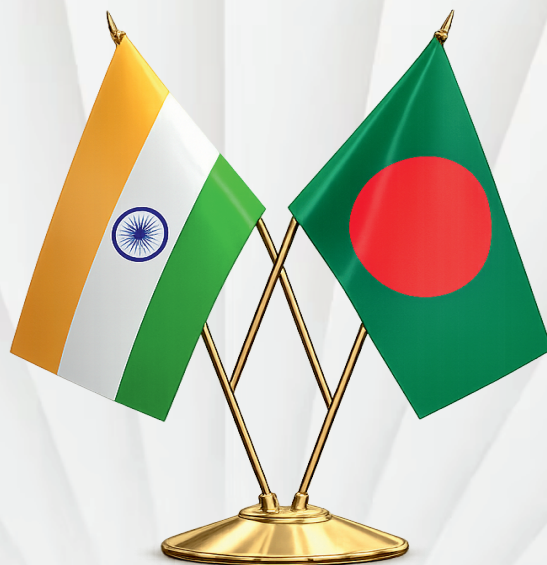


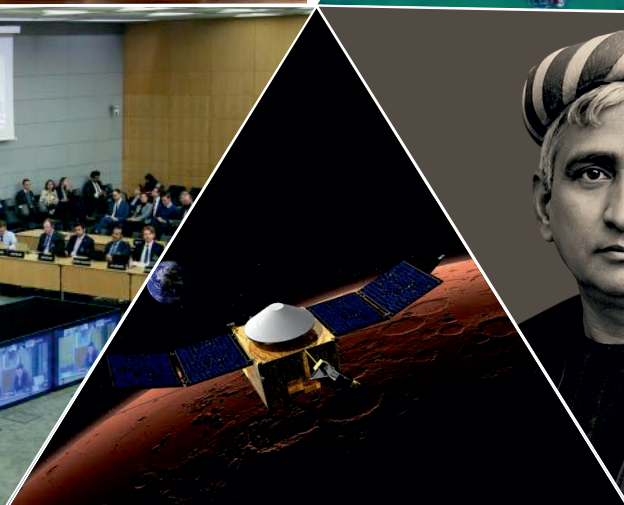
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The Trust Deficit in **India–Bangladesh** Relations



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The Trust Deficit in India–Bangladesh Relations

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The Trust Deficit in India–Bangladesh Relations



Why in News?

- More than 100 days have passed since the **Tarique Rahman Government** assumed office in Bangladesh.
- Many observers expected a significant improvement in India–Bangladesh relations following the end of the interim government led by **Muhammad Yunus**.
- However, bilateral relations continue to remain strained and are increasingly characterized by a growing **trust deficit**.
- The issue has acquired greater importance because several critical matters are pending, including the **renewal of the Ganga Water Treaty (1996) by 31 December 2026**, unresolved visa and trade restrictions, growing political rhetoric around illegal immigration, increasing Bangladeshi engagement with China, and concerns regarding domestic instability in Bangladesh.

What is a Trust Deficit?

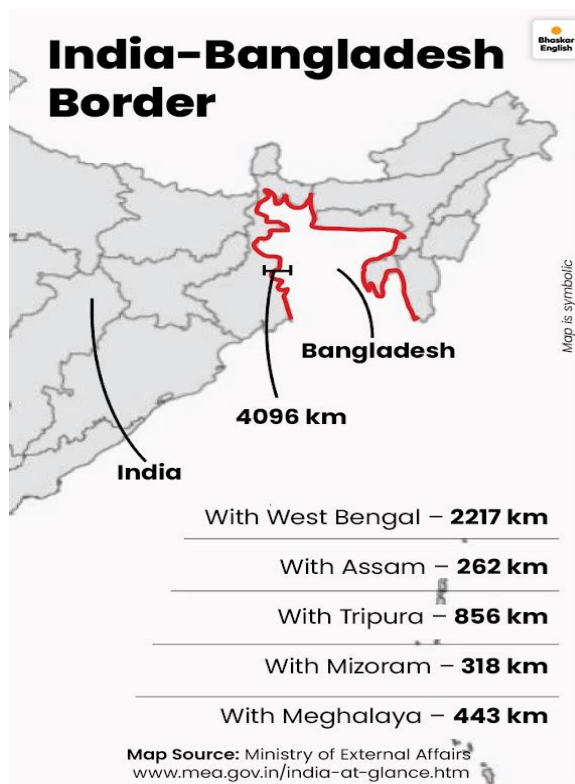
- A **Trust Deficit** refers to the gap between the expectations that two countries have from one another and the actions they actually observe.

- When expectations are not matched by policy outcomes, doubts emerge regarding intentions and commitments, leading to mistrust and reduced cooperation.

In international relations, a trust deficit often results in:

- Slower diplomatic engagement.
- Delayed agreements and negotiations.
- Reduced intelligence and security cooperation.
- Rise of nationalist rhetoric.
- Weakening of strategic partnerships.

Historical Foundations of India–Bangladesh Relations



India's Role in Bangladesh's Liberation War (1971)

- The modern relationship between India and Bangladesh is deeply rooted in the events of the **Bangladesh Liberation War of 1971**.

Background

- Bangladesh was formerly known as **East Pakistan**. Political discrimination, economic neglect and cultural suppression by West Pakistan generated widespread resentment among the Bengali population.
- In March 1971, Pakistan launched **Operation Searchlight** to suppress the Bengali nationalist movement.

Consequences

The operation resulted in:

- Large-scale atrocities and genocide.
- Massive displacement of civilians.
- Severe humanitarian crisis.

India's Contribution

- India played a decisive role in Bangladesh's liberation through:

Humanitarian Assistance

- India provided shelter to nearly **10 million refugees** who fled East Pakistan.

Support to Mukti Bahini

- India trained and supported the **Mukti Bahini** freedom fighters.

Military Intervention

- India intervened militarily against Pakistani forces in December 1971.

Outcome

- Bangladesh emerged as an independent nation on **16 December 1971**.
- India came to be viewed as Bangladesh's liberator.
- Expectations of long-term friendship and strategic cooperation were created.

Shared Cultural and Civilizational Heritage

- India and Bangladesh share deep historical, linguistic and cultural connections that continue to shape bilateral relations.

Common Cultural Icons

- Rabindranath Tagore
- Kazi Nazrul Islam
- Sarat Chandra Chattopadhyay

Shared Traditions

- Durga Puja
- Pohela Boishakh
- Baul Music
- Bengali literary traditions
- Bengal Renaissance heritage

These common traditions have created enduring people-to-people connections that often survive political disagreements.

Linguistic and People-to-People Ties

- The **Bengali language**, spoken by more than **230 million people**, acts as a natural bridge between the two societies.
- Historical migration patterns, family relationships across borders, religious pilgrimage routes, educational exchanges and cultural interactions have further strengthened these ties.

Medical Tourism

Every year, thousands of Bangladeshis travel to India for:

- Medical treatment.
- Higher education.
- Business activities.
- Specialized healthcare services.

Major destinations include:

- Chennai
- Delhi
- Kolkata

This medical tourism contributes significantly to India's healthcare economy.

The Golden Chapter (2009–2024)

- The period under the government of Sheikh Hasina is often described as the **Golden Chapter** in India–Bangladesh relations.

Land Boundary Agreement (2015)

- One of the most significant achievements was the **Land Boundary Agreement (LBA), 2015**.

Achievements

- Exchange of enclaves.
- Resolution of citizenship issues.
- Settlement of a long-standing border dispute.

Significance

- The agreement is widely regarded as one of the most successful examples of peaceful border dispute resolution anywhere in the world.

Connectivity Revolution

Several agreements significantly improved connectivity between the two countries:

- Coastal Shipping Agreement.
- Protocol on Inland Water Transit and Trade (PIWTT).
- Restoration of railway links.
- Expansion of road and waterway networks.

Benefits

- Reduced transportation costs.
- Increased trade.
- Greater regional integration.
- Improved connectivity with Northeast India.

Security Cooperation

Bangladesh acted against insurgent groups operating from its territory, including:

- ULFA
- NDFB

Significance

- Enhanced security in Northeast India.
- Increased trust between security agencies.
- Strengthened bilateral strategic cooperation.

Political Transition and Emergence of the Trust Deficit

August 2024 Political Upheaval

- A major political upheaval in Bangladesh in August 2024 transformed the bilateral environment.

Consequences

- Fall of Sheikh Hasina's government.
- Rise of an interim administration.
- Growth of anti-India narratives in some political circles.
- Increased uncertainty in bilateral relations.

India's Outreach to Tarique Rahman's Government

- Before Tarique Rahman formally became Prime Minister, India made several efforts to establish positive relations.

Diplomatic Outreach

- External Affairs Minister S. Jaishankar visited Dhaka on 31 December 2025.
- India sent Foreign Secretary Vikram Misri and Lok Sabha Speaker Om Birla to attend the swearing-in ceremony.

Objective

- Demonstrate goodwill.
- Establish constructive relations.
- Open a new phase of engagement.

Why is Bangladesh Dissatisfied?

- According to leaders of the **Bangladesh Nationalist Party (BNP)**, symbolic gestures alone are insufficient. Bangladesh expected tangible policy measures to normalize bilateral relations.

Major Expectations from India

Restoration of Transshipment Facilities

- Bangladesh expected restoration of transshipment facilities for its exports, which would reduce transportation costs and improve trade competitiveness.

Restoration of Visa Services

Bangladesh sought restoration of:

- Medical visas.
- Business visas.
- Tourist visas.

Visa restrictions have adversely affected medical tourism, business exchanges, educational interactions and family visits.

Removal of Trade Restrictions

- Bangladesh expected easier access to Indian markets and reduction of trade barriers.

Illegal Immigration: The Biggest Political Irritant

India's Perspective

India views illegal immigration as:

- A security issue.
- A demographic challenge.
- A political concern, particularly in border states.

Bangladesh's Perspective

Bangladesh expected less emphasis on immigration rhetoric and greater focus on:

- Visa restoration.
- Trade normalization.
- Ganga Treaty renewal.
- Economic cooperation.

Bangladesh's Strategic Turn Towards China

- As hopes for rapid normalization with India weakened, Bangladesh increasingly explored stronger engagement with China.

Why China Attracts Bangladesh?

China offers:

Infrastructure Development

- Roads.
- Bridges.
- Ports.

Investments

- Manufacturing.
- Energy projects.
- Industrial zones.

Strategic Cooperation

- Defence collaboration.
- Development financing.

Why China Cannot Replace India?

- Despite China's economic strength, it cannot replace India's geographical advantages.

India Provides

- River water sharing.
- Cross-border connectivity.
- River management cooperation.
- Access to regional transport networks.

Geographic Reality

- India is the **Upper Riparian State** for many rivers flowing into Bangladesh.
- Therefore, Bangladesh remains structurally dependent on India for:
 - Water security.

- River management.
- Regional connectivity.

This reflects the concept of **Geographic Interdependence**.

Water Security: The Most Critical Issue : Importance of the Ganga (Padma) River

The **Ganga River**, known as the **Padma River** in Bangladesh, is essential for:

- Agriculture.
- Irrigation.
- Food security.
- Rural livelihoods.
- Economic activity.

Millions of Bangladeshis depend on this river system.

Ganga Water Treaty (1996)

Background

The treaty was signed in 1996 to establish a framework for sharing Ganga waters between India and Bangladesh.

Expiry

- Treaty completes 30 years in 2026.
- Renewal deadline: **31 December 2026**.

Why Renewal is Critical?

- Failure to renew the treaty may result in:

Agricultural Problems

- Reduced irrigation.
- Water shortages.

Economic Impact

- Lower agricultural output.
- Reduced rural incomes.

Food Security Risks

- Decline in crop productivity.
- Disruption of sowing seasons.

Domestic Challenges Facing Bangladesh

- The Tarique Rahman government currently faces several internal crises.

Energy Crisis

Linked to wider geopolitical tensions involving:

- United States
- Israel
- Iran

This has resulted in higher energy prices and inflationary pressures.

Measles Outbreak

- Bangladesh is facing one of its worst measles outbreaks.

Impact

- At least 600 infant deaths.
- Criticism of the government's response.

Law and Order Concerns

Major issues include:

- Rising sexual violence.
- Increasing crime.
- Public insecurity.

Root Causes of the Trust Deficit

From Bangladesh's Perspective

- Visa restrictions.
- Transshipment restrictions.
- Trade barriers.
- Delay in Ganga Treaty renewal.
- Delay in Teesta Agreement.
- Immigration rhetoric.
- Perceived Indian preference for the Awami League.

From India's Perspective

- Rise of anti-India groups.
- Security concerns.
- Illegal immigration.
- Expanding Chinese influence.
- Uncertainty regarding future security cooperation.

Impact of the Trust Deficit

Political Impact

- Slower diplomatic engagement.
- Delayed agreements.
- Reduced strategic dialogue.

Economic Impact

- Reduced trade potential.
- Lower tourism flows.
- Decline in business exchanges.

Security Impact

- Reduced intelligence sharing.
- Weaker border cooperation.

Social Impact

- Growth of anti-India sentiment.
- Weakening people-to-people trust.

Way Forward

What India Should Do?

- Restore confidence through visible policy actions.
- Expand visa services.
- Address water-sharing concerns.
- Promote economic cooperation.
- Avoid unnecessary political rhetoric on sensitive issues.

What Bangladesh Should Do?

- Address India's security concerns.
- Prevent anti-India activities.
- Maintain balanced diplomacy.
- Continue constructive engagement with India.

What Both Countries Must Do?

Immediate Priority

- Renew the **Ganga Water Treaty** before **31 December 2026**.

Medium-Term Priority

- Revive trade and connectivity initiatives.
- Restore people-to-people contacts.
- Expand cultural exchanges.

Long-Term Priority

- Build institutional trust that survives changes in governments.
- Develop a stable and predictable partnership framework.

