthen **professional cooperation** between the specialist **diving and EOD teams** of the Indian Navy and US Navy.

Key Features of the Exercise

The five-day exercise includes:

- **Subject Matter Expert Exchanges (SMEEs)**
- **Cross-training**
- **Equipment demonstrations**
- **Scenario-based practical exercises**

These activities will facilitate the exchange of:

- Contemporary **EOD methodologies**
- **Emerging technologies**
- Operational **best practices**
- Capabilities and operational concepts
- Employment philosophies of both navies

Objectives

- Enhance **interoperability** between Indian and US naval forces.
- Promote **collaborative learning**.
- Improve **operational synergy**.
- Refine EOD procedures and response mechanisms.
- Strengthen **mutual understanding** between specialist teams.
- Improve the ability to respond to **complex and evolving EOD challenges**.

Explosive Ordnance Disposal (EOD)

- **EOD** refers to specialised capabilities used to identify, assess and safely deal with explosive hazards.
- In naval operations, EOD teams may be involved in dealing with explosive threats in **maritime and underwater environments**.
- The exercise focuses specifically on cooperation between the two countries' **specialist diving and EOD teams**.

India–US Naval EOD Cooperation

- The Indian Navy and US Navy have been conducting joint **Salvage and EOD exercises** since **2005**.
- The **2026 exercise is the eighth edition** of this specialised bilateral training exercise.

- The continued exercises demonstrate the long-term commitment of both navies to:

- **Interoperability**
- Sharing of **operational expertise**
- Exchange of **best practices**
- Cooperation in **specialised maritime operations**

Significance for India

- Strengthens India's **maritime security capabilities**.
- Provides Indian personnel exposure to contemporary **EOD technologies and procedures**.
- Improves coordination with the **US Navy** during complex maritime operations.
- Enhances India's ability to respond to evolving **explosive and underwater security challenges**.
- Contributes to deeper **India–US defence cooperation**.

Conclusion

The **Indian Navy–US Navy EOD Exercise 2026** strengthens specialised maritime cooperation between the two countries. Through **expert exchanges, cross-training, equipment demonstrations and practical exercises**, it aims to improve operational readiness, interoperability and the ability of both navies to address complex EOD challenges.

India–Thailand Joint Military Exercise MAITREE-XV 2026



Why in News?

- An **Indian Army contingent** has departed for Thailand to participate in the **15th edition of the India–Thailand Joint Military Exercise MAITREE-XV (2026)**.
- The exercise will be conducted from **18 to 31 August 2026**.
- Venue: **Vibhavadi Rangsit Camp, Surat Thani, Thailand**.
- The previous edition was conducted at the **Foreign Training Node, Umroi, Meghalaya, in September 2025**.

Participating Forces

- **Indian Army:** 85 personnel.
 - Mainly represented by troops from **9 Gorkha Rifles**.
- **Royal Thai Army:** 85 personnel.
 - Represented by personnel from the **3rd Battalion, 25th Infantry Brigade, 5th Division**.
- The exercise will involve **company-level joint training**.

Focus Areas

The training will focus on operations in:

- **Jungle terrain**
- **Semi-urban terrain**

The exercise will particularly strengthen the ability of both armies to conduct **joint counter-insurgency and counter-terrorism operations**.

Aim of Exercise MAITREE

The main objective is to strengthen **military cooperation between India and Thailand**.

The exercise aims to:

- Enhance **combined operational capabilities**.
- Improve **interoperability** between the two armies.
- Strengthen **mutual understanding**.
- Promote exchange of **operational experience and best practices**.
- Improve coordination during **joint operations**.
- Build greater **camaraderie** between personnel of both armies.

Training Activities

The exercise will include:

- **Field exercises**
- **Combat discussions**
- **Lectures**
- **Demonstrations**
- **Culminating validation exercise**

The two contingents will also:

- Exchange operational experiences.
- Share **best practices**.
- Demonstrate contemporary **equipment and technologies** used during joint operations.

UN Charter Framework

- Joint counter-insurgency and counter-terrorism operations will be conducted under **Chapter VII of the United Nations Charter**.
- Chapter VII deals with **actions in respect of threats to the peace, breaches of the peace and acts of aggression**.

Exercise MAITREE

- Exercise **MAITREE** was instituted in **2006**.
- It serves as an important platform for strengthening **military cooperation between India and Thailand**.
- Regular exercises provide both armies with opportunities to exchange operational knowledge and improve their ability to work together.

Significance for India–Thailand Relations

MAITREE-XV strengthens the long-standing defence relationship between India and Thailand by promoting:

- **Military interoperability**
- **Operational cooperation**
- **Counter-terrorism cooperation**
- **Exchange of best practices**
- **Professional interaction**
- **Mutual trust and understanding**

The exercise also contributes to broader **India–Thailand bilateral relations** and strengthens cooperation in the field of **defence and security**.

'Mangrol' Delivered to Indian Navy



Why in News?

- 'Mangrol', the **third of eight Anti-Submarine Warfare Shallow Water Craft (ASW SWCs)**, was delivered to the **Indian Navy** on **21 August 2026**.
- It was **indigenously designed and constructed** by **Cochin Shipyard Limited (CSL)**, Kochi.
- The induction strengthens India's **indigenous Anti-Submarine Warfare (ASW) capabilities** and supports the vision of **Aatma Nirbhar Bharat**.

Key Features of 'Mangrol'

- **Type:** Anti-Submarine Warfare Shallow Water Craft (ASW SWC)
- **Builder:** Cochin Shipyard Limited (CSL), Kochi
- **Number in series:** 3rd of 8 ASW SWCs
- **Induction:** 21 August 2026
- **Indigenous content:** Approximately **80%**
- Designed and constructed according to the classification rules of **Det Norske Veritas (DNV)**.

Main Roles

'Mangrol' is designed to perform several important maritime missions:

- **Anti-Submarine Warfare (ASW)**
- **Underwater surveillance**
- **Search and Rescue (SAR)**
- **Low Intensity Maritime Operations (LIMO)**
- **Mine-laying operations**

Its primary role is to conduct **ASW operations in shallow coastal waters**.

Weapons and Sensors

The vessel is equipped with advanced systems including:

- **Lightweight torpedoes**
- **Indigenous ASW rockets**
- **Advanced shallow-water sonars**

These systems help the vessel to:

- Detect underwater threats
- Track underwater targets
- Counter submarine threats in shallow waters

Propulsion

- **Propulsion system:** Diesel Engine–Waterjet Propulsion
- This system powers the vessel for operations in coastal and shallow-water environments.

Significance for India

Strengthening ASW Capability

- Shallow coastal waters can be difficult environments for detecting submarines.
- 'Mangrol' will improve the Indian Navy's ability to **detect and counter underwater threats** in these areas.