Conclusion

The current tensions between India and Bangladesh are not merely disputes over visas, trade or water sharing. They reflect a deeper **trust deficit** created by political transitions, unmet expectations, immigration debates, strategic competition involving China, and unresolved bilateral issues. The successful renewal of the **Ganga Water Treaty**, restoration of economic and people-to-people ties, and sustained diplomatic engagement will be crucial for rebuilding trust and ensuring long-term regional stability.

□□□

CURRENT EVENTS OF INTERNATIONAL IMPORTANCE

India-Mongolia Spiritual Relations: Enshrinement of Holy Relics in Ulaanbaatar



Why in News?

The Holy Relics of Arhat Sariputra and Arhat Mahamoggallana, the two chief disciples of Lord Buddha, were ceremonially enshrined at the Gandantegchenling Monastery in Ulaanbaatar, Mongolia. The enshrinement occurred on the auspicious occasion of Buddha Purnima (Vesak Day), kicking off a highly successful 10-day exposition from May 31 to June 10, 2026.

Direct Significance of the Exposition

- **Diplomatic & Spiritual Milestones:** Announced by Prime Minister Narendra Modi during the State Visit of Mongolian President Ukhnaagiin Khurelsukh to India, this event highlights the "spiritual neighbor" status between the two countries. The timing is particularly milestone-driven as both nations celebrate 70 years of diplomatic relations and 10 years of a Strategic Partnership.
- **High-Level State Protocol:** Reflecting deep trust and mutual reverence, the sacred relics—historically preserved at the Sanchi Stupas in India—were granted the security protocol equivalent to a Head of State and transported via a special Indian Air Force IL-76 aircraft.

- **Mass Devotion:** Over the course of the 10 days, approximately 100,000 devotees across Mongolia gathered at the monastery to offer prayers and pay their respects.

Core Geographic Profile of Mongolia

Geographic Overview

- **Type:** A landlocked sovereign nation situated in north-central Asia.
- **Bordering Nations:** Strategically bounded by two massive neighbors — Russia to the north and China to the south.
- **Capital City:** Ulaanbaatar, which also serves as the nation's cultural and economic center.

Major Physical Features

- **Climate:** Experiences a distinct, harsh continental climate. This is a direct consequence of its high latitude, notable elevation, and vast distance from any stabilizing ocean body.
- **Vegetation Zones:** The country features 4 distinct ecological zones that transition horizontally and vertically from the northern mountains down to southern basins: forest-steppe, steppe, semidesert, and desert.
- **Prominent Mountains:** Dominated by three major mountain systems — the Khentii Mountains, the Khangai Mountains, and the Altay Mountains.
- **Highest Point:** Nayramadlin Orgil, reaching a peak elevation of 14350 feet (4374 meters).
- **Principal River:** The Orkhon River. The surrounding Orkhon River Valley is highly protected and inscribed on the UNESCO World Heritage List.
- **Major Lakes:** Hovsgol Nuur, one of the largest freshwater bodies in Asia, positioned directly along its northern border with the Russian Federation.
- **Natural Mineral Reserves:** Possesses extensive, largely untapped underground wealth, containing major deposits of coal, fluorite (fluorspar), gold, copper, silver, and various other valuable metallic ores.

Election of Bangladesh Foreign Minister as UNGA President



Why in News?

- The presidency of the **81st session of the United Nations General Assembly (UNGA)** was secured by Bangladesh Foreign Minister **Khalilur Rahman** following a secret-ballot election, where Andreas Kakouris of Cyprus was defeated.
- This marks the second time the UNGA presidency has been secured by **Bangladesh**, with the post previously being held by the country during the 41st session in **1986-87**.

Election Framework and Term

- Official Term:** The office will be assumed by Khalilur Rahman when the 81st UNGA session opens on **September 8, 2026**, for a fixed **one-year term**.
- Regional Rotation Rule:** The UN General Assembly President is elected annually based on an established system of **regional rotation** among five specific blocs:
 - African States
 - Asia-Pacific States (Allocated for the 81st session)
 - Eastern European States
 - Latin American and Caribbean States
 - Western European and Other States

Theme of the 81st Session

The tenure will be guided by the theme: **“Restoring Trust, Managing Transformation: A United Nations**

that Delivers for All.” It highlights a core focus directed toward rebuilding faith in multilateral institutions and strengthening global cooperation.

Structure and Roles within the UNGA

Aspect	Description
UNGA Organ	Functions as one of the six principal organs of the United Nations and includes all 193 member states .
Resolution Status	A global platform is provided for deliberation, though most resolutions adopted by the General Assembly are not legally binding .
Presidential Duties	UNGA sessions are presided over, debates are guided, consensus is facilitated, and the Assembly is officially represented in interactions with other UN organs.
Nature of Position	The role is largely procedural but carries immense diplomatic weight.

India–UK Critical Minerals Global Supply Chain Observatory (GSCO)



Why in News?

The **India–UK Critical Minerals Global Supply Chain Observatory (GSCO)** was formally launched in New Delhi. The initiative was set up to strengthen resilient, diversified supply chains for critical minerals, which are essential for clean energy technologies and advanced manufacturing.

Collaborative Architecture and Timeline

- Tripartite Joint Initiative:** The GSCO is spearheaded by **TEXMiN** (Technology Innovation in Exploration & Mining Foundation), the **Indian Institute of Technology (ISM) Dhanbad**, and the **University of Cambridge**.

- **Institutional Genesis:** The partnership directly stems from the **India–UK Technology Security Initiative**.
- **Timeline of Development:** The setting up of the observatory was initially announced during the bilateral engagement between the Indian and UK Prime Ministers in **October 2025**. It was later formalized via a **Research Collaboration Agreement** signed in **March 2026** before its final launch.

Core Operational Mandate

The GSCO functions as a data-driven digital platform. Global critical mineral flows are continuously monitored, supply risks are mapped, market disruptions are anticipated, and strategic intelligence is actively provided to policymakers, industry leaders, and researchers.

Strategic Significance for India

Operational Focus	Targeted Strategic Outcomes for India
National Mission Alignment	Vital analytical data is supplied to support the National Critical Mineral Mission (NCMM) across exploration, processing, and recycling initiatives.
Vulnerability Reduction	Supply chain vulnerabilities are mitigated by helping India monitor and bypass risks from monopolized processing, particularly concerning China .
Clean Energy Transition	Trusted access is secured for key resources like lithium, cobalt, nickel, and rare earth elements —the basic building blocks for EVs, battery storage, and green tech.

Broader India–UK Bilateral Relations

- **Vision 2035 Roadmap:** Bilateral cooperation in economic growth, technology, and resource security is actively strengthened by the GSCO in alignment with the shared **India–UK Vision 2035**.
- **Trade Integration:** The initiative directly complements the ongoing **India–UK Comprehensive Economic and Trade Agreement (CETA)** framework by prioritizing secure, reliable trade corridors for critical technologies.

Election of Non-Permanent Members to the UNSC



Why in News?

- Five countries were recently elected by the **United Nations General Assembly (UNGA)** as non-permanent members of the Security Council for two-year terms beginning **January 1, 2027**.
- A historic milestone is marked by this election for **Kyrgyzstan**, by which a seat on the Security Council will be served for the first time since the nation joined the United Nations in 1992.

Elected Members by Regional Blocs

The newly elected nations will replace outgoing members—Denmark, Greece, Pakistan, Panama, and Somalia—whose terms conclude at the end of 2026. The incoming distribution is organized as follows:

- **Western European and Other States (WEOG):** Austria and Portugal (*Germany faced a setback and lost this category*)
- **Latin American and Caribbean Group (GRULAC):** Trinidad and Tobago
- **African Group:** Zimbabwe
- **Asia-Pacific Group:** Kyrgyzstan (*secured victory after defeating the Philippines in multiple voting rounds*)

The council will also be joined by Bahrain, Colombia, the Democratic Republic of Congo, Latvia, and Liberia, whose mandates run through the end of 2027.

Structure and Framework of the UN Security Council

Structural Dimension	Operational Mandate and Constitutional Rules
Primary Mandate	Established in 1945 under the UN Charter, the UNSC constitutes one of the UN's six principal organs. The primary responsibility of maintaining international peace and security is entrusted to it.
Membership Split	The Council comprises 15 members : 5 permanent members (P5 —China, France, Russia, the UK, and the US) who hold veto power, and 10 non-permanent members.
Seat Allocation	Non-permanent seats are distributed on a strict regional basis: 5 for African and Asian States , 1 for Eastern European States, 2 for Latin American and Caribbean States, and 2 for Western European and Other States.
Voting Mechanism	Elections are conducted annually via a secret ballot , where a two-thirds majority vote is legally required from the UNGA, even when candidates run unopposed.
Binding Authority	The UNSC operates as the only UN body whose decisions member states are strictly obligated to implement under the UN Charter.

India's Participation History

Active participation has been maintained by India in the Security Council as a non-permanent member across **eight distinct tenures**:

- 1950-51
- 1967-68
- 1972-73
- 1977-78
- 1984-85
- 1991-92
- 2011-12
- 2021-22

India's BrahMos Missile Exports Expand in Southeast Asia



Why in News?

At the Shangri-La Dialogue in Singapore, India's Defence Secretary announced a new BrahMos missile export agreement with Vietnam. Additionally, a similar deal with Indonesia is currently being finalized following an initial agreement in March 2026.

Key Highlights & Regional Impact

- **First Export Milestone:** The Philippines became the initial international buyer of the BrahMos system, securing a 375 million dollar contract in 2022 and establishing India as a key defense exporter in Southeast Asia.
- **Technology Transfer Strategy:** India actively shares its advanced military technologies with trusted, friendly partners—particularly within the ASEAN bloc—to build strategic alignment.
- **Geopolitical Relevance:** Because multiple ASEAN nations like Vietnam and the Philippines face overlapping maritime disputes with China in the South China Sea, these BrahMos acquisitions significantly strengthen regional defense alliances.
- **Shangri-La Dialogue:** This premier annual security summit in Singapore serves as a critical platform for defense ministers, military leaders, and global analysts to address Indo-Pacific and international security challenges.

Core Features of the BrahMos Missile

- **Development:** A joint venture between India and Russia, the supersonic cruise missile merges Russian propulsion systems with Indian guidance technology. It is named after the Brahmaputra and Moskva rivers.
- **Service Induction:** The weapon system was first adopted by the Indian Navy in 2005, followed by the Army in 2007, and achieved air-launched capability via an IAF Sukhoi-30 MKI in 2017.
- **Deployment Versatility:** It can be launched from land, air, sea, and submarines, utilizing upgraded long-range variants and advanced tracking sensors for multi-domain warfare.
- **Velocity:** Operating at supersonic speeds between Mach 2.8 and Mach 3, the missile ensures rapid target interception.
- **Strategic Value:** The high speed, stable flight trajectory, and pinpoint accuracy of the BrahMos underline India's growing self-reliance in defense manufacturing under the Atmanirbhar Bharat framework.

India and South Africa Forge Industrial Co-Production Pact



Why in News?

In June 2026, India and South Africa upgraded their 31-year-old science and technology partnership—originally established under the 1995 S&T Agreement—from traditional research-focused cooperation to a comprehensive industrial co-production framework. Supplemented by a direct Telangana–South Africa collaboration, this strategic pivot reinforces India-Africa ties as a pillar of geopolitical stability.

Core Priorities of the Next-Generation Technology Partnership

- **Pivoting to Emerging Frontiers:** Both nations have designated Artificial Intelligence (AI), Digital Public Infrastructure (DPI), and Advanced Manufacturing as the central pillars of bilateral tech deployment. Focus has expanded into Quantum Technologies, Genomics, and Cyber-Physical Systems to prioritize scalable commercialization over theoretical research.
- **Hydrogen Energy and Biotechnology:** Joint frameworks are targeting renewable energy, green hydrogen technologies, and vaccine development, pairing India's low-cost healthcare manufacturing with South Africa's green transition goals.
- **Deep Space Exploration:** The two sides reviewed their ongoing alignment on the **Square Kilometre Array (SKA)** project, leveraging it as a foundational driver for global big data analytics, high-performance

computing, and human resource development.

- **Telangana–South Africa Paradiplomacy:** Telangana executed a direct collaboration framework with South Africa to leverage Hyderabad's established strengths in IT, Global Capability Centers (GCCs), defense, aerospace, and pharmaceuticals. This sub-national partnership focuses on bulk drug co-production, resilient healthcare supply lines, agro-processing, and medical tourism.

Realignment of India's Economic Strategy in Africa

- **Regional Over Continental FTAs:** India has paused its push for a continent-wide Free Trade Agreement (FTA) to prioritize targeted trade agreements with specific regional blocs, notably the **Southern African Customs Union (SACU)**—comprising South Africa, Botswana, Eswatini, Lesotho, Namibia, and South Africa.
- **Securing Critical Minerals:** To fuel domestic electric vehicle (EV) manufacturing and the National Green Hydrogen Mission, India is embedding access to strategic critical minerals like lithium, cobalt, and rare earth elements into bilateral African partnerships while funding local processing hubs.
- **Leveraging the AfCFTA Market:** With cumulative Indian investments in Africa reaching 80 billion dollars, New Delhi is utilizing the African Continental Free Trade Area (AfCFTA)—a 3.4 trillion dollar market—by setting up localized production facilities in countries like Kenya and South Africa for seamless continent-wide market access.
- **Diversifying Supply Lines:** To insulate itself from volatile Gulf supply routes, India is actively expanding its energy and fertilizer partnerships with North African nations including Algeria, Tunisia, Libya, and Morocco.
- **BRICS and Institutional Linkages:** India has formally invited South Africa to the upcoming BRICS Science, Technology, and Innovation

Ministerial Meeting in Chennai (August 2026) to advance collaborative precision agriculture, while the South African delegation extended a reciprocal invitation to India for the Science Forum South Africa 2026.