Aatma Nirbhar Bharat

- Around **80% indigenous content** reflects India's growing capability in:
 - Warship design
 - Ship construction
 - Defence technology
 - Indigenous weapons and systems

Indigenous Defence Manufacturing

- The project strengthens India's domestic defence manufacturing ecosystem.
- It reduces dependence on foreign sources for specialised naval platforms and technologies.

Name – 'Mangrol'

- The warship is named after **Mangrol**, a historic and strategically important coastal township in **Gujarat's Surat district**.

Key Organisations

- **Indian Navy:** User and operator of the vessel.
- **Cochin Shipyard Limited (CSL):** Designed and constructed 'Mangrol'.
- **Det Norske Veritas (DNV):** Classification rules followed for the vessel's design and construction.

□□□

History, Art & Culture

Tourism Sector in India



Why in News?

- India is emerging as a major **global tourism hub**.
- Growth is supported by:
 - Better destination infrastructure
 - Improved connectivity
 - Digital tourism platforms
 - Easier travel procedures
 - Global promotion
 - Focus on **sustainable and inclusive tourism**.

Why Is Tourism a National Growth Engine?

- Tourism is a major driver of:
 - **Economic growth**
 - **Employment**
 - **Regional development**
- It supports sectors such as:
 - Hospitality
 - Transport
 - Handicrafts
 - Food services
 - Wellness
 - Culture
 - Local businesses

Important Data

- **Domestic tourist visits:** Around **2.9 billion** in 2024.
- **International tourist arrivals:** Around **2.02 crore** in 2025.
- **GDP contribution:** ₹15.73 lakh crore in 2023–24, around **5.22% of GDP**.

- **Employment:** Around **84.6 million jobs** in 2023–24.
- **Foreign exchange earnings:** Around **USD 31.7 billion** from international tourism in 2025.
- Tourism also helps develop **less-developed regions** by creating local livelihoods and improving infrastructure.

India's Tourism Advantage

Diversity

India offers:

- Ancient civilisations
- Living traditions
- Pilgrimage sites
- Wildlife
- Mountains
- Festivals
- Different cuisines
- Wellness experiences

Heritage

- India has **45 UNESCO World Heritage Sites**.

Natural Resources

India has:

- **106 National Parks**
- **18 Biosphere Reserves**
- Protected forests
- Beaches
- Islands
- Diverse landscapes

Cultural Attractions

Major attractions include:

- Pilgrimage centres
- Monuments
- Museums
- Handicrafts
- Performing arts
- Festivals
- Yoga
- Ayurveda

Major Tourism Segments

1. Spiritual Tourism

India is associated with the origins of:

- Hinduism
- Buddhism
- Jainism
- Sikhism

Important destinations include:

- Char Dham
- Kashi
- Ayodhya
- Bodh Gaya
- Amritsar
- Tirupati
- Puri

Growing pilgrim numbers and better connectivity are strengthening India's position as a **spiritual tourism hub**.

2. Buddhist Tourism

Important sites include:

- Bodh Gaya
- Sarnath
- Kushinagara

These sites strengthen India's cultural and civilisational links with Asian countries.

3. Heritage and Cultural Tourism

Includes:

- Forts
- Palaces
- Temples
- Archaeological sites
- Museums
- Historic cities
- Classical dance and music
- Festivals
- Handicrafts
- Regional cuisine

4. Wellness and Medical Tourism

India attracts tourists through:

- Yoga
- Ayurveda
- Naturopathy
- Traditional healing systems
- Affordable medical treatment
- High-quality healthcare

5. Eco and Wildlife Tourism

India's:

- National parks
- Tiger reserves
- Wetlands
- Mangroves
- Himalayan landscapes

support:

- Safaris
- Birdwatching
- Trekking
- Conservation tourism

They also generate local employment.

6. Rural and Community Tourism

Includes:

- Homestays
- Village walks
- Traditional food
- Crafts
- Agricultural experiences

It provides direct income to **rural households and artisans**.

7. MICE Tourism

MICE = Meetings, Incentives, Conferences and Exhibitions

India is becoming an important MICE destination because of:

- Modern convention infrastructure
- Better connectivity
- International events

8. Coastal, Cruise and Adventure Tourism

India's **7,500+ km coastline**, islands, rivers, deserts and mountains support:

- Cruise tourism
- Water sports
- Trekking
- Mountaineering
- River rafting
- Desert safaris
- Film tourism

These activities increase visitor choices and can encourage longer stays.

Infrastructure-Led Tourism Development

Swadesh Darshan

- **76 projects**
- Worth over **₹5,295.24 crore**
- Spread across **14 thematic circuits**
- Includes:
 - Buddhist
 - Coastal
 - Desert

- Himalayan
- North-East
- Ramayana
- Rural
- Spiritual
- Tribal

- **75 projects** have been physically completed.

Swadesh Darshan 2.0

- Focuses on **destination-centric, sustainable and experience-based tourism**.
- **53 projects**
- Worth **₹2,207.08 crore**

PRASHAD Scheme

- **54 projects**
- Worth over **₹1,726.24 crore**
- Focuses on improving facilities at major **pilgrimage and heritage destinations**.

Capital Support to States

Under the **Special Assistance to States for Capital Investment**:

- **40 projects**
- Across **23 States**
- Worth **₹3,295.76 crore**
- Aim: develop iconic tourist centres to global standards.

Challenge-Based Destination Development

- **37 projects**
- Worth **₹687.99 crore**
- Focuses mainly on high-potential:
 - Spiritual destinations
 - Eco-tourism destinations

Better Connectivity

Tourism is also supported by:

- Highways
- Modern railway stations
- Vande Bharat trains
- UDAN airports
- E-buses
- Better last-mile transport

Viksit UDAN

- Outlay of more than **₹28,840 crore**
- Expected to improve connectivity in **Tier-2, Tier-3 and remote areas**.
- Focuses on more than:

- **100 new aerodromes**
- **200 helipads**

Ease of Travel and Digital Tourism

e-Tourist Visa

- Available to nationals of **175 countries**.
- Entry through:
 - **33 airports**
 - **19 seaports**
 - **4 land ports**

Digital authorisation and expanded e-Visa categories have made travel easier.

NIDHI+

NIDHI = National Integrated Database of Hospitality Industry

It provides a unified digital platform for:

- Registration
- Recognition
- Classification of tourism service providers

It supports:

- Online applications
- Integrated payments
- Transparent approvals
- Ease of doing business

Tourism Startups

- India had **1,497 DPIIT-recognised travel and tourism startups** across **262 districts** as of April 2023.
- They generated around **13,919 jobs**.
- Around **58%** were located in **Tier-II and Tier-III cities**.