Geopolitical Significance of Deepened India-Africa Ties

- **Global South Advocacy:** India and the African Union are acting as co-architects for the Global South, pushing for structural reforms in the UN Security Council, Bretton Woods institutions, and global climate finance architecture through platforms like BRICS.
- **Maritime Security via SAGAR:** Under the *Security and Growth for All in the Region (SAGAR)* doctrine, India has expanded joint naval exercises, maritime domain awareness, and real-time intelligence sharing through the Information Fusion Centre–Indian Ocean Region (IFC-IOR) to safeguard vital sea lanes from piracy and illicit trafficking.
- **Counterweight to "Debt-Trap" Models:** Governed strictly by the **Kampala Principles (2018)**, India's model presents a transparent alternative to the opaque, state-backed infrastructure loans provided by other major powers (e.g., China's FOCAC). India focuses instead on demand-driven capacity building that respects sovereign financial integrity.
- **Net Security Provider:** India maintains more than 5,000 active peacekeepers in volatile zones like South Sudan and the Democratic Republic of the Congo (DRC), sustaining its historical role in continental stability.
- **Expanding Diplomatic Footprint:** By opening 17 new diplomatic missions, India has increased its total across the continent to 46, ensuring direct diplomatic visibility and localized intelligence management. The upcoming **India-Africa Forum Summit (IAFS-IV)** aims to institutionalize these sporadic engagements into permanent executive alignments.

Major Structural Challenges in the Relationship

- **Project Implementation Deficits:** Parliamentary Standing Committee reports indicate bureaucratic bottlenecks in executing targeted Lines of Credit (LoC), which risks eroding diplomatic goodwill.
- **Asymmetry in Capital Competition:** Heavily subsidized Chinese mega-projects via the Belt and Road Initiative (BRI) outscale Indian sovereign and private investments, creating steep competition for Indian capital.
- **Political Volatility:** Frequent insurgencies and military coups, particularly across the Sahel region and parts of West Africa, create high-risk environments that deter sustained private sector investments.
- **Regulatory and Transport Friction:** Despite healthy trade volumes, foreign direct investment is constrained by highly complex and differing regulatory landscapes across 54 separate African nations, alongside a persistent lack of direct maritime and aviation connectivity.
- **Diaspora Vulnerabilities:** Local economic distress and high unemployment rates in host nations occasionally trigger xenophobic targeting of the 3 million-strong Indian diaspora, requiring complex consular interventions.
- **Constitutional Limits on Paradiplomacy:** While state-led international initiatives are economically beneficial, foreign affairs strictly fall under Entry 10 of the Union List in the Seventh Schedule. This structural reality can cause domestic policy friction, requiring states to clear prolonged central hurdles before executing international MoUs.

Strategic Roadmap for Strengthening Ties

- **Institutionalize Regular Summits:** Reconvene IAFS-IV immediately to draft a post-pandemic, technology-first roadmap explicitly aligned with the African Union's **Agenda 2063**.

- **Establish Joint Working Groups:** Constitute a Joint Working Group (JWG) on Critical Minerals to secure stable supply chains for India's domestic semiconductor fabrication and green mobility targets.
- **Streamline Paradiplomatic Guidelines:** The Ministry of External Affairs (MEA) should clear structural pathways to empower proactive State Governments in executing international commercial MoUs without complex central delays.
- **Deploy DPI as an Export Catalyst:** Expand the footprint of the **India Stack** (digital identity and payment systems) across Africa to boost financial inclusion, generating immense soft power and cementing India's role as a key technological partner to the Global South.

Conclusion

Key adjustments in India's policy toward Africa show a move past shared post-colonial history toward a modern, reciprocal economic paradigm characterized by industrial co-production, technology transfers, and resilient supply chain networks. By integrating regional trade blocs and securing strategic raw assets, this evolving partnership advances Global South solidarity while introducing a balanced source of stability into an increasingly volatile global order.

India–Nepal Relations



Why in News?

- Recent remarks by the Prime Minister of **Nepal** on the **Kalapani–Lipulekh–Limpiyadhura** boundary dispute, emphasizing an objective and amicable resolution, along with renewed high-level

diplomatic engagement, have signaled a potentially pragmatic phase in **India–Nepal relations**.

India–Nepal Boundary Dispute

Treaty of Sugauli (1816)

- The dispute originates from the **Treaty of Sugauli**, signed after the Anglo-Nepalese War.
- The treaty designated the **Kali (Mahakali) River** as Nepal's western boundary.
- However, the treaty did not clearly identify the river's source, leading to competing territorial claims.

Nepal's Claim

- Nepal maintains that the Kali River originates from **Limpiyadhura**.
- Based on this interpretation, Nepal claims:
 - Kalapani
 - Lipulekh
 - Limpiyadhura
- In 2020, Nepal amended its Constitution and adopted a revised political map incorporating these territories.
- The claim was further reinforced through the issuance of a new currency note depicting the revised map.

India's Claim

- India argues that the Kali River originates near **Kalapani**.
- Consequently, India considers the disputed area part of **Uttarakhand's Pithoragarh district**.
- India continues to exercise administrative and military control over the region.

Strategic Importance

- The disputed region lies close to **China**.
- **Lipulekh Pass** serves as:
 - An important trade route.
 - A gateway for the **Kailash Mansarovar Yatra**.

Changing Approach of Nepal Towards India

From Ideology to Pragmatism

- Nepal is increasingly prioritizing economic cooperation over political rhetoric.
- This shift is reflected in the agreement to export **10,000 MW of hydropower** to India over the next decade.

From Special Relationship to Sovereign Equality

- Nepal seeks a relationship based on:
 - Mutual respect.
 - Diplomatic parity.
 - Sovereign equality.

Pragmatic Approach to Border Issues

- Boundary disputes are increasingly viewed as technical and diplomatic issues requiring dialogue rather than nationalist mobilization.

Greater Strategic Autonomy

- Nepal aims to pursue an independent foreign policy while balancing relations with major powers through diplomacy and historical evidence.

Key Outcomes of Nepal Foreign Minister's Visit to India

Cross-Border Digital Payments

- India and Nepal launched a **Peer-to-Peer (P2P)** linkage connecting:
 - India's **Unified Payments Interface**
 - Nepal's National Payments Interface (NPI)
- The system facilitates low-cost and real-time cross-border remittances.

Language Technology Cooperation

- An MoU was signed between **Bhashini** and **Kathmandu University**.
- The agreement seeks to develop a voice-first digital translation platform.

Judicial Cooperation

- Both countries welcomed the operationalization of the **India–Nepal Mutual Legal Assistance Agreement (MLAA)** in criminal matters.
- The agreement strengthens cooperation against cross-border crimes.

Development Partnership

- India handed over:
 - 72 health facilities.
 - 12 cultural heritage projects.
- These projects were completed under the post-2015 Earthquake Reconstruction Assistance Programme.

India–Nepal Bilateral Relations

Trade and Economic Relations

- India is Nepal's largest trading partner and export destination.
- Nepal has emerged as India's **14th largest export destination** in 2024–25.
- Nepal exports:
 - Edible oil.
 - Tea.
 - Coffee.
 - Jute.
- India exports:
 - Petroleum products.
 - Iron and steel.
 - Cereals.
 - Vehicles.
 - Machinery.

Defence and Security Cooperation

Gorkha Regiment

- Military cooperation is anchored through the **Gorkha Regiment**.
- Around 32,000 Nepali Gorkha soldiers serve in the Indian Army.

Surya Kiran Exercise

- The annual **Surya Kiran** exercise enhances interoperability and combat readiness.

Connectivity Infrastructure

Rail Connectivity

Important cross-border railway projects include:

- Jayanagar–Bijalpura–Bardibas.
- Jogbani–Biratnagar.
- Proposed Raxaul–Kathmandu railway.

Road Connectivity

- The **Mechi Bridge** serves as an important international border crossing.

Petroleum Pipeline

- The **Motihari–Amlekhgunj Pipeline**, commissioned in 2019, became South Asia's first cross-border petroleum pipeline.

Energy and Digital Integration

Hydropower Cooperation

- Under the 2024 Power Trade Agreement, Nepal will export **10,000 MW** of electricity to India over a 10-year period.

Digital Payments

- Cross-border QR-based payments have been enabled through UPI interoperability with Nepal's **FonePay** network.

River Basin Cooperation

- Cooperation exists through:
 - **Kosi Agreement (1954)**
 - **Gandak Agreement (1959)**
 - **Mahakali Treaty (1996)**
- Collaboration also extends to flood control and river management.

Disaster Management and Cultural Ties

- India has consistently acted as a first responder during disasters in Nepal, including:
 - The 2015 earthquake.
 - The Covid-19 pandemic.
- Cultural linkages are strengthened through:
 - Buddhist Circuit.
 - Ramayana Circuit.
 - Pilgrimage centres such as **Lumbini** and **Janakpur**.

Strategic Importance of India–Nepal Relations

Geographic Buffer

- Nepal serves as a strategic buffer between India and China.
- Stability in Nepal contributes to India's northern security.

Security of the Siliguri Corridor

- A stable Nepal is crucial for protecting India's strategically important **Siliguri Corridor (Chicken's Neck)** connecting mainland India with the Northeast.

Open Border Security

- The **1,751-km open border** promotes people-to-people contact but requires cooperation to combat:
 - Smuggling.
 - Illegal migration.
 - Cross-border crime.

Countering China's Influence

- China's growing engagement through the **Belt and Road Initiative** has strategic implications.
- Enhanced connectivity and economic integration remain important for maintaining India's influence.

Water and Energy Security

- Nepal's rivers are important for:
 - Flood management in northern India.
 - Hydropower generation.
 - Regional energy security.

Key Challenges in India–Nepal Relations

China Factor

- Chinese investments in:
 - BRI projects.
 - Proposed trans-Himalayan railway.
 - Infrastructure initiatives such as **Pokhara International Airport** have generated strategic concerns for India.

Legacy of the 2015–16 Blockade Controversy

- Nepal accused India of imposing an unofficial blockade during the Madhesi protests.
- Although India denied the allegation, the episode contributed to anti-India sentiments.

Changing Diplomatic Expectations

- Nepal increasingly emphasizes sovereign equality and strict diplomatic protocol in bilateral engagements.

Open Border Challenges

- The porous border facilitates:
 - Human trafficking.
 - Smuggling.
 - Fake Indian Currency Notes (FICN).
 - Transnational criminal networks.

Water-Sharing Disputes

- Differences persist regarding:
 - Kosi.
 - Gandak.
 - Mahakali rivers.
- Delays in the **Pancheshwar Multipurpose Project** continue to hinder cooperation.

Media-Driven Nationalism

- Nationalist narratives and media controversies often aggravate bilateral disputes.

Measures to Strengthen India–Nepal Relations

Modernize Bilateral Frameworks

- Review the **Eminent Persons Group (EPG)** recommendations.
- Revisit the **1950 India–Nepal Treaty of Peace and Friendship** to address contemporary concerns.

Improve Infrastructure Delivery

- Expedite projects such as:
 - Arun-III Hydropower Project.
 - Cross-border rail links.
 - Pipeline expansion projects.

Depoliticize Boundary Disputes

- Strengthen the Boundary Working Group and Foreign Secretary-level mechanisms for technical dialogue on Kalapani–Lipulekh–Limpiyadhura.

Strengthen Water Cooperation

- Fast-track the Pancheshwar Multipurpose Project.
- Improve flood management coordination and benefit-sharing arrangements.

Expand Energy Partnership

- Operationalize the hydropower export agreement and strengthen transmission infrastructure.

Promote People-to-People Ties

- Enhance educational exchanges, cultural engagement and military cooperation.

Respect Sovereign Sensitivities

- Build relations on mutual respect, non-interference and sovereign equality.

Conclusion

- India and Nepal share a unique relationship founded on geography, culture, economic interdependence and people-to-people ties.
- The emergence of a more pragmatic leadership in Nepal offers an opportunity to deepen cooperation through connectivity, energy trade, infrastructure development and sustained diplomatic engagement while addressing long-standing disputes through dialogue and mutual respect.

India–Estonia Relations



Why in News?

- Recently, government officials and technology industry leaders from **Estonia** expressed a strong interest in expanding cooperation with **India** in key sectors such as:
 - Defence.
 - Cybersecurity.
 - Artificial Intelligence (AI).
 - Digital Governance.
 - Trade and Investment.
- The development reflects growing strategic convergence between the two countries in the digital and technology domains.

India–Estonia Relations

Historical Background

Early Recognition

- India first recognized Estonia in **1921** when Estonia joined the **League of Nations**.

Re-recognition after Soviet Dissolution

- Following the collapse of the **Soviet Union**, India formally re-recognized the Republic of Estonia in **September 1991**.

Political Relations

Democratic Values

- Both countries share commitments to:
 - Democracy.
 - Rule of law.
 - Open societies.
 - Digital governance.

Multilateral Cooperation

- Cooperation takes place through:
 - United Nations.
 - International cyber governance forums.
 - Technology and innovation platforms.

Cybersecurity Cooperation

India–Estonia Cyber Dialogue

Inaugural Dialogue

- The first **India–Estonia Cyber Dialogue** was held in **2024**.

Significance

- Recognized Estonia as a global leader in:
 - Cybersecurity.
 - E-governance.
 - Digital public services.

India's Strength

- India's success in building large-scale **Digital Public Infrastructure (DPI)** was highlighted.

Areas of Cooperation

- Cyber resilience.
- Digital governance.
- Cybercrime prevention.
- Data protection.
- Secure digital ecosystems.

Cooperation in Artificial Intelligence (AI)

Emerging Partnership

- Estonia has expressed interest in collaborating with India on:
 - AI research.
 - Innovation ecosystems.
 - Digital transformation.
 - Smart governance solutions.

Importance

- AI is increasingly becoming a strategic technology for:
 - Economic growth.
 - National security.
 - Public service delivery.

Defence Cooperation

Strategic Significance

- Estonia seeks closer engagement with India in defence and security sectors.

Potential Areas

- Defence technology.
- Cyber defence.
- Maritime security.
- Emerging technologies.

Importance

- Growing geopolitical uncertainties have increased the importance of international security partnerships.

Trade and Economic Relations

Bilateral Trade

Goods Trade

- Bilateral trade in goods reached approximately **139.3 million euros** in 2025.

Services Trade

- Bilateral trade in services stood at approximately **66.4 million euros** in 2025.

Investment Relations

Indian Investment in Estonia

- Indian Foreign Direct Investment (FDI) in Estonia reached approximately **13.6 million euros** by December 2025.

Estonian Investment in India

- Estonian FDI in India amounted to approximately **4.15 million euros** during 2000–2025.

Future Potential

- Information technology.
- Start-up ecosystems.
- Fintech.
- Artificial intelligence.
- Digital public services.

About Estonia

Geographical Location

Region

- Estonia is located in **Northeastern Europe**.

Baltic States

- It is the northernmost of the three Baltic countries:
 - **Estonia**
 - **Latvia**
 - **Lithuania**

Borders

Land Borders

- Russia to the east.
- Latvia to the south.

Water Bodies

- Gulf of Finland in the north.
- Baltic Sea in the west.
- Lake Peipus in the east.

Maritime Borders

- Shares maritime boundaries with:
 - Finland
 - Sweden

Physical Features

Islands

Extent

- Estonia has nearly **1,500 islands and islets**.

Major Islands

- Saaremaa
- Hiiumaa

Topography

Highest Peak

- Suur Munamägi
- Height: **318 metres**.

Major Rivers

- Narva River
- Pärnu River
- Pedja River
- Kasari River

Political System

Capital City

- Tallinn

Government

- Parliamentary Republic.

Key Characteristics

- Strong digital governance model.
- High internet penetration.
- Advanced e-governance ecosystem.

Historical Evolution

Independence in 1918

- Estonia gained independence following the collapse of the Russian Empire.

Soviet Occupation

- Incorporated into the Soviet Union in **1940**.

Restoration of Independence

- Regained independence in **1991** during the dissolution of the USSR.

Strategic Integration with Western Institutions

European Union (EU)

Membership

- Estonia became a member of the **European Union**.

Benefits

- Access to the European single market.
- Political and economic integration.

Eurozone

Currency

- Uses the **Euro (€)** as its official currency.

North Atlantic Treaty Organization (NATO)

Membership

- Estonia is a member of **North Atlantic Treaty Organization**.

Importance

- Collective security framework.
- Strategic deterrence.

Nordic-Baltic Eight (NB8)

About

- Regional cooperation grouping comprising Nordic and Baltic countries.

Objective

- Promote political, economic and security cooperation.

Significance of India–Estonia Relations

Digital Governance Partnership

- Combines Estonia's expertise in e-governance with India's success in Digital Public Infrastructure.

Cybersecurity Cooperation

- Supports secure digital ecosystems and cyber resilience.

Technology and Innovation

- Expands collaboration in AI, start-ups and digital innovation.

Economic Opportunities

- Enhances trade, investment and technology partnerships.

Strategic Cooperation

- Strengthens India's engagement with Europe and the Baltic region.

Challenges

Limited Trade Volume

- Bilateral trade remains relatively modest.

Geographical Distance

- Physical distance limits economic interaction.

Need for Greater Connectivity

- Stronger institutional and business-to-business links are required.

Way Forward

Expand Cyber Cooperation

- Deepen collaboration in cybersecurity and digital governance.

Promote AI Partnerships

- Establish joint research and innovation initiatives.

Enhance Trade and Investment

- Encourage start-up collaboration and technology investments.

Strengthen Strategic Dialogue

- Expand cooperation in defence, maritime security and emerging technologies.

Conclusion

- India and Estonia share a growing partnership founded on digital innovation, cybersecurity cooperation, democratic values and technological advancement.
- As both countries strengthen collaboration in AI, digital governance, defence and trade, the relationship has the potential to emerge as an important pillar of India's engagement with the Baltic region and the wider European landscape.

Seafarer Safety and Maritime Security in Conflict Zones



Why in News?

- The death of three Indian seafarers aboard **MT Settebello** following a military strike in the **Gulf of Oman** has highlighted growing concerns regarding maritime security and the safety of commercial shipping in conflict-prone regions.

- The incident underscores the increasing risks faced by civilian merchant vessels amid geopolitical tensions and modern maritime warfare.

What is the Core Issue Affecting Seafarer Safety?

Asymmetric Maritime Warfare

Changing Nature of Maritime Threats

- Maritime threats have evolved beyond traditional piracy and armed robbery at sea.

Emerging Threats

Commercial vessels are increasingly exposed to:

- Drone attacks.
- Precision-guided munitions.
- Loitering munitions.
- Missile strikes.
- Electronic warfare.

Actors Involved

- Sovereign states.
- Non-state actors.
- Militant groups.

Geopolitical Crossfire and Maritime Blockades

Targeting of Merchant Ships

- Commercial vessels are increasingly caught in geopolitical rivalries and economic blockades.

Vulnerability

- Merchant vessels carrying:
 - Crude oil.
 - LNG.
 - Chemicals.
 - Other combustible cargo.

are particularly vulnerable during conflicts.

Impact

- Civilian ships often become unintended collateral damage despite having no involvement in hostilities.

Sanctions-Related Vulnerabilities

Operational Risks

- Ships accused of sanctions violations may face:
 - Loss of insurance cover.
 - Restricted port access.
 - Financial penalties.

Consequences

- Increased operational uncertainty.
- Higher risks for crew members.

Weak Enforcement of Maritime Legal Frameworks

Existing Frameworks

International instruments such as:

- **United Nations Convention on the Law of the Sea**
- **International Labour Organization Maritime Labour Convention**

provide legal protections.

Challenge

- Enforcement remains weak during armed conflicts involving:
 - State actors.
 - Non-state armed groups.

What are Sanctioned Vessels?

Definition

- A sanctioned vessel is a ship officially blacklisted or restricted under economic, trade or security sanctions.

Who Imposes Sanctions?

United Nations

- Through binding resolutions of the **United Nations Security Council**.

Individual Countries and Regional Blocs

Examples include:

- **United States**
- **United Kingdom**
- **European Union**

Reasons for Vessel Sanctions

Ownership Links

- Ownership by sanctioned individuals or entities.

Terrorism Links

- Involvement in financing or supporting terrorism.

Prohibited Cargo

- Transportation of:
 - Weapons.
 - Illicit oil.
 - Restricted goods.

Sanctions Evasion

Examples include:

- Disabling Automatic Identification Systems (AIS).
- Unauthorized ship-to-ship transfers.
- Concealment of vessel identity.

India's Position on Sanctions

Recognition of Sanctions

- India primarily recognizes sanctions imposed through the **UN Security Council**.

Implication

- A vessel sanctioned by another country is not automatically illegal under Indian law unless covered by a binding UN resolution.

Why is Seafarer Safety a Strategic Concern for India?

Large Maritime Workforce

Global Contribution

- India has over **300,000 trained seafarers** as of 2025.

Global Ranking

- India ranks third globally after:
 - **Philippines**
 - **China**

Share

- Accounts for approximately **12% of the global seafaring workforce**.

Maritime India Vision 2030

Objective

- Increase India's share of global seafarers to **20% by 2030**.

Strategy

- Expand maritime education and training infrastructure.

Exposure to High-Risk Regions

Persian Gulf and Gulf of Oman

- Approximately 18,000 Indian seafarers operate in these regions at any given time.

Strategic Chokepoints

Strait of Hormuz

- Critical route for global energy trade.

Bab-el-Mandeb Strait

- Connects the Red Sea with the Gulf of Aden.

Risk

- These regions are highly vulnerable to military escalation.

Flags of Convenience (FoC)

Meaning

- Commercial vessels registered in countries different from the nationality of their owners.

Common FoC Registries

- **Panama**
- **Liberia**
- **Palau**

Challenges

- Complicates:
 - Legal jurisdiction.
 - Accountability.
 - Diplomatic intervention.

Impact on Indian Seafarers

- Indian crew members may become victims of conflicts involving vessels owned or registered elsewhere.

Economic Significance

Remittance Contribution

- Indian seafarers contribute billions of dollars annually through remittances.

Trade Dependence

- More than:
 - 90% of India's trade by volume
 - 70% of India's trade by value

moves through maritime routes.

Impact of Maritime Insecurity

- Higher insurance costs.
- Increased shipping expenses.
- Rising energy import costs.

Legal Frameworks for Seafarer Safety

Global Frameworks

UNCLOS, 1982

Purpose

- Governs the legal order of oceans.

Key Principle

- Freedom of navigation.

Importance

- Protects maritime commerce and transit passage.

Maritime Labour Convention (MLC), 2006

Administered By

- International Labour Organization

Status

- Ratified by India.

Known As

- "Seafarers' Bill of Rights."

Key Provisions

- Decent working conditions.
- Welfare standards.
- Health protection.
- Repatriation rights.

International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978

Purpose

- Establishes global standards for:
 - Training.
 - Certification.
 - Watchkeeping.

Objective

- Ensure maritime safety and operational competence.

International Convention for the Safety of Life at Sea (SOLAS), 1974

Administered By

- International Maritime Organization

Purpose

- Prescribes minimum standards for:
 - Ship construction.
 - Equipment.
 - Safe operation.

International Convention on Maritime Search and Rescue (SAR), 1979

Objective

- Ensure rescue assistance to persons in distress at sea.

Principle

- Assistance irrespective of nationality or location.

Indian Legal Framework

Merchant Shipping Act, 1958

Purpose

- Principal legislation governing Indian merchant shipping.

Coverage

- Vessel safety.
- Crew welfare.
- Employment conditions.

Directorate General of Shipping (DGS)

Role

- Apex maritime regulator under the Ministry of Ports, Shipping and Waterways.

Functions

- Vessel certification.
- Regulation of recruitment agencies.
- Seafarer welfare oversight.

Information Fusion Centre – Indian Ocean Region (IFC-IOR)

Location

- Gurugram, Haryana.

Function

- Maritime Domain Awareness (MDA).

Role

- Real-time intelligence sharing.
- Threat monitoring.
- Regional maritime cooperation.

Measures to Strengthen Seafarer Safety

Strengthen Naval Deployments

Operation Sankalp

- Expand surveillance and escort operations in high-risk maritime zones.

Benefits

- Improved protection.
- Faster response capability.
- Enhanced deterrence.

Adopt a Risk-Based Approach

Measures

- Regular threat assessments.
- Travel advisories.
- Enhanced onboard security measures.

Objective

- Minimise risks without disrupting maritime commerce.

Ensure Informed Consent

Requirement

- Mandatory disclosure of risks before deployment to conflict zones.

Protection

- Seafarers refusing assignments in war-risk areas should be protected from professional penalties.

Create an Inter-Ministerial Maritime Security Framework

Stakeholders

- Ministry of External Affairs.
- Ministry of Defence.
- Intelligence agencies.
- DGS.
- Shipping companies.
- Seafarers' unions.

Objective

- Coordinated crisis response and assistance.

Leverage Multilateral Platforms

Indian Ocean Rim Association (IORA)

Opportunity

- Use India's leadership role to promote maritime safety initiatives.

International Maritime Organization (IMO)

Objective

- Advocate binding protocols protecting civilian mariners during conflicts.

Significance for India

Human Security

- Protects thousands of Indian seafarers working globally.

Economic Security

- Safeguards trade, energy imports and remittance flows.

Maritime Security

- Strengthens India's role as a responsible maritime power.

Blue Economy

- Supports sustainable growth of maritime industries.

Challenges

Escalating Maritime Conflicts

- Rising geopolitical tensions increase risks.

Weak Enforcement Mechanisms

- Existing international laws often lack effective enforcement.

Complex Jurisdictional Issues

- Flags of Convenience complicate legal accountability.

Technological Threats

- Drones and precision-guided weapons pose new challenges.

Conclusion

- The tragic deaths of Indian seafarers aboard MT Settebello underscore the growing vulnerability of civilian shipping in an era of asymmetric maritime warfare.
- As India emerges as a major maritime nation with one of the world's largest seafaring workforces, ensuring the safety and welfare of seafarers must become a strategic priority.
- Strengthening naval deployments, enhancing international cooperation, improving legal safeguards and building robust maritime security mechanisms will be essential to protect Indian seafarers and secure global maritime trade routes.

New Development Bank (NDB)



Why in News?

- **Uzbekistan** has become the **10th member** of the **New Development Bank** and the first country from Central Asia to join the BRICS-led multilateral financial institution.

New Development Bank (NDB)

About

- The NDB is a **multilateral development bank** established by the **BRICS** countries.
- It focuses on financing **infrastructure** and **sustainable development projects** in emerging and developing economies.

Formation

- Established during the **6th BRICS Summit** held in **Fortaleza** in **2014**.
- Became fully operational in **2015**.

Headquarters

- **Shanghai, China**.

Capital Structure

- Authorized Capital: **USD 100 Billion**.
- Initial Subscribed Capital: **USD 50 Billion**.
- Equally contributed by the five founding members:
 - Brazil
 - Russia
 - India
 - China
 - South Africa

Objectives of NDB

Infrastructure Development

- Finance infrastructure projects in developing economies.

Sustainable Development

- Support environmentally sustainable and climate-resilient projects.

Alternative Development Financing

- Provide an alternative source of development finance alongside traditional institutions such as the **World Bank** and the **International Monetary Fund**.

Support Emerging Economies

- Mobilize resources for **Emerging Market Economies and Developing Countries (EMDCs)**.