Startups are working in:

- Travel technology
- Online booking
- Homestays
- Rural tourism
- Smart mobility
- AI-based travel planning

Examples mentioned:

- **Highway Delite** — digitally connected highway amenities
- **VilloTale** — rural homestays and community tourism

- **udChalo** — technology-enabled travel services for defence personnel, veterans and their dependents

Sustainable and Inclusive Tourism

India is moving towards a tourism model based on:

- Environmental responsibility
- Economic inclusion
- Community participation
- Better visitor experience

Travel for LiFE

Encourages tourists and service providers to:

- Travel responsibly
- Conserve resources
- Make environmentally conscious choices

Destination Diversification

Activities such as:

- Trekking
- Birdwatching
- Turtle trails
- Nature-based tourism

can reduce pressure on overcrowded destinations while supporting conservation.

Community Benefits

Sustainable tourism can create:

- Local employment
- Community enterprises
- Income for guides
- Income for artisans
- Opportunities for homestay operators

Cultural and Environmental Protection

Responsible tourism helps preserve:

- Local traditions
- Heritage sites
- Biodiversity
- Natural resources

Sustainable Development Goals

Sustainable tourism contributes to:

- **SDG 8.9** — jobs and local culture
- **SDG 12.B** — monitoring tourism impacts
- **SDG 14.7** — sustainable use of marine and coastal resources

Dhimsa Dance



Why in News?

- More than **13,000 tribal women and girl students** recently performed the traditional **Dhimsa dance**.
- The performance was held at the **Alluri Sitarama Raju International Airport, Bhogapuram**.
- **Guinness World Records** recognised it as the “largest Dhimsa dance”.

About Dhimsa Dance

- **Dhimsa** is a popular **tribal dance of Andhra Pradesh**.
- It is performed by several tribal communities, including:
 - Bagata
 - Valmiki
 - Poraja
 - Khond
 - Gadaba
 - Kondadora
 - Mukadora
 - Kotia

Occasions

Dhimsa is performed during:

- **Festivals**
- **Weddings**
- **Hunting festival**, held in April

During the hunting festival, men and women may dance together for several hours.

Origin

- There are **12 varieties of Dhimsa**.
- Its origin can be traced to the **Koraput region**, which is associated with the **Ghond Tribe**.

Performance

- Usually performed by a group of around **15–20 women**.
- Dancers traditionally wear:
 - Colourful ethnic sarees.
 - Traditional ornaments.
- They move in **synchronised circles**.
- Male members of the community generally play the accompanying musical instruments.
- The dance focuses mainly on **body movements**, rather than facial expressions or literary texts.
- **Feet and hand movements** are particularly important.
- The movements change according to the music.

Musical Instruments

Dhimsa is accompanied by **wind and percussion instruments**, including:

- **Mori** – wind instrument
- **Thudum** – drum
- **Dappu** – percussion instrument

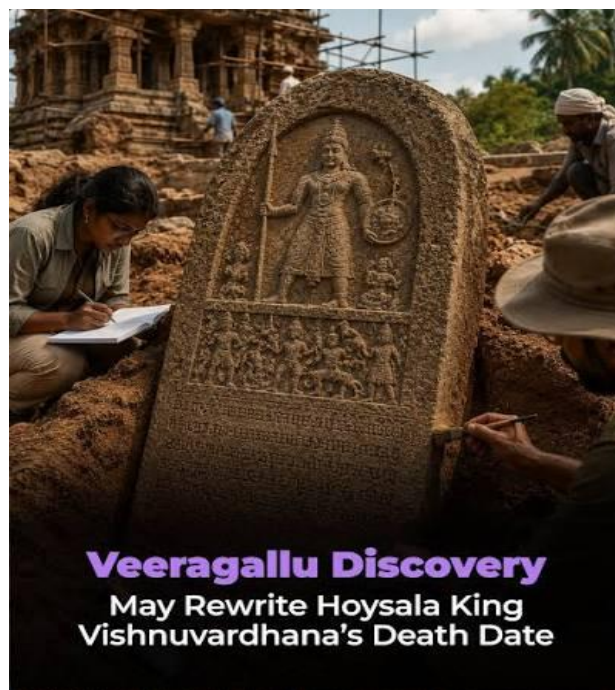
Themes

The themes of Dhimsa are connected with the traditional life and culture of tribal communities.

They include:

- **Mythologies**
- **Folktales**
- **Tribal ethos**
- **Customs and social values**
- **Economic activities**
- **Kinship**
- **Marital life**

12th-Century Veeragallu Inscription and Hoysala King Vishnuvardhana



Why in News?

- A **12th-century Veeragallu (hero stone)** with an **Old Kannada inscription** has been discovered at **Neeragunda village in Karnataka**.
- The discovery may help resolve the long-standing historical debate over the **death of Hoysala ruler Vishnuvardhana**.

What are the Key Facts About the Discovery?

- **Discovery Site:** The Veeragallu was found during restoration work at the **Hoysala-era Lakshmi Narayana Swamy Temple** in Neeragunda, Karnataka.
- **Inscription Details:**
 - The inscription states that **Maravve** erected the hero stone in memory of her husband **Boppa**, a Hoysala soldier.
 - Boppa reportedly died shortly after the death of **King Vishnuvardhana at Bankapura**, in present-day Haveri district.
 - The inscription records the date as **Ekadashi of Pushya Masa, Durmathi Samvatsara, Year 1064**.
 - This corresponds to **11 December 1141 CE** in the Gregorian calendar.

- If authenticated, the inscription could help settle the debate over Vishnuvardhana's death, which has previously been placed by different scholars in **1149 CE or 1152 CE**.

What is Veeragallu (Hero Stone)?

- **Veeragallu** refers to memorial stones erected to honour people who died while defending their:
 - King
 - Village
 - Cattle
- **Typical Structure:**
 - Hero stones often contain **three panels**:
 1. **Battle scene**
 2. **Ascent to heaven**
 3. **Worship before a deity**
 - These scenes symbolise **Moksha (salvation)**.
- **Hoysala Connection:**
 - The tradition also reflects the **Hoysala Garuda tradition**.
 - Elite royal bodyguards showed extreme loyalty to the king and, in some cases, **sacrificed their lives after the king's death**.

Who was King Vishnuvardhana?

- **Original Name:** Bitti Deva
- He was one of the **greatest rulers of the Hoysala dynasty**.
- **Battle of Talakad (1116 CE):**
 - Vishnuvardhana defeated the **Cholas** at Talakad.
 - This helped consolidate Hoysala power in southern India.
- **Chennakeshava Temple, Belur:**
 - The temple was consecrated by Vishnuvardhana in **1117 CE**.
 - It commemorated his **1116 CE victory over the Cholas**.