Voting Structure

Equal Voting Principle

- Unlike the World Bank, voting power is not determined solely by capital contribution.

No Veto Power

- Every member has voting rights.
- No country possesses veto power.

BRICS Safeguard

- The combined voting share of founding BRICS members cannot fall below **55%**.

Membership Expansion

Founding Members

- Brazil
- Russia
- India
- China
- South Africa

New Members

- **Bangladesh** (2021)
- **United Arab Emirates** (2021)
- **Egypt** (2023)
- **Algeria** (2025)
- **Uzbekistan** (2026)

Countries Awaiting Membership Completion

- **Uruguay**
- **Colombia**
- **Ethiopia**

Significance of Uzbekistan's Membership

First Central Asian Member

- Uzbekistan is the first Central Asian nation to join the NDB.

Expansion of Global South Representation

- Strengthens the NDB's position as a major institution representing the **Global South**.

Strengthening BRICS Outreach

- Expands BRICS-linked financial cooperation beyond its traditional regions.

Local Currency Financing

- Supports efforts to increase financing in local currencies.
- Reduces dependence on the **US Dollar** in development financing.

Importance of NDB

Voice of the Global South

- Provides greater representation for developing countries in global financial governance.

Infrastructure Financing

- Addresses infrastructure funding gaps in emerging economies.

Sustainable Development

- Supports renewable energy, climate resilience, transport, water, and urban development projects.

Multipolar Financial Order

- Promotes a more balanced and inclusive global financial architecture.

India and NDB

Founding Member

- India is one of the founding members of the NDB.

Connect Central Asia Policy

- Uzbekistan's inclusion aligns with India's **Connect Central Asia Policy**.

Strategic Significance

- Enhances India's engagement with Central Asia through economic and developmental cooperation.

Regional Connectivity

- Supports India's efforts to strengthen connectivity, trade, and investment linkages with Central Asian countries.

Financial Action Task Force (FATF)



Financial Action Task Force

Why in News?

- India will assume the **Vice-Presidency** of the **Financial Action Task Force** for the first time.
- **Vivek Aggarwal**, Secretary, Ministry of Culture, has been appointed as FATF Vice-President for the term **July 2026 to June 2027**.

Key Development

Role of FATF Vice-President

- Assists the FATF President in steering the organization's work.
- Supports implementation of FATF's mandate and strategic priorities.
- Plays a key role in coordinating global anti-money laundering and counter-terror financing efforts.

Tenure

- Vice-Presidency: July 2026 – June 2027.
- FATF Presidency is held for a two-year term.

Significance for India

Global Recognition

- Reflects India's growing credibility in combating **money laundering** and **terror financing**.

Leadership Role

- Enhances India's influence in global financial governance.

Future Prospects

- Strengthens India's chances of assuming the FATF Presidency in the future.

Counter-Terrorism Efforts

- Reinforces India's longstanding efforts against cross-border terror financing.

Financial Action Task Force (FATF)

About

- FATF is an intergovernmental body that acts as the global watchdog against:
 - Money laundering.
 - Terrorist financing.
 - Financing of Weapons of Mass Destruction (WMD) proliferation.

Establishment

- Established in **1989** at the initiative of the **Group of Seven** Summit held in **Paris**.

Evolution of FATF Mandate

1989

- Focused on combating money laundering.

2001

- Mandate expanded to include terrorist financing following the 9/11 attacks.

2012

- Expanded further to address financing of **Weapons of Mass Destruction (WMD)** proliferation.

Objectives of FATF

Protect Financial Integrity

- Safeguard the international financial system from illicit financial flows.

Combat Terror Financing

- Prevent terrorist organizations from accessing financial resources.

Strengthen Global Cooperation

- Promote international coordination against financial crimes.

Set Global Standards

- Develop recommendations and best practices for member countries.

Membership and Global Reach

Members

- FATF has **40 members**, including major economies and regional organizations.

Global Network

- More than **200 jurisdictions** follow FATF standards through FATF-Style Regional Bodies (FSRBs).

Governance Structure

FATF Plenary

- The highest decision-making body of FATF.
- Meets three times annually.

Functions

- Reviews member compliance.
- Adopts policy decisions.
- Evaluates emerging financial crime threats.

FATF Lists

Grey List

- Countries placed under increased monitoring due to strategic deficiencies in anti-money laundering and counter-terror financing frameworks.

Black List

- High-risk jurisdictions with serious deficiencies and inadequate cooperation.

Impact of Listing

- Reduced foreign investment.
- Increased scrutiny of financial transactions.
- Higher borrowing and compliance costs.

India and FATF

Observer Status

- India became an Observer in **2006**.

Full Membership

- India joined FATF as the **34th member** in **June 2010**.

Legislative Measures

Prevention of Money Laundering Act (PMLA), 2002

- Provides the legal framework to combat money laundering.

Unlawful Activities (Prevention) Act (UAPA), 1967

- Strengthens measures against terrorism and terror financing.

Importance of FATF

Global Financial Security

- Promotes transparency and accountability in financial systems.

Counter-Terrorism

- Helps disrupt terror financing networks.

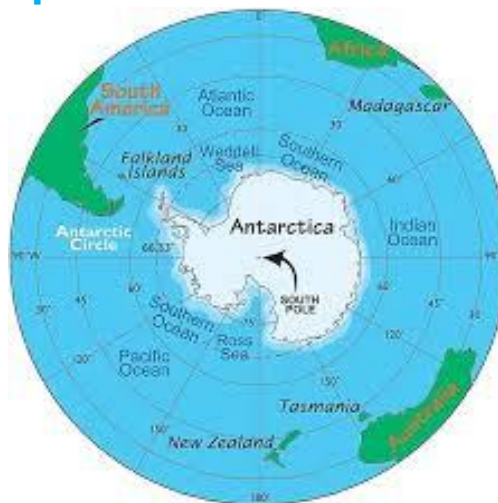
Anti-Money Laundering Framework

- Encourages countries to adopt robust legal and regulatory measures.

International Cooperation

- Facilitates information sharing and coordinated action against financial crimes.

Antarctic Treaty: 65 Years of Peace, Science and International Cooperation



Why in News?

- The **Antarctic Treaty** marks its **65th anniversary in 2026**.
- The treaty remains a unique example of international cooperation dedicated to **peaceful use, scientific research, and environmental protection** in Antarctica.
- However, growing geopolitical competition, climate change, and resource interests are posing new challenges to the treaty system.

What is the Antarctic Treaty?

Background

- Signed on **1 December 1959** in Washington.
- Entered into force on **23 June 1961**.
- Emerged from the success of the **International Geophysical Year** (1957–58), which promoted international scientific cooperation in Antarctica.

Antarctica Day

- Celebrated annually on **1 December** to commemorate the signing of the treaty.

Coverage

- Applies to all areas south of **60° South Latitude**.
- Covers nearly **10% of Earth's surface**.

Original Signatories

Founding Members (1959)

- Argentina
- Australia
- Belgium
- Chile
- France
- Japan
- New Zealand
- Norway
- South Africa
- Soviet Union
- United Kingdom
- United States

Current Membership

- The treaty now has **58 Parties**.
- Members are classified as:
 - **Consultative Parties** (voting members).
 - **Non-Consultative Parties** (non-voting members).

Key Provisions of the Antarctic Treaty

Peaceful Use Only (Article I)

- Antarctica shall be used exclusively for peaceful purposes.
- Prohibits:
 - Military bases.
 - Weapons testing.
 - Military exercises.

Freedom of Scientific Research (Articles II & III)

- Guarantees freedom of scientific investigation.
- Promotes international scientific cooperation.
- Research findings must be freely shared.

Freezing of Territorial Claims (Article IV)

Core Principle

- Neither recognizes nor rejects existing territorial claims.
- Prevents new claims while the treaty remains in force.

Claimant Countries

- Argentina
- Australia
- Chile
- France
- New Zealand
- Norway
- United Kingdom

Nuclear-Free Zone (Article V)

- Prohibits:
 - Nuclear explosions.
 - Disposal of radioactive waste.

Antarctic Treaty System (ATS)

Definition

- A collection of treaties and agreements governing Antarctica.

Convention for the Conservation of Antarctic Seals (CCAS), 1972

- Regulates seal hunting and conservation.

Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), 1980

- Protects Antarctic marine ecosystems.
- Focuses particularly on krill conservation.

Madrid Protocol (1991)

Official Name

- Protocol on Environmental Protection to the Antarctic Treaty.

Key Features

- Declares Antarctica a:
 - **"Natural reserve devoted to peace and science."**
- Requires environmental impact assessments.
- Protects Antarctic ecosystems.

Mining Ban

- Prohibits all commercial mineral resource extraction activities.

India's Role in Antarctica

Treaty Participation

- India signed the Antarctic Treaty in **1983**.
- Obtained **Consultative (Voting) Status** in the same year.
- Ratified the **Madrid Protocol** in **1998**.

Indian Antarctic Research Stations

Dakshin Gangotri (1983)

Significance

- India's first Antarctic research station.

Current Status

- Decommissioned and used as a supply base.

Special Achievement

- India's first Antarctic post office was established here in 1984.

Maitri (1989)

Location

- Schirmacher Oasis, East Antarctica.

Features

- Currently operational.
- Supports scientific research throughout the year.

Lake Priyadarshini

- Freshwater lake created near the station.

Antarctic Post Office

- Established on 26 January 1990.

Bharati (2012)

Location

- Situated between Thala Fjord and Quilty Bay.

Importance

- Supports year-round scientific research.
- Designed for modern multidisciplinary studies.

Postal Facility

- Hosts India's second active Antarctic post office.

Maitri II (Proposed)

Completion Target

- By 2032.

Objective

- Replace the ageing Maitri station.

Features

- Green research base.
- Solar and wind energy powered.
- Advanced automated monitoring systems.
- Enhanced scientific and living infrastructure.

National Centre for Polar and Ocean Research (NCPOR)

About

- Established in 1998 in Goa.
- Functions under the Ministry of Earth Sciences.

Functions

- Coordinates India's Antarctic Programme.
- Conducts polar and Southern Ocean research.
- Supports Arctic and Himalayan research initiatives.

- Contributes to India's Deep Ocean Mission.

Indian Antarctic Act, 2022

Purpose

- Provides legal backing to:
 - Antarctic Treaty.
 - Madrid Protocol.
 - CCAMLR.

Key Provisions

- Extends jurisdiction of Indian courts to Antarctica for Indian expeditions.
- Regulates:
 - Tourism.
 - Commercial activities.
 - Environmental protection measures.

India's Diplomatic Contributions

46th Antarctic Treaty Consultative Meeting (ATCM), Kochi (2024)

Achievement

- India facilitated the first focused discussions on regulating Antarctic tourism.

Significance

- Strengthened India's leadership role in Antarctic governance.

Challenges Facing the Antarctic Treaty Geopolitical Competition

- Growing strategic interest among major powers.

Climate Change

- Accelerated melting of glaciers and ice sheets.

Resource Pressures

- Increasing interest in Antarctica's mineral and marine resources.

Tourism Expansion

- Rising tourist activity creates environmental risks.

Significance of the Antarctic Treaty

Preserves Antarctica for Peace

- Prevents militarization and conflict.

Promotes Scientific Cooperation

- Facilitates collaborative global research.

Protects Fragile Ecosystems

- Ensures environmental conservation.

Supports Global Climate Research

- Antarctica remains critical for understanding climate change.

Way Forward

Strengthen Antarctic Governance

- Enhance compliance with treaty obligations.

Protect Environmental Integrity

- Maintain strict conservation measures and mining prohibition.

Regulate Tourism

- Develop sustainable tourism guidelines.

Expand Scientific Cooperation

- Promote international collaboration in polar research.

Enhance India's Polar Presence

- Accelerate development of **Maitri II** and strengthen Antarctic scientific capabilities.



EDITORIALS

Crux of The Hindu & Indian Express

International Issues

India–Myanmar Relations: Strategic Importance, Challenges and Future Prospects

Why in News?

- Myanmar President **Min Aung Hlaing** paid an official visit to India in June 2026 and held comprehensive discussions with Prime Minister **Narendra Modi** on bilateral, regional and strategic issues.

The talks covered a wide range of areas including:

- Trade and investment
- Connectivity projects
- Defence and security cooperation
- Border management
- Energy cooperation
- Critical minerals and rare earths
- Development assistance
- Educational and cultural exchanges
- Regional security situation

The visit is significant because Myanmar occupies a crucial position in India's **Neighbourhood First Policy**, **Act East Policy**, **MAHASAGAR Vision**, and broader **Indo-Pacific strategy**.

Key Outcomes of the Visit

Strengthening Bilateral Cooperation

Both leaders expressed their commitment to deepening cooperation in:

- Trade and investment

- Development partnership
- Healthcare
- Education
- Energy
- Infrastructure
- Connectivity

The discussions reflected a shared desire to strengthen bilateral relations despite Myanmar's ongoing internal challenges.

Support for Sovereignty and Territorial Integrity

Prime Minister Modi reaffirmed India's support for:

- Myanmar's sovereignty
- Territorial integrity
- Political independence

India reiterated its long-standing position of respecting the internal affairs of neighbouring countries while supporting peace, stability and development.

Expansion of Educational Cooperation

- India announced a major expansion of educational opportunities for Myanmar students.

Mekong-Ganga ICCR Scholarships

- Existing scholarships: **36 annually**
- Revised scholarships from 2026: **100 annually**

This move aims to strengthen educational exchanges and long-term people-to-people relations.

Cooperation in Critical Minerals and Rare Earths

Both sides discussed enhancing cooperation in:

- Critical minerals
- Rare earth elements

These resources have become increasingly important for:

- Electric vehicles
- Renewable energy technologies
- Electronics manufacturing
- Defence production
- Semiconductor industries

The two countries agreed to continue discussions and promote cooperation in these strategic sectors.