- It was originally known as the **Vijaya Narayana Temple**.

● **Religious Patronage:**

- Influenced by **Ramanujacharya**, Vishnuvardhana embraced **Srivaishnavism**.
- At the same time, he continued to patronise **Jainism and Shaivism**.

About the Hoysala Empire

- The **Hoysala Empire** ruled parts of present-day:
 - Karnataka
 - Tamil Nadu
 - Andhra Pradesh
- **Period:** Mainly between the **11th and 14th centuries CE**.
- **Capitals:**
 - **Belur**
 - Later **Halebidu (Dwarasamudra)**

Hoysala Temple Architecture

Hoysala temples are known for their distinctive **Vesara-style architecture**, including:

- **Stellate (star-shaped) plans**
- Raised circumambulatory platforms called **Jagati**
- **Tiered friezes**
- Intricate carvings made mainly in **soapstone**
- The **Sacred Ensembles of the Hoysalas**, comprising **Belur, Halebidu and Somanathapura**, were inscribed as a **UNESCO World Heritage Site in 2023**.

Significance of the Discovery

- Provides a potential **new historical source** for dating the death of Vishnuvardhana.
- Offers information about **Hoysala military traditions and royal loyalty**.
- Highlights the importance of **Old Kannada inscriptions** in reconstructing medieval South Indian history.
- Adds to the understanding of **Hoysala political, social and religious history**.

Royal Indian Navy (RIN) Mutiny of 1946



Why in News?

- As India observed its **80th Independence Day on 15 August 2026**, the **Royal Indian Navy (RIN) Mutiny of 1946** is being recalled for the pressure it created on British colonial rule.
- Though the sailors eventually surrendered, the revolt **shook British confidence in the loyalty of Indian armed forces**, which were a key pillar of the colonial system.

What was the Royal Indian Navy (RIN) Mutiny of 1946?

- **About:** The RIN Mutiny was a major uprising by Indian naval ratings against British authority.
 - It began as a **strike on 18 February 1946 in Bombay (now Mumbai)** and soon developed into a wider **anti-imperial movement** across British India.
 - The revolt gained support from **workers, students and civilians** and also generated sympathy among sections of other armed forces.

What were the Causes and Triggers of the Mutiny?

- **Post-War Demobilisation:** During World War II, the Royal Indian Navy grew rapidly from fewer than **2,000 to nearly 30,000 personnel**.
 - After the war, Britain planned to reduce the strength to around **11,000**, creating **job insecurity and loss of status** among Indian sailors.
- **Racial Discrimination and Poor Conditions:** Indian ratings faced unequal treatment compared with British personnel.

- Major grievances included **racial discrimination, poor living conditions and inferior food**.
- Between **1942 and 1945**, **nine smaller mutinies** had already occurred over morale and management issues.
- **Immediate Spark:** Anti-British slogans such as **“Quit India”** and **“Down with the British”** were painted at **HMIS Talwar** in late 1945 and again in early February 1946.
 - In February 1946, **Commander Arthur Frederick King’s racial abuse** and refusal to address the sailors’ complaints further intensified the situation.
 - This led to the full-scale strike on **18 February 1946**.
- **Nationalist Fervour:** The **INA trials** and the influence of **Subhas Chandra Bose** strengthened nationalist feelings among the sailors.
 - Service-related grievances gradually turned into a broader **anti-colonial protest**.

How did the Mutiny Spread?

- The revolt expanded from **Bombay** to naval bases in **Karachi, Visakhapatnam, Jamnagar and Kolkata**.
- Around **78 ships, 20 shore establishments and nearly 20,000 personnel** became involved.
- The rebels formed a **Naval Strike Committee** and called themselves the **Indian National Navy and Azad Hindis**, drawing inspiration from the INA.
- The rebels:
 - Removed **British flags**.
 - Hoisted **Congress and Muslim League flags**.
 - Expressed wider opposition to British rule.
- **Civilian support** gave the movement a broader base.
 - **Dockyard and mill workers, railway workers and students** participated in the agitation.

- The unrest disrupted **public transport and commercial activity in Bombay.**

What were the Demands of the Mutineers?

- **Better food, rations and living conditions.**
- **Parity in pay and allowances** with the Royal Navy.
- Fair employment opportunities after demobilisation.
- Protection from **victimisation.**
- Access to **NAAFI (Navy, Army and Air Force Institutes) stores.**
- **Release and fair trials of INA detainees.**
- Withdrawal of British Indian troops from **Indonesia.**
- Opposition to using Indian personnel for **British imperial expansion.**

How did the British Respond?

- British forces used **disproportionate force** to suppress the revolt.
- The crackdown resulted in the deaths of at least **400 civilians.**
- The growing unrest also raised concerns about the possibility of the movement spreading further.

How did the Mutiny End?

- **Sardar Vallabhbhai Patel and Muhammad Ali Jinnah** persuaded the sailors to end the mutiny.
 - Their intervention was aimed at preventing the violence from spreading further.
- The rebel sailors eventually **surrendered**, limiting the mutiny's immediate political success.
- Unlike the INA, the movement lacked a **charismatic national leader** who could become its enduring public symbol.

What was the Significance of the RIN Mutiny?

- **Shook British Confidence:** The revolt demonstrated that the British could no longer **rely unconditionally on Indian armed forces** to sustain colonial rule.
- **Broadened the Freedom Struggle:** Participation by naval personnel, workers, students and civilians turned the revolt into a wider **anti-British mobilisation.**

- **Added Pressure on British Rule:** Coming after the **INA trials and growing nationalist unrest**, the mutiny further weakened the political position of the British in India.
- **Contribution to Independence:** Although the revolt itself ended in surrender, its impact contributed to the circumstances that **hastened British withdrawal from India.**
- **Historical Description:** The RIN Mutiny is often described as the **"last war of independence"** because of its role in the final phase of India's struggle against British rule.

Indian Independence Act, 1947



Why in News?

- The **80th Independence Day** has renewed focus on the **Indian Independence Act, 1947**, the historic legislation that brought **British rule in India to an end** and provided for the creation of **India and Pakistan as independent dominions.**
- The Act was **passed on 4 July 1947.**
- It received **Royal Assent on 18 July 1947.**
- It came into effect on **15 August 1947.**

What were the Key Features of the Indian Independence Act, 1947?