Strategic Significance of Myanmar for India

- Myanmar occupies a unique and indispensable position in India's regional and geopolitical strategy.

Gateway to Southeast Asia and ASEAN

- Myanmar is India's only Southeast Asian neighbour that shares both:
 - A land border
 - A maritime boundary
- As a result, it serves as India's gateway to **ASEAN** and acts as a bridge connecting South Asia with Southeast Asia.
- Strong relations with Myanmar are therefore essential for India's engagement with the broader Indo-Pacific region.

Convergence of India's Major Foreign Policy Initiatives

- Myanmar lies at the intersection of several important Indian foreign policy frameworks:

Neighbourhood First Policy

- Aims to strengthen relations with neighbouring countries.

Act East Policy

- Seeks deeper economic and strategic engagement with Southeast and East Asia.

MAHASAGAR Vision

- Focuses on maritime cooperation, regional prosperity and security.

Indo-Pacific Strategy

- Supports a free, open, inclusive and rules-based Indo-Pacific region.
- Myanmar's geographical location makes it central to the success of all these initiatives.

Strategic and Security Importance

- India shares a **1,643-km border** with Myanmar, making stability in Myanmar vital for India's national security.

Peace and stability in Myanmar directly influence:

- Security of Northeast India
- Counter-insurgency efforts
- Border management
- Prevention of cross-border crime

Thus, developments inside Myanmar have immediate consequences for India's internal security environment.

Economic and Maritime Importance

Myanmar offers significant opportunities for:

- Trade
- Energy cooperation
- Infrastructure investment
- Mining

- Critical minerals
- Rare earth resources

Its coastline along the **Bay of Bengal** also strengthens India's maritime outreach and connectivity initiatives.

Civilisational and Cultural Linkages

- India and Myanmar share centuries-old civilisational ties rooted in:
 - Buddhism
 - Historical exchanges
 - Cultural interactions
- President **Droupadi Murmu** highlighted that the shared Buddhist heritage and deep people-to-people connections continue to provide warmth and strength to bilateral relations.

Economic Cooperation

- Economic engagement remains an important pillar of India–Myanmar relations.

Bilateral Trade

- Trade between the two countries has shown steady growth.

Bilateral Trade Volume

- Approximately **USD 2.15 billion** in FY 2024–25.

Trade Pattern

India imports:

- Pulses
- Agricultural products
- Timber and forest products

India exports:

- Pharmaceuticals
- Machinery
- Iron and steel products
- Petroleum products

India generally maintains a trade deficit due to higher imports from Myanmar.

Rupee–Kyat Settlement Mechanism

- To facilitate smoother trade, both countries welcomed the growing use of the:

Rupee–Kyat Settlement Mechanism

Operational since **May 2024**, the mechanism allows bilateral trade to be settled directly in:

- Indian Rupee
 - Myanmar Kyat
- through **Special Rupee Vostro Accounts (SRVA)** maintained by **Punjab National Bank**.

Significance

The mechanism:

- Reduces dependence on the US Dollar.

- Lowers transaction costs.
- Improves trade efficiency.
- Strengthens financial cooperation.

Priority Areas for Investment

Both countries identified several sectors for future economic collaboration:

- Agro-processing
- Petroleum
- Energy
- Mining
- Infrastructure
- Manufacturing

These sectors are expected to drive deeper economic integration in the coming years.

Connectivity: Core Pillar of India–Myanmar Relations

- Connectivity remains the foundation of India's engagement with Myanmar and Southeast Asia.

Kaladan Multi-Modal Transit Transport Project (KMTTP)

Kaladan Multi Modal Transit Transport Project



Both leaders reviewed progress on the:

Kaladan Multi-Modal Transit Transport Project

The project seeks to connect:

- Kolkata Port
- Sittwe Port in Myanmar
- Kaladan River system
- Mizoram

Significance

The project will:

- Provide alternative access to Northeast India.
- Reduce dependence on the Siliguri Corridor.
- Enhance regional connectivity.

- Promote trade and development.

Both sides agreed to work towards its early completion.

India–Myanmar–Thailand Trilateral Highway

- The two countries also reiterated their commitment to advancing the:

India–Myanmar–Thailand Trilateral Highway

Significance

The highway will:

- Connect India with Southeast Asia by road.
- Promote trade and tourism.
- Strengthen regional integration.
- Advance India's Act East Policy.

The project is expected to become a major economic corridor linking South Asia and Southeast Asia.

Security and Border Cooperation

- Security cooperation remains one of the most important dimensions of India–Myanmar relations.

Counter-Insurgency Cooperation

- Several insurgent groups operating in Northeast India have historically maintained bases inside Myanmar.
- During the visit, Myanmar assured India that:
- Myanmar's territory will not be allowed to be used against India's security interests.
- This assurance is significant for India's efforts to maintain peace and stability in the Northeast.

Border Management

Both countries emphasized cooperation to prevent:

- Cross-border insurgency
- Arms trafficking
- Drug trafficking
- Organized crime
- Illegal migration

Effective border management remains essential given the difficult terrain and porous nature of the India–Myanmar border.

Cooperation Against Cyber Scam Networks

- Myanmar-based cyber scam compounds have emerged as a major transnational security challenge.
- The two countries agreed to continue cooperation for:
 - Rescue of victims

- Repatriation of Indian citizens
- Action against cyber-crime syndicates
- India has already rescued and repatriated more than **2,400 Indian citizens** trapped in such scam centres.

Political Developments and India's Approach Support for Myanmar-led Peace Process

- India reiterated support for a:
"Myanmar-led and Myanmar-owned" peace process

India emphasized:

- National reconciliation
- Inclusive dialogue
- Participation of all stakeholders
- Peaceful resolution of conflicts

Issue of Aung San Suu Kyi

- Prime Minister Modi raised the issue of detained democracy leader **Aung San Suu Kyi** during discussions.
- India highlighted the importance of:
 - Democratic processes
 - Political inclusion
 - National reconciliation
- At the same time, India maintained that its engagement with Myanmar should not be viewed as interference in Myanmar's internal political arrangements.

India's Balancing Strategy

- India faces the challenge of balancing:

Democratic Values

- Support for democracy.
- Human rights.
- Inclusive governance.

Strategic Interests

- Border security.
- Connectivity projects.
- Economic cooperation.
- Regional stability.

India's approach seeks to combine principled support for democratic processes with pragmatic engagement with Myanmar's governing authorities.

Challenges in India–Myanmar Relations

- Despite strong strategic convergence, several challenges continue to affect bilateral relations.

Political Instability in Myanmar

- The military takeover in 2021 and continuing internal conflict have created uncertainty regarding:

- Governance
- Security
- Economic cooperation
- Infrastructure projects

- The instability complicates India's engagement efforts.

Delay in Connectivity Projects

Strategic projects such as:

- Kaladan Multi-Modal Transit Transport Project
 - India–Myanmar–Thailand Trilateral Highway
- have experienced delays due to:
- Security concerns
 - Conflict zones
 - Operational challenges

These delays affect the effectiveness of India's Act East Policy.

Refugee Influx into Northeast India

- Continuing violence in Myanmar has resulted in repeated refugee inflows into India.

Most Affected State

- **Mizoram**

The influx creates humanitarian, administrative and security challenges.

Rohingya Crisis

- The Rohingya issue remains a major humanitarian concern.
- The displacement of Rohingya populations has affected regional stability and continues to pose diplomatic and security challenges.

Chinese Strategic Influence

- Myanmar remains an important arena of strategic competition between India and China.
- China's extensive investments, infrastructure projects and economic influence in Myanmar create challenges for India's strategic interests.
- Consequently, India views stronger engagement with Myanmar as essential for maintaining strategic balance in the region.

Difficult Border Terrain

The India–Myanmar border passes through:

- Dense forests
- Mountainous terrain
- Remote tribal regions

These geographical conditions make surveillance, law enforcement and border management particularly difficult.

Way Forward

Accelerate Connectivity Projects

Timely completion of:

- Kaladan Multi-Modal Transit Transport Project
 - India–Myanmar–Thailand Highway
 - Sittwe Port initiatives
- is essential for realizing the objectives of the Act East Policy.

Strengthen Border Management

India should continue to improve:

- Border infrastructure
 - Surveillance systems
 - Intelligence sharing
 - Joint security cooperation
- while preserving traditional cross-border community linkages.

Deepen Economic Engagement

Both countries should expand cooperation in:

- Trade
- Energy
- Infrastructure
- Manufacturing
- Critical minerals
- Mining

Greater economic interdependence can strengthen bilateral relations.

Balance Democracy and Strategic Interests

India should continue supporting:

- Democratic aspirations
 - National reconciliation
 - Peaceful political dialogue
- while maintaining pragmatic engagement with Myanmar's authorities.

Promote Cultural and Educational Exchanges

Shared civilisational heritage should be leveraged through:

- Scholarships
 - Educational exchanges
 - Cultural programmes
 - Heritage conservation initiatives
- to strengthen people-to-people bonds.

Encourage Regional Peace Initiatives

India can support:

- ASEAN-led initiatives
- Track-II diplomacy
- Regional dialogue mechanisms to contribute towards peace and stability in Myanmar

About Myanmar

- **Location:** Positioned as the northernmost nation in the Southeast Asian region.
- **Capital City:** Naypyidaw
- **Land Borders:**
 - **West:** India
 - **Northwest:** Bangladesh
 - **North and Northeast:** China
 - **East:** Laos
 - **Southeast:** Thailand
- **Maritime Borders:** Encircled by the Andaman Sea to the south and the Bay of Bengal to the southwest.

Geographical Features of Myanmar

- **Climate:** Characterized predominantly by a tropical monsoon weather pattern.
- **Topography and Mountain Ranges:** Prominent highlands and ranges are featured, including the Rakhine Yoma, Bago Yoma, and the Shan Hills.
- **Highest Point:** Hkakabo Razi
- **Key River Systems:** Principal drainage networks include the Irrawaddy, Chindwin, Salween, and Mekong rivers.
- **Natural Wealth:** Diverse resources are found in abundance, such as natural gas, petroleum, timber, copper, tin, tungsten, lead, coal, limestone, marble, and significant hydropower potential.

Conclusion

Myanmar is one of India's most strategically significant neighbours and occupies a central position in India's **Neighbourhood First Policy, Act East Policy, MAHASAGAR Vision and Indo-Pacific strategy**. As India's gateway to Southeast Asia, Myanmar is crucial for connectivity, trade, regional security and economic integration. While challenges such as political instability, insurgency, refugee flows, project delays and Chinese influence continue to affect bilateral relations, both countries remain committed to strengthening cooperation across multiple sectors. A balanced approach combining strategic pragmatism, economic engagement, security cooperation and support for reconciliation will be essential for advancing India's interests while contributing to peace, stability and prosperity across the Indo-Pacific region.

Armenia Parliamentary Election 2026



Why in News?

- Armenia's ruling **Civil Contract Party** won the 2026 Parliamentary Election.
- Prime Minister **Nikol Pashinyan** secured another term in office.
- The election was closely watched as a test of Armenia's foreign policy direction amid changing regional geopolitics.

Election Results

Party	Vote Share
Civil Contract Party	49.8%
Strong Armenia Alliance	23.2%
Armenia Alliance	9.9%

Key Statement

Following the victory, Prime Minister Pashinyan described the result as a "**historic victory**" and stated that Armenians had voted for:

- Peace.
- Regional prosperity.
- Greater cooperation.

Why Was This Election Important?

- The election was viewed as a referendum on Prime Minister Pashinyan's policies since coming to power in 2018.

Key Issues in the Election : Armenia's Foreign Policy Shift

The government has increasingly sought to:

- Strengthen relations with Western countries.
- Expand engagement with the European Union.
- Reduce excessive dependence on Russia.

Relations with Russia

Russia remains:

- Armenia's largest trading partner.
- Traditional security partner.

- Long-standing political ally. However, tensions have emerged in recent years over regional security issues, especially after conflicts involving Azerbaijan.

Regional Security Concerns

The election took place amid:

- Ongoing tensions with Azerbaijan.
- Security concerns in the South Caucasus.
- Shifting geopolitical alignments in the region.

About Armenia

Location

- Armenia is a **landlocked country** located in the **South Caucasus** region.
- It lies between Europe and Asia and occupies a strategically important position in Eurasia.

Bordering Countries

Armenia shares borders with:

- Georgia** (North)
- Azerbaijan** (East)
- Iran** (South-East)
- Turkey** (West)

Capital

Yerevan

- Largest city of Armenia.
- One of the world's oldest continuously inhabited cities.

Geographical Features of Armenia

Climate

- Armenia experiences a: **Highland Continental Climate**
- Characteristics include:
 - Hot summers.
 - Cold winters.
 - Significant temperature variation.

Terrain

Lesser Caucasus Mountains

- The **Lesser (Little) Caucasus Mountains** dominate much of Armenia's landscape.
- Mountainous terrain covers a large part of the country.

Volcanic Origin

Much of Armenia's soil is derived from:

- Volcanic lava deposits. As a result, the soil is rich in:
 - Nitrogen.
 - Potash.
 - Phosphates.

This supports agricultural activities in many regions.

Highest Peak : Mount Aragats

- Height: **4,090 metres**
- An extinct volcanic mountain.
- Highest point in Armenia.

Major Rivers

Important rivers include:

Aras River

- One of the major rivers of the region.
- Forms part of Armenia's border.

Other Important Rivers

- Hrazdan
- Arpa
- Vorotan

Importance

These rivers support:

- Irrigation.
- Hydropower generation.
- Agriculture.

Important Lake

Lake Sevan

- Largest lake in Armenia.
- One of the largest high-altitude freshwater lakes in the world.
- Important source of water, fisheries and hydropower.

Natural Resources

Armenia possesses modest mineral resources, including:

- Gold
- Copper
- Molybdenum
- Zinc
- Bauxite

Mining remains an important sector of the Armenian economy.