- **End of British Sovereignty:** The Act ended British legal authority over India.
 - The British monarch also ceased to use the title **"Emperor of India."**
- **Abolition of the Viceroy's Office:** The office of the **Viceroy** was replaced by a **Governor-General** in each of the two dominions.
- **Constituent Assemblies:** The Constituent Assemblies of India and Pakistan were given powers to:
 - **Draft their respective constitutions.**

- Repeal or modify existing laws as required.
- **Princely States:** The Act ended **British paramountcy** over the princely states.
 - They were no longer bound by British authority.
 - This created the question of whether they would **join India, join Pakistan or seek independence**.
- **Interim Constitutional Framework:** Both dominions were allowed to function under the **Government of India Act, 1935**, with necessary modifications, until their own constitutions came into force.
- **Boundary Demarcation:** The Act provided for the determination of the final boundaries of **Punjab and Bengal**.
 - **Boundary Commissions**, chaired by **Sir Cyril Radcliffe**, were responsible for the demarcation.
- **Abolition of Secretary of State for India:** The office of the **Secretary of State for India** was abolished, marking the end of another major institution of British control over India.

What was the Background to the Indian Independence Act?

- **Growth of the Freedom Movement:** The national movement had steadily increased pressure on British rule.
 - Movements such as the **Non-Cooperation Movement** and **Quit India Movement** strengthened the demand for complete independence.
- **Muslim League's Demand:** The **Lahore Resolution of 1940** strengthened the demand for a separate Muslim state.
- **Failure of the Cabinet Mission Plan:** The **Cabinet Mission Plan of 1946** attempted to preserve a united India while providing substantial provincial autonomy.
 - Political differences and growing communal tensions prevented the plan from succeeding.
- **Attlee's Announcement:** In **February 1947**, British Prime Minister **Clement Attlee** announced that Britain would transfer power and grant full self-government to British India by **June 1948 at the latest**.

- The future of the **princely states** was also to be settled in connection with the transfer of power.
- **Mountbatten Plan:** The transfer of power was eventually brought forward through **Lord Mountbatten's Partition Plan**, also known as the **3 June Plan**.
 - The plan was accepted by both the **Indian National Congress and the Muslim League**.
 - It became the immediate political basis for the **Indian Independence Act, 1947**.

Significance of the Indian Independence Act, 1947

- It provided the **legal framework for the end of British rule** in India.
- It created the two independent dominions of **India and Pakistan**.
- It ended **British paramountcy over princely states**.
- It transferred constitutional authority to the **Indian and Pakistani Constituent Assemblies**.
- It laid the immediate legal foundation for the **transfer of power on 15 August 1947**.

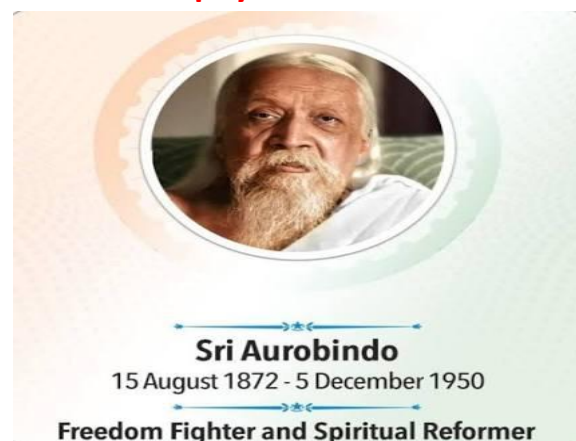


EDITORIALS

Crux of The Hindu & Indian Express

History, Art & Culture

Sri Aurobindo: Life, Freedom Struggle and Philosophy



Why in News?

- On **15th August 2026**, the Prime Minister paid tribute to **Sri Aurobindo** on his birth anniversary, remembering his role in **India's freedom struggle** and his ideas on **human progress, spiritual growth and transformation**.

Who was Sri Aurobindo?

- **Full Name:** Aurobindo Ghose
- **Born:** 15th August 1872, Calcutta
- **Died:** 5th December 1950, Pondicherry
- He was a **yogi, philosopher, poet, seer and nationalist**.

Early Life and ICS

- Aurobindo appeared for the **Indian Civil Service (ICS)** examination and passed it.
- However, he did not enter the service because he failed to appear for the **compulsory horse-riding test**.

Sri Aurobindo's Role in the Freedom Struggle

Revolutionary Nationalism

- Aurobindo was one of the early leaders who advocated **radical nationalism** against British rule.
- He supported **mass mobilisation** even before the rise of Gandhi as the central leader of the national movement.
- He strongly criticised the **moderate approach of the Indian National Congress**.

New Lamps for Old

- **New Lamps for Old** was a series of articles written by Aurobindo.
- Through these articles, he criticised the Congress for its **moderate political methods**.
- He argued for a more **assertive and radical approach** to achieving national freedom.

Alipore Bomb Case

- Aurobindo was arrested in the **Alipore Bomb Case (1908)**.
- He was successfully defended by **Chittaranjan Das**.

Revolutionary Organisations and Journalism

- He was closely associated with revolutionary groups such as:
 - **Jugantar**
 - **Anushilan Samiti**

- He also contributed to nationalist journalism.
- He wrote for **Bande Mataram** and later founded **Karmayogin**.

Sri Aurobindo's Spiritual and Philosophical Journey

- Aurobindo gradually moved from active revolutionary politics towards **spirituality and philosophy**.
- He established the **Sri Aurobindo Ashram in Pondicherry in 1926**.
- He worked closely with **Mirra Alfassa**, popularly known as **The Mother**.
- The Mother later founded **Auroville**, envisioned as a **universal township**.

Major Literary and Philosophical Works

Sri Aurobindo wrote extensively on **spirituality, philosophy, yoga, culture and human evolution**.

Important works include:

- *The Life Divine*
- *Savitri*
- *Essays on the Gita*
- *The Synthesis of Yoga*
- *Defence of Indian Culture*

Nobel Prize Nominations

- He was nominated for the **Nobel Prize in Literature in 1943**.
- He was also nominated for the **Nobel Peace Prize in 1950**.

Sri Aurobindo's Vision of India

- Aurobindo believed that India's role was not limited to achieving political freedom.
- He envisioned India playing a **leading spiritual and civilisational role** in the future of humanity.
- His thought emphasised:
 - **Cultural self-confidence**
 - **Spiritual regeneration**
 - **Human progress**
 - **Transformation of human consciousness**

Significance of Sri Aurobindo

Sri Aurobindo's contribution can be understood through two major phases:

- **Political Phase:** Radical nationalism, anti-colonial mobilisation and revolutionary thought.

- **Spiritual Phase:** Yoga, philosophy, human evolution and India's spiritual mission.

His legacy therefore connects **India's freedom struggle with a broader vision of spiritual and human transformation.**

1,800-Year-Old Saraswati Idol Reveals India's Ancient Harp Tradition



Why in News?

A recent **iconographic study** of an approximately **1,800-year-old black sandstone idol of Goddess Saraswati** from Madhya Pradesh has provided new insights into **ancient Indian musical traditions** and the cultural history of the **Malava community**.

About the Saraswati Idol

- **Location:** Manasa town, **Neemuch district, Madhya Pradesh**
- **Discovery:** Excavated during the **1980s**
- **Present location:** **Ujjain Museum**
- **Period:** **2nd century CE**, associated with the **Malava era**
- It is regarded as the **oldest Saraswati sculpture from Madhya Pradesh depicting the goddess with a musical instrument.**

The Vakra-Veena

- Saraswati is shown playing a distinctive **arched, harp-like string instrument** known as the **Vakra-Veena**.
- Its curved form provides evidence of an early branch of India's **string-instrument tradition**.
- The sculpture therefore serves as an important visual source for reconstructing the evolution of **ancient Indian musical instruments**.

Malavas: Historical Context

- The **Malavas** were an historically significant community of ancient India.
- Roman historian **Quintus Curtius Rufus**, in *Historiae Alexandri Magni*, recorded their **resistance to Alexander the Great**.
- The community subsequently moved southwards towards the **Mandsaur region**.
- The Saraswati sculpture provides an additional cultural link to the historical presence of the Malavas in central India.

Evolution of the Indian Arched Harp

Evidence for the harp-like instrument occurs across different periods:

Period / Source	Evidence
Bronze Age	Arched-harp representations in rock paintings at Nimbu Bhoj Cave, Pachmarhi
2nd century CE	Saraswati idol from Manasa , showing the Vakra-Veena
Gupta period	Samudragupta's gold coins depict the emperor playing a harp-like instrument
Present day	Similar arched harp survives in Myanmar as the Saung-Gauk

Literary Evidence

The tradition of stringed instruments has textual roots in ancient Indian literature:

- **Rigveda** contains early references associated with musical traditions.
- **Bharata's Natyashastra** provides more developed discussions of **music and musical instruments**.

Modern Survival: Saung-Gauk

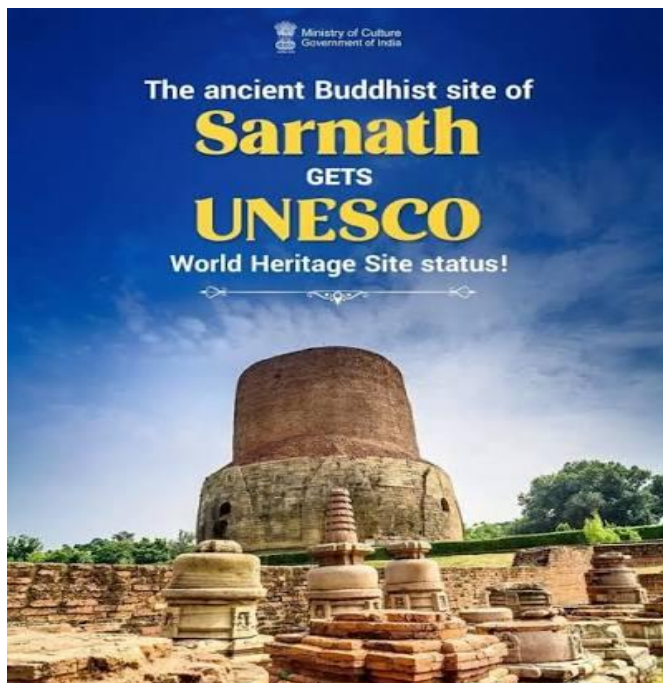
- The ancient Indian arched-harp tradition has largely disappeared from present-day India.
- A related form survives in **Myanmar**, where the instrument is known as the **Saung-Gauk**.
- It represents an important surviving link to the historical development of **arched harp traditions in South Asia**.

Significance

- Provides evidence for the **antiquity and evolution of Indian musical instruments**.
- Connects **archaeology, iconography, literature and cultural history**.
- Offers insights into the **Malava cultural landscape** of ancient central India.

- Demonstrates the importance of sculptures and other material remains in reconstructing **India's musical heritage**.
- The continuity of the arched-harp tradition into Myanmar highlights the **historical cultural exchanges of South Asia**.

Ancient Buddhist Site of Sarnath Added to UNESCO World Heritage List



Why in News?

- The **Ancient Buddhist Site of Sarnath** in Uttar Pradesh has been inscribed on the **UNESCO World Heritage List** during the **48th Session of the World Heritage Committee in Busan, South Korea**.
- With this addition, India now has **45 UNESCO World Heritage properties**, making it the **6th largest country globally** and **2nd in the Asia-Pacific region** in terms of World Heritage properties.

UNESCO World Heritage List

- UNESCO identifies, protects and preserves **cultural and natural heritage of outstanding value** under the **1972 World Heritage Convention**.
- As of **July 2026**, the World Heritage List contains:
 - **1,273 properties**
 - Across **173 countries**
 - **991 cultural**

- **240 natural**
- **42 mixed**

- The World Heritage Convention has been ratified by **196 States Parties**.

About Sarnath

- **Location:** Varanasi, Uttar Pradesh.
- Sarnath is one of the **four principal Buddhist pilgrimage sites**.
- It is traditionally associated with **Gautama Buddha's first sermon after enlightenment**.
- The site is known in Buddhist literature by names including:
 - **Rishipatana**
 - **Ishipatana**
 - **Mrigadava**

Historical Significance

- Sarnath is associated with the **Dharmachakra Pravartana**, or "**Turning of the Wheel of the Law**", where Buddha delivered his first sermon in the **6th century BCE**.

This event is significant because it:

- Marked the beginning of Buddha's formal teaching mission.
- Led to the establishment of the **Buddhist Sangha**.
- Introduced the teachings associated with the **Noble Eightfold Path**.

Components of the UNESCO Inscription

The UNESCO property comprises **two components**:

1. **Chaukhandi Stupa**
2. **Archaeological Remains of Sarnath**

The archaeological complex contains several important monuments:

- **Dhamek Stupa**
- **Dharmarajika Stupa**
- **Mulagandhakuti Vihara**
- **Ashokan Pillar**

Architectural and Cultural Evolution

- Sarnath represents nearly **16 centuries of continuous historical development**.
- Its monuments span from the **Pre-Mauryan period (4th–3rd century BCE)** to the **12th century CE**.
- The site evolved through the patronage of:
 - **Rulers**

- Buddhist monasteries
- Devotees
- It subsequently declined and was rediscovered in the 18th century.

UNESCO Criteria for Inscription

Sarnath was inscribed under **Criteria (iii) and (vi)**.