Armenia's Strategic Importance : South Caucasus Region

Armenia occupies an important geopolitical position in the South Caucasus, a region connecting:

- Europe.
- Central Asia.
- West Asia.

Regional Connectivity

Armenia lies near important trade and transport corridors linking:

- Europe.
- Russia.
- Middle East.

- Central Asia.

Relations with Azerbaijan

- Armenia's relationship with **Azerbaijan** remains one of the most important factors shaping its foreign and security policy.
- The two countries have experienced prolonged disputes over the: **Nagorno-Karabakh** region.

Challenges Before the New Government

Managing Relations with Russia

- Balancing traditional ties with Moscow.
- Maintaining economic cooperation.

Expanding Western Engagement

- Deepening ties with Europe and Western partners.
- Attracting investment and economic opportunities.

Regional Security

- Maintaining peace with neighbouring Azerbaijan.
- Strengthening national security.

Economic Development

- Addressing inflation and economic pressures.
- Diversifying trade and investment sources.

Conclusion

The victory of Prime Minister **Nikol Pashinyan** and the **Civil Contract Party** marks a significant political development in Armenia. The election reflects public support for stability, peace and economic development while highlighting Armenia's ongoing effort to balance its traditional relationship with Russia with a growing desire for deeper engagement with Western countries. The new government will face the challenge of managing regional security concerns, strengthening economic growth and navigating the complex geopolitical dynamics of the South Caucasus region.

US-Iran Ceasefire 2026: Why the Next 60 Days Are Crucial



Why in News?

- On **15 June 2026**, the **United States** and **Iran** agreed on a framework for a peace deal extending the current ceasefire by **60 days**.
- US President **Donald Trump** announced the removal of the US naval blockade on Iranian ports.
- Iran confirmed that a **Memorandum of Understanding (MoU)** had been reached.
- The agreement focuses on:
 - Reopening of the **Strait of Hormuz**.
 - Economic relief for Iran.
 - Release of frozen assets.
 - Future nuclear negotiations.
 - Regional de-escalation.

Key Provisions of the MoU

Security and Military Measures

Ceasefire Arrangement

- Existing ceasefire extended for **60 days**.
- Hostilities to cease across all fronts.
- Both sides committed to reducing military escalation.

US Commitments

- Remove naval blockade of Iranian ports.
- Avoid imposing new sanctions during negotiations.
- Withdraw forces from certain areas surrounding Iran.

Iranian Commitments

- Maintain ceasefire.
- Refrain from escalation.
- Continue diplomatic negotiations.

Strait of Hormuz Reopening

What Has Been Agreed?

- Iran will reopen the **Strait of Hormuz** for commercial shipping.
- The US will ease restrictions affecting maritime trade.

Why is it Important?

The Strait of Hormuz:

- Connects the Persian Gulf with the Gulf of Oman.
- Carries nearly **20% of global oil trade**.
- Is one of the world's most important maritime chokepoints.

Significance

- Stabilises global energy markets.
- Reduces risks to international shipping.

- Improves energy security.

Economic Relief Measures

Release of Frozen Assets

- Around **\$24 billion** of Iranian assets may be released.

Sanctions Relief

- Temporary waiver of oil sanctions.
- No additional sanctions during negotiations.

Reconstruction Package

- Proposed **\$300 billion reconstruction and development plan**.
- Intended to support economic recovery and infrastructure rebuilding.

Nuclear Question Deferred

What Has Been Decided?

Instead of resolving the nuclear issue immediately:

- Both sides agreed to maintain the status quo.
- Comprehensive nuclear negotiations will continue during the next 60 days.

Iran's Interim Commitments

Iran agreed to:

- Not acquire nuclear weapons.
- Maintain current nuclear activities.
- Avoid further uranium enrichment.

Why Was the Nuclear Issue Deferred?

US Concerns

The US seeks:

- Restrictions on uranium enrichment.
- Strong verification mechanisms.
- Long-term limits on Iran's nuclear programme.

Iranian Demands

Iran seeks:

- Sanctions relief.
- Security guarantees.
- Recognition of its nuclear rights.

Result

- Neither side was ready for a final compromise.
- Therefore, the issue was postponed for future negotiations.

How Has Iran's Bargaining Position Improved?

Traditional US Leverage

Before the conflict, the US relied mainly on:

Economic Sanctions

- Restricted Iran's access to global markets.
- Limited trade and investment.

Military Pressure

- Superior military capabilities.
- Damage to nuclear facilities at Natanz, Isfahan and Fordow.

Iran's New Sources of Leverage

Control of the Strait of Hormuz

- Ability to affect global oil supplies.
- Influence over international shipping routes.

Missile and Drone Capabilities

- Ability to target regional military infrastructure.
- Ability to threaten energy facilities.

Regional Influence

- Continued influence through allied groups and networks.

Impact

These factors strengthened Iran's negotiating position and reduced the effectiveness of traditional US pressure.

What Triggered the MoU?

Israeli Strike on Beirut

- Israeli forces carried out an attack on Beirut.
- Iran prepared retaliatory action.
- Risk of wider regional escalation increased.

US Response

- President Trump criticised the strike.
- The US accelerated negotiations.
- Naval blockade removal was announced.

Outcome

- The crisis ultimately pushed both sides towards finalising the MoU.

Why Are the Next 60 Days Important?

The implementation period is considered the real test of the agreement.

Key Issues to Watch

1. US Ability to Restrain Israel

- Any new military escalation may derail negotiations.

2. Removal of Naval Blockade

- Iran considers this a critical test of US commitment.

3. Release of Frozen Assets

- Timely release will build confidence.

4. US Military Withdrawal

Questions remain regarding:

- Scope of withdrawal.
- Timeline.
- Verification process.

5. Progress Towards Nuclear Agreement

- Success depends on whether both sides can move from temporary arrangements to a final settlement.

Debate Within Iran

Concerns of Hardliners

Many hardline groups argue that:

- Iran gained significant leverage during the conflict.
- Reopening Hormuz weakens that leverage.
- Stronger guarantees should be obtained before concessions.

Hormuz as a Strategic Asset

For many in Iran:

- Control over Hormuz has become a major geopolitical advantage.
- Any concession on shipping rights is viewed with caution.

Why Is Iran Supporting the Deal?

Economic Relief

- Access to frozen assets.
- Potential sanctions relief.
- Reconstruction assistance.

Better Negotiating Position

- Tehran believes its bargaining position is stronger than before the conflict.

Retention of Military Capabilities

The agreement does not restrict:

- Missile programme.
- Drone programme.
- Conventional deterrence capabilities.

Significance of the Agreement

Regional Stability

- Reduces the risk of a wider conflict.

Energy Security

- Helps stabilise oil markets.
- Secures maritime trade routes.

Economic Recovery

- Supports Iran's economic revival.

Nuclear Diplomacy

- Creates a pathway towards a comprehensive nuclear agreement.

Implications for India

Energy Security

- India depends heavily on Gulf oil imports.
- Stability in Hormuz is vital for energy supplies.

Maritime Trade

- Safer shipping routes reduce trade disruptions.

Strategic Connectivity

- Stability supports India's interests in **Chabahar Port** and connectivity to Central Asia.

Challenges Ahead

- Deep trust deficit between the US and Iran.
- Unresolved nuclear issues.
- Possibility of renewed regional tensions.

- Domestic opposition in both countries.
- Verification and implementation challenges.

Way Forward

- Ensure strict ceasefire compliance.
- Implement economic commitments on time.
- Advance nuclear negotiations.
- Maintain maritime security in Hormuz.
- Build confidence through transparent verification mechanisms.

Conclusion

The **US-Iran MoU of June 2026** represents a significant diplomatic breakthrough aimed at reducing regional tensions and restoring stability in West Asia. While the agreement addresses immediate concerns such as the ceasefire, sanctions relief and reopening of the **Strait of Hormuz**, the crucial nuclear issue remains unresolved. The next **60 days** will therefore determine whether the framework evolves into a lasting peace agreement or remains only a temporary pause in the long-standing US-Iran rivalry.

Prime Minister's State Visit to Seychelles 2026



Why in News?

- The Prime Minister of India undertook a State Visit to **Seychelles** as the Guest of Honour for its **50th National Day (Golden Jubilee of Independence)** celebrations.
- The visit also marked **50 years of India–Seychelles diplomatic relations**, during which both countries unveiled a commemorative logo celebrating five decades of partnership.

Key Outcomes of the Prime Minister's Visit

Deployment of UPI

- An MoU was signed between **NPCI International Payments Limited** and the Central Bank of Seychelles.

- It will facilitate the rollout of **Unified Payments Interface (UPI)** in Seychelles.

- The initiative will strengthen digital payments and promote financial inclusion.

Umbrella Line of Credit

- India extended an umbrella line of credit worth **₹1,250 crore**.
- The credit will support priority developmental projects in Seychelles.

Janaushadhi Cooperation

- An agreement between **HLL Lifecare Limited** and Seychelles' Ministry of Health will facilitate the supply of affordable generic medicines.
- It integrates Seychelles with India's **Pradhan Mantri Bhartiya Janaushadhi Pariyojana** model.

National Hospital Development

- Both countries signed a framework MoU for developing a modern National Hospital in Seychelles.

Extradition Treaty

- A new extradition treaty was signed.
- It aims to strengthen cooperation against:
 - Drug trafficking.
 - Financial crimes.
 - Other transnational offences.

Maritime Mobility

- An MoU was signed for mutual recognition of training and certification of Indian seafarers.
- This will allow Indian seafarers to work on Seychelles-flagged vessels.

Diplomatic Capacity Building

- Institutional cooperation was established between:
 - **Sushma Swaraj Institute of Foreign Service**
 - Seychelles Ministry of Foreign Affairs and the Diaspora.
- The partnership will support training and diplomatic capacity building.

Space Cooperation

- Both countries signed an MoU on peaceful uses of outer space.
- Areas of cooperation include:
 - Satellite applications.
 - Remote sensing.
 - Climate monitoring.
 - Disaster management.

Agricultural Research Work Plan (2026–2031)

- An MoU was signed between the **Indian Council of Agricultural Research** and the Seychelles Agriculture Department.

- It focuses on:
 - Agricultural research.
 - Technical cooperation.
 - Food security initiatives.

Defence and Maritime Cooperation

- India handed over **PS LESPWAR**, a Made-in-India Fast Patrol Vessel built by **Goa Shipyard Limited**, to the Seychelles Coast Guard.
- India also gifted:
 - Ambulances.
 - Utility vehicles.
 - Laser radial boats.
- These measures will strengthen maritime surveillance and disaster response capabilities.

Guardian of the Blue Horizon Award

- The President of Seychelles conferred the country's highest Presidential Distinction, "**Guardian of the Blue Horizon**", upon the Prime Minister of India.
- The award recognizes contributions towards:
 - Climate action.
 - Blue Economy.
 - Sustainable ocean governance.
 - Development of Small Island Developing States (SIDS).

Vision MAHASAGAR

About :

- **MAHASAGAR** stands for **Mutual and Holistic Advancement for Security and Growth Across Regions**.
- It represents India's comprehensive approach to cooperation in the **Indian Ocean Region (IOR)**.

Significance

- Promotes maritime security.
- Strengthens development partnerships.
- Encourages digital and health diplomacy.
- Enhances regional connectivity and resilience.

Why is Seychelles Strategically Important for India?

- Seychelles is located near critical **Sea Lanes of Communication (SLOCs)**.
- It lies close to important maritime chokepoints such as:
 - **Mozambique Channel**
 - **Bab-el-Mandeb**
 - **Cape of Good Hope**.

Countering China's Influence

- Strong ties with Seychelles help India maintain strategic balance in the Western Indian Ocean.
- Supports India's efforts to counter China's growing maritime footprint.

Maritime Security Cooperation

- Seychelles is linked to India's:
 - Coastal Surveillance Radar Network (CSRN).
 - **Information Fusion Centre–Indian Ocean Region**.
- This improves Maritime Domain Awareness (MDA).

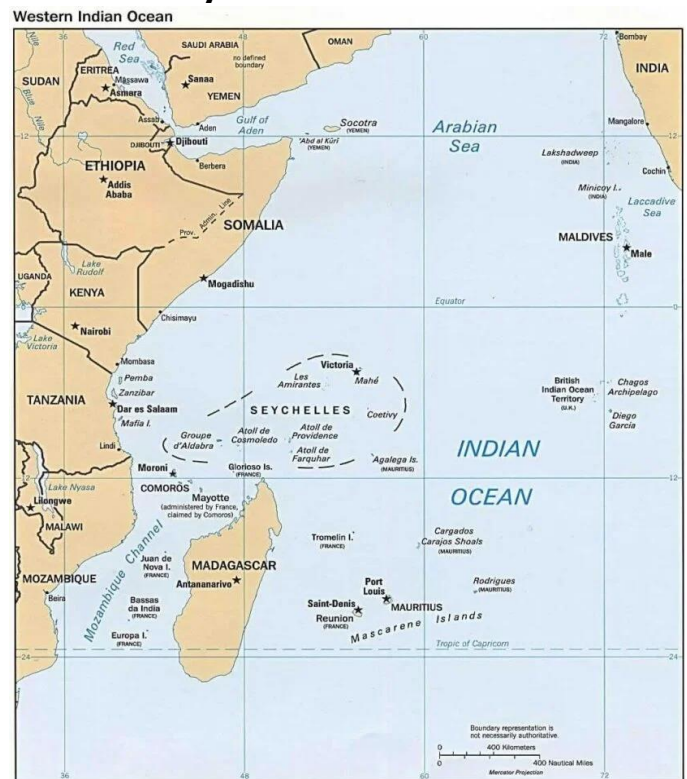
Blue Economy Cooperation

- Seychelles possesses an EEZ of approximately **1.3 million sq km**.
- It is an important partner for sustainable ocean resource management.