Criterion	Significance
(iii)	Demonstrates its enduring spiritual importance as one of the four principal Buddhist pilgrimage centres .
(vi)	Has a direct association with major events in Buddha's life , particularly his first sermon and his meeting with his first five disciples.

Long Nomination Process

- Sarnath entered India's **Tentative List** of UNESCO World Heritage Sites in **1998**.
- India submitted the formal nomination dossier in **January 2025**.
- This was followed by **technical evaluation and review by UNESCO advisory bodies**.
- Final inscription took place at the **48th World Heritage Committee session**.

International Buddhist Significance

Sarnath continues to attract Buddhist pilgrims from several countries, including:

- Japan
- Thailand
- Sri Lanka
- Myanmar
- Vietnam
- South Korea
- Cambodia
- Mongolia

Thus, its recognition strengthens India's role in **Buddhist cultural diplomacy and heritage-based international engagement**.

Four Major Buddhist Pilgrimage Sites

With Sarnath's inscription, **three of the four major Buddhist pilgrimage sites associated with Buddha are now UNESCO World Heritage Sites**:

Site	Location	Association with Buddha
Lumbini	Nepal	Birth
Mahabodhi Temple	Bodh Gaya, Bihar	Enlightenment
Sarnath	Uttar Pradesh	First Sermon
Kushinagar	Uttar Pradesh	Mahaparinirvana

India's UNESCO World Heritage Profile

As of **July 2026**, India has **45 World Heritage properties**:

- **37 Cultural**
- **7 Natural**
- **1 Mixed**

India's First UNESCO Inscriptions

India's first four properties were inscribed in **1983**:

- **Agra Fort**
- **Taj Mahal**
- **Ajanta Caves**
- **Ellora Caves**

The list has subsequently expanded to cover diverse heritage such as **forts, temples, caves, railways, stepwells, planned cities and national parks**.

Recent Additions

- **Maratha Military Landscapes of India** — inscribed at the **47th World Heritage Committee session in Paris**.
- **Ancient Buddhist Site of Sarnath** — inscribed at the **48th session in Busan**.

India's **Tentative List** contains **69 properties**, providing a pool of potential future nominations.

Institutional Framework for Heritage Conservation

Ministry of Culture

The **Ministry of Culture** leads India's engagement with UNESCO on cultural heritage.

Its responsibilities include:

- Implementing UNESCO cultural conventions.
- Coordinating **World Heritage and Intangible Cultural Heritage nominations**.
- Promoting international heritage cooperation.
- Using heritage as an instrument of **cultural diplomacy**.

Archaeological Survey of India (ASI)

The **Archaeological Survey of India (ASI)** is the nodal agency for World Heritage-related matters in India.

It is responsible for:

- Conservation and maintenance of centrally protected monuments.
- Managing conservation activities at **28 UNESCO World Heritage properties**.

- Implementing India's heritage protection framework.

Major Laws

- **Ancient Monuments and Archaeological Sites and Remains Act, 1958**
- **Antiquities and Art Treasures Act, 1972**

Government Initiatives for Heritage Conservation

1. Retrieval of Antiquities

The Government works with the **Ministry of Culture, ASI, Indian Missions and enforcement agencies** to bring Indian cultural artefacts back from abroad.

- **669 antiquities** have been repatriated.
- **656 of these have returned since 2014.**
- Important examples include:
 - Chola-period **Shiva Nataraja**
 - **Saint Sundarar with Paravai**
 - **Somaskanda**

2. Adopt a Heritage 2.0 Programme

- Originally launched in **2017** and revamped in **2023**.
- Encourages participation of:
 - Private companies
 - PSUs
 - NGOs
 - Trusts
 - Societies
- Focuses on improving **visitor amenities at centrally protected monuments** through CSR and other contributions.

3. Gyan Bharatam Mission

- Launched in **2025**.
- Focuses on:
 - Preservation of manuscripts
 - Digitisation
 - Wider accessibility
 - Digital repositories

National Manuscript Survey

- The **2026 survey** identified more than **1.19 crore manuscripts**.

- Over **4.40 lakh digitised manuscripts** are accessible through the **Gyan Bharatam portal**.

4. Digitisation of Archives

The **National Archives of India** is digitising historical records through the **Abhilekh Patal portal**, improving access to archival material.

5. National Mission on Monuments and Antiquities (NMMA)

Implemented under the **ASI**, NMMA develops a national database of:

- Monuments
- Antiquities

This supports **conservation planning, monitoring and prioritisation**.

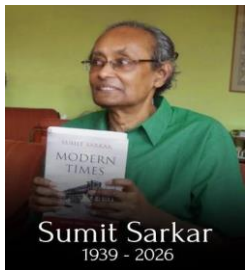
Significance of Sarnath's UNESCO Recognition

- **Cultural heritage:** Gives international recognition to one of India's most important Buddhist archaeological landscapes.
- **Buddhist diplomacy:** Strengthens India's cultural links with Buddhist-majority and Buddhist-influenced countries.
- **Tourism:** Can promote heritage and pilgrimage tourism in Uttar Pradesh.
- **Conservation:** UNESCO recognition reinforces the importance of scientific preservation and sustainable management.
- **Soft power:** Adds to India's ability to project its historical and civilisational connections globally.
- **Historical continuity:** Highlights the evolution of Buddhist architecture and culture across nearly **16 centuries**.



PERSONS IN NEWS

Person	Why in News	Key Facts
D. Y. Patil 	Died on 4 August 2026 in Kolhapur, Maharashtra, aged 90.	Received Padma Shri in 1991 for social work. Served as Governor of Tripura (2009–2013) and Governor of Bihar (2013–2014) , with additional charge of West Bengal. Founded the D.Y. Patil Group , which has more than 182 educational institutions and seven universities.
Tewolde Gebremariam 	Appointed CEO and Managing Director of Air India on 5 August 2026 .	He will succeed Campbell Wilson . Air India is a scheduled Indian airline and a Tata Group company .
Prof. Karthikeyan Lanka 	Selected for the NASI Young Scientist Award 2026 .	Associate Professor at IIT Bombay's Centre of Studies in Resources Engineering and associate faculty in its Interdisciplinary Programme in Climate Studies. His research includes remote sensing, land-atmosphere interactions and agricultural droughts .
Droupadi Murmu 	Presented the Sant Kabir Handloom Awards and National Handloom Awards 2025 on 7 August 2026 .	A total of 22 awards were presented: 3 Sant Kabir Handloom Awards and 19 National Handloom Awards. She also released four commemorative postage stamps and unveiled a book on handloom textiles.
Deepak Dhar 	Named a recipient of the 2026 Dirac Medal .	Shared the medal with Bernard Derrida, Marc Mézard and Haim Sompolinsky . He is an Indian physicist known for research including the sandpile model . He completed his PhD from Caltech in 1978 .
N. Chandrasekaran 	Decided not to seek reappointment as Chairman of Tata Sons .	His current term ends on 20 February 2027 . He joined Tata Group in 1987, became TCS CEO in 2009 , and became Chairman of Tata Sons in 2017 .

Dr. Jal Ratanji Patel 	Proposed by Pakistan for the Nishan-e-Imtiaz , Pakistan's highest civilian award.	A Mumbai-based Parsi physician . He was associated with the medical examination of Muhammad Ali Jinnah in Bombay in 1946 .
Dr. Jal Dhaybho-Koo 	Proposed by Pakistan for the Nishan-e-Imtiaz .	A Mumbai-based Parsi radiologist . He was associated with the 1946 medical examination of Muhammad Ali Jinnah along with Dr. Jal Ratanji Patel.
Shubhada Varadkar 	Received the Sangeet Natak Akademi Award 2025 on 13 August 2026 .	An Odissi exponent . The award included a ₹1 lakh purse, Tamrapatra and Angavastram .
Sumit Sarkar 	Died on 13 August 2026 at the age of 87.	A historian of modern Indian history . Known for work on nationalism, colonialism and social history . His major works include <i>The Swadeshi Movement in Bengal, 1903–1908</i> and <i>Modern India: 1885–1947</i> .
Amit Shah 	Presented the President's Colour to Goa Police on 7 September 2026 .	Also launched an AI-based multilingual voice assistant for cyber-crime helpline 1930 , supporting 12 languages .
Pramod Sawant 	Attended the ceremony for the President's Colour to Goa Police .	Goa Chief Minister and one of the dignitaries present at the ceremony.



SINCE-1989
37 Years of Excellence

VAJIRAO & REDDY INSTITUTE

India's Top Potential Training Institute for IAS

OUR SUPER ACHIEVERS IAS - 2025 | 8 In Top 10 | 16 In Top 20 | 30 In Top 50 | 55 In Top 100

We are proud of our super achievers to secure Top Ranks in Civil Services Exam – 2025. Our 487+ achievers have been selected in CSE – 2025. These selected super achievers have been associated with our various CSE programmes. This result is a proof of our dedication, strategy, right guidance with our 37 years of experience. For detail visit : www.vajiraoinsitute.com

OUR SUPER ACHIEVERS IAS - 2025 8 In Top 10



2
Rank

RAJESHWARI SUVE M
Mentorship Session,
Advance Study Materials, IGP



3
Rank

AKANSH DHULL
GS Mains Advance Course,
Pre & Mains Test Series,
Advance Study Materials, IGP



4
Rank

RAGHAV JHUNJHUNWALA
Mentorship Session,
Advance Study Materials, IGP



5
Rank

ISHAN BHATNAGAR
Mentorship Session,
Advance Study Materials, IGP



6
Rank

ZINNIA AURORA
IGP



7
Rank

A R RAJAH MOHAIDEEN
Mentorship Session,
Advance Study Materials, IGP



8
Rank

PAKSHAL SECRETREY
GS Prelims, CSAT,
GS Mains Classroom Course,
Essay Course, Pre & Mains Test Series,
Advance Study Materials, Mentorship, IGP



9
Rank

ASTHA JAIN
IGP

OUR SUPER ACHIEVERS IAS - 2024 8 In Top 10



1
Rank

SHAKTI DUBEY
IGP



3
Rank

DONGRE ARCHIT PARAG
Mentorship, Materials, IGP



4
Rank

SHAH MARGI CHIRAG
Essay Course, Mains Test Series
Advance Study Materials, IGP



5
Rank

AAKASH GARG
GS Complete Course,
Essay Course, Test Series,
Advance Study Materials, IGP



7
Rank

AAYUSHI BANSAL
Mentorship, Materials,
IGP



8
Rank

RAJ KRISHNA JHA
Mentorship, Materials,
IGP



9
Rank

ADITYA VIKRAM AGARWAL
IGP



10
Rank

MAYANK TRIPATHI
IGP

Begin your preparation CSE - 2026-27 with "Vajirao & Reddy Institute" having 37 years of Excellence and add your name to the List of UPSC Top Rank Holders

New Batch :

Courses we offer in Offline & Online LIVE

11 MONTH COMPLETE COURSE PROGRAMME

Morning/Evening Batch :

3 YEAR FOUNDATION COURSE PROGRAMME (For College Students)

Morning/Evening Batch :

15 MONTH WEEKEND COURSE PROGRAMME

Morning/Evening Batch :

10 MONTH NCERT COURSE PROGRAMME

Morning/Evening Batch :

11 MONTH GS PRE-CUM-MAINS PROGRAMME

Morning/Evening Batch :

ESSAY & GS MAINS TEST SERIES PROGRAMME

Morning/Evening Batch :

2 MONTH GS MAINS ADVANCE COURSE (Crux of GS Mains/QIP)

Morning/Evening Batch :

Optional Subjects Offline & Online Live

- * History
- * Geography
- * Political Science & IR
- * Public Administration
- * Sociology
- * Anthropology
- * Hindi Literature

**To avoid waiting
Grab Token Number**

**For New Batch
Registration
Scan QR Code**



Or

visit : www.vajiraoinsitute.com

Salient Features

- * Each part of General Studies covered in continuous classes.
- * Facility to every students revise offline classes on Vajirao learning app.
- * Maximum opportunity for students to interact with the faculty.
- * Exclusive Study material (Printed Notes & Current Affairs Assignment).
- * Vajirao IAS Pre-cum-Mains GS 18 Set Printed Notes.
- * Mains Exam Test Series questions according with UPSC pattern with through coverage of the entire syllabus, detailed model answers.
- * Emphasis on answer writing practice.
- * Today's Analysis Assignments.

- * Senior Expert faculty.
- * Subject wise Test.
- * Dedicated Current Affairs classes.
- * Rich library for every student.
- * CRUX of NCERT 10 Set Printed Notes.
- * Monthly Current Affairs Magazine.
- * Subject Oriented Mentorship Program.
- * Hostel facility available in Campus.
- * GS Topic-wise printed Assignments.

Note : It has come to our attention that certain coaching centers are misusing names similar to ours, such as Vajirao or Bajirao, in an attempt to mislead and attract students/parents. Please be informed that we have no association with these fake institutes and legal proceedings have already been initiated against them before the Hon'ble Delhi High Court. We urge students and parents to stay vigilant and let us know in case they are approached by such fake institutes.

19/1A Shakti Nagar, Near Delhi University Campus Nagia Park Delhi

011-42547314, 89-8888-5050, 89-8888-6060