Gateway to Africa

- Seychelles is a member of:
 - **African Union**
 - **Indian Ocean Commission**
- It serves as a bridge for India's engagement with East Africa.

India–Seychelles Bilateral Relations



Diplomatic Relations

- India established diplomatic relations with Seychelles in **1976** following its independence.

- **INS Nilgiri** participated in Seychelles' Independence Day celebrations in 1976.

Defence Cooperation

- India has installed six Coastal Surveillance Radar Systems in Seychelles.
- Both countries conduct the joint military exercise **Exercise LAMITYE**.
- Seychelles also participates in **MILAN Naval Exercise**.

Trade and Investment

- Bilateral trade stood at approximately **USD 73 million in 2024–25**.
- Major Indian exports include:
 - Rice.
 - Pharmaceuticals.
 - Medical instruments.
 - Vehicles.

Human Resource Development

- More than 1% of the Seychellois population are alumni of India's **ITEC Programme**.

Climate and Energy Cooperation

- Seychelles is a founding member of the **International Solar Alliance**.
- Both countries cooperate extensively on renewable energy initiatives.

Diaspora Links

- Seychelles hosts:
 - Around 5,000 Persons of Indian Origin (PIOs).
 - Around 7,000 Non-Resident Indians (NRIs).
- The Indian community plays an important role in the country's economy and society.

Challenges in India–Seychelles Relations

Geopolitical Competition

- China's growing economic and strategic presence presents challenges for India's regional interests.

Maritime Security Constraints

- Seychelles faces difficulties in monitoring its vast EEZ.
- Threats include:
 - Illegal fishing.
 - Piracy.
 - Drug trafficking.

Limited Economic Engagement

- Trade remains modest due to:
 - Small market size.
 - Connectivity constraints.
 - Delays in project implementation.

Institutional Capacity Constraints

- Limited administrative and technical manpower can slow project execution.

Supply Chain Vulnerabilities

- External disruptions affect food, fuel, and construction material supplies.

Way Forward

Enhance Maritime Domain Awareness

- Strengthen intelligence sharing through IFC-IOR.
- Improve monitoring against piracy and illegal fishing.

Promote Scientific Diplomacy

- Link India's **Deep Ocean Mission** and marine research institutions with Seychelles.
- Expand cooperation in marine biotechnology and ocean sciences.

Climate Finance Innovation

- Support Seychelles in developing Blue Carbon Credit frameworks.
- Facilitate access to climate finance mechanisms.

Energy and Climate Mapping

- Utilize ISRO's satellite capabilities for:
 - Ocean Thermal Energy Conversion (OTEC) assessments.
 - Coral reef monitoring.
 - Marine heatwave forecasting.

Deepen Development Partnership

- Expand cooperation in healthcare, digital technology, capacity building, and sustainable development.

Significance

Strategic Partnership in the Indian Ocean

- Reinforces India's role as a trusted development partner in the Indian Ocean Region.

Advancing MAHASAGAR Vision

- Strengthens maritime security, economic cooperation, and regional stability.

Supporting Small Island States

- Demonstrates India's commitment to sustainable development and climate resilience of Small Island Developing States (SIDS).

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Supreme Court Ruling on the Doctrine of Promissory Estoppel



Why in News?

The Supreme Court recently observed that the doctrine of promissory estoppel cannot be invoked to claim a benefit under a government policy that was never aimed at benefiting a specific class of industrial unit.

About the Doctrine of Promissory Estoppel

- **Definition:** It is a foundational legal doctrine stating that if a party reasonably relies on a promise and changes their position or acts (or refrains from acting) in a way that causes them harm, the promise can be legally enforced.
- **Core Function:** It prevents the promisor (the party making the promise) from arguing against the enforcement of that promise or going back on their word. It primarily acts as an equitable tool to protect the rights of an aggrieved promisee and prevent injustice.
- **Remedial Variations:** The doctrine varies by country. Depending on the jurisdiction and specific legal circumstances, cases can result in either reliance damages (compensation for costs incurred) or expectation damages (benefits intended under the promise).

Essential Requirements for Application

For an injured party to successfully invoke the doctrine, a standard checklist must be satisfied (as re-emphasized by the Supreme Court in the landmark 1981 *Chhaganlal Keshavalal Mehta v. Patel Narandas Haribhai* case):

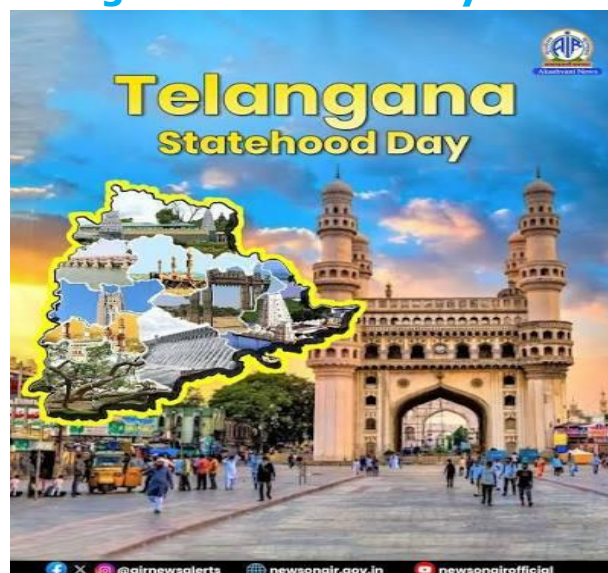
1. **Clear and Unambiguous Promise:** The promisor must make a explicit promise, whether orally or in writing.

2. **Reasonable Reliance:** The plaintiff/promisee must have acted in direct, reasonable reliance on that specific promise.
3. **Detriment or Loss:** The plaintiff must have suffered a distinct financial or material loss due to the non-performance of the promise.

Illustrative Example

- **Scenario:** A clothing vendor makes an oral promise to a customer stating they will replace any garment if it does not fit the customer's size.
- **Action:** Relying entirely on this oral assurance, the customer buys the clothes and takes them home.
- **Application:** When the customer later returns to exchange the ill-fitting clothes, the vendor is legally **estopped** (prevented) from refusing the return.

Telangana Statehood Day



Why in News?

The Prime Minister recently greeted the people of Telangana on the occasion of **Telangana Statehood Day**, which is observed every year on **June 2**.

About Telangana Formation

- **State Creation:** Telangana was formed on **June 2, 2014**, after splitting from Andhra Pradesh. It became India's 29th State at that time. Following the change of Jammu and Kashmir into Union Territories in 2019, Telangana is currently one of India's **28 States**.
- **Legal Basis:** The State was created under the **Andhra Pradesh Reorganisation Act, 2014**, which divided the old state into Telangana and the remaining parts of Andhra Pradesh.

- **Capital City: Hyderabad** serves as the capital city for Telangana.

Historical Timeline of Telangana

Princely State Era

Pre-1947

- Present-day Telangana was part of the Telugu-speaking region of the **princely State of Hyderabad**, ruled by the Nizam. A peasant uprising against the landlord (jagirdari) system began in 1945, which faced harsh pushback from the Nizam's private militia, the **Razakars**.

Integration into India

1948

- Hyderabad was officially integrated into the Indian Union following a military action known as **Operation Polo**.

Linguistic Merger

1956

- The States Reorganisation Commission (1953) initially suggested keeping Telangana separate. However, the **States Reorganisation Act, 1956** merged Telangana with Andhra State to form a unified **Andhra Pradesh**, with Hyderabad as its capital.

Mulki Protests & Political Shifts

1952 - 1973

- Protests erupted over the violation of **Mulki Rules** (which protected government jobs for locals). Student protests peaked in 1969, leading to the formation of the **Telangana Praja Samiti** to demand separate statehood. After political unrest and a brief period of President's Rule, the **32nd Constitutional Amendment** introduced a zonal job system and ended the old Mulki Rules.

Movement Revival & Srikrishna Committee

2001 - 2010

- The statehood movement was revived in 2001 and gained massive public momentum by 2009. In 2010, the Central Government set up the **Justice B.N. Srikrishna Committee** to look into the separate statehood demand.

Key Terms to Remember

- **Operation Polo:** The 1948 police/military action used by India to merge the princely state of Hyderabad into the Indian Union.
- **Mulki Rules:** Historical guidelines meant to protect local residents by reserving government employment and administrative jobs for them.

- **Gentlemen's Agreement (1956):** An agreement signed between leaders of Telangana and Andhra to secure safeguards for Telangana's interests during the merger, the violation of which fueled future protests.

Right to Travel Abroad under Article 21 and Its Limitations



Why in News?

- Recently, the **Supreme Court of India** ruled that the **right to travel abroad** under **Article 21** is not absolute and must be balanced against the victim's right to a speedy trial and the broader interests of criminal justice.
- The Court set aside a **Telangana High Court** order that had permitted an accused businessman to travel to the United States for medical treatment.
- The Supreme Court observed that adequate medical facilities were available within India and criticized the High Court for adopting an indulgent approach instead of exercising judicial restraint.

Right to Travel Abroad under Article 21

Constitutional Basis

- The right to travel abroad has been recognized as an integral component of the **Right to Life and Personal Liberty** guaranteed under **Article 21** of the Constitution.
- The scope of personal liberty has been interpreted broadly by the judiciary to include various freedoms essential for individual dignity and autonomy.

Not an Absolute Right

- The Supreme Court has reiterated that the right to travel abroad is not an unrestricted entitlement.
- The exercise of this right remains subject to the **"procedure established by law"** as provided under Article 21.

- Restrictions may be imposed when justified by law and public interest considerations.

Doctrine of Balancing Rights

Balancing Individual Liberty and Public Interest

- The Court emphasized that when criminal proceedings are pending, the right of the accused to travel abroad cannot be considered in isolation.
- A balancing approach must be adopted between:
 - The personal liberty of the accused.
 - The victim's right to a speedy trial.
 - The larger interests of the criminal justice system.

Victim's Right to Speedy Trial

- Delays caused by the absence of an accused person may adversely affect the progress of criminal proceedings.
- Courts are therefore required to ensure that the rights of victims are not compromised while considering requests for foreign travel.

Administration of Criminal Justice

Ensuring Effective Judicial Process

- The Court observed that constitutional rights must be harmonized with the need for the effective administration of justice.
- Permission for foreign travel should not undermine:
 - Ongoing investigations.
 - Court proceedings.
 - Trial timelines.
 - Enforcement of judicial orders.

Judicial Restraint

- Courts must exercise caution while granting travel permissions to accused persons.
- Such permissions should be based on compelling and genuine grounds supported by evidence.
- Judicial discretion must be exercised in a manner consistent with the interests of justice.

Important Judicial Precedent

Maneka Gandhi v. Union of India (1978)

- The Supreme Court held that the right to travel abroad forms part of **personal liberty** under Article 21.
- It was also held that any restriction on this right must satisfy the requirements of fairness, reasonableness and due process.

Significance of the Judgment

- Reaffirms that fundamental rights are subject to reasonable legal restrictions.
- Strengthens the recognition of victims' rights within the criminal justice system.
- Emphasizes the need to balance individual freedoms with societal interests.
- Reinforces judicial accountability while granting relief to accused persons.

Conclusion

- The Supreme Court's ruling highlights that the **right to travel abroad**, though protected under **Article 21**, cannot override the requirements of a fair and effective criminal justice process.
- The judgment underscores the importance of balancing **individual liberty**, **victims' rights**, and the **administration of justice**, thereby ensuring that constitutional freedoms operate within the framework of the rule of law.

Appointment of Additional Judges and High Court Judges in India



Why in News?

- Recently, the President of India appointed **six Additional Judges as Permanent Judges** of the **Bombay High Court**.
- The development has brought attention to the constitutional provisions governing the appointment of High Court judges, including Additional Judges, Acting Judges and Ad hoc Judges.

Additional Judges in High Courts

Constitutional Provision

- The appointment of **Additional Judges** is provided under **Article 224(1)** of the Constitution.

Purpose

- Additional Judges may be appointed when:
 - There is a temporary increase in the workload of a High Court.
 - A large backlog of pending cases needs to be cleared.

Tenure

- An Additional Judge may be appointed for a period not exceeding **two years**.
- Such a judge cannot continue in office after attaining the age of **62 years**, which is the retirement age for High Court judges.

Significance

- The provision helps High Courts address case backlogs and improve judicial efficiency without permanently increasing the sanctioned strength of judges.

Appointment of High Court Judges

Constitutional Provision

- High Court judges are appointed under **Article 217** of the Constitution.

Appointing Authority

- Every High Court judge is appointed by the **President of India** through a warrant under his hand and seal.

Appointment of Chief Justice of a High Court

- The President appoints the Chief Justice after consultation with:
 - The **Supreme Court of India Chief Justice of India (CJI)**.
 - The Governor of the concerned state.

Appointment of Other Judges

- For the appointment of judges other than the Chief Justice, consultation is held with:
 - The Chief Justice of India.
 - The Governor of the concerned state.
 - The Chief Justice of the concerned High Court.

Common High Court

- Where a High Court serves more than one state, the Governors of all concerned states are consulted during the appointment process.

Constitutional Provisions Related to High Court Judges

Article 217 – High Court Judges

- Provides for the appointment of High Court judges by the President.
- Consultation is required with:
 - Chief Justice of India.
 - Governor of the concerned state.

- Chief Justice of the concerned High Court (for appointment of judges other than the Chief Justice).

- Judges hold office until the age of **62 years**.

Article 223 – Acting Chief Justice of High Court

- Applies when:
 - The office of the Chief Justice becomes vacant.
 - The Chief Justice is unable to perform official duties.
- The President may appoint another judge of that High Court to act as the **Acting Chief Justice**.

Article 224(1) – Additional Judges

- Provides for the appointment of Additional Judges.
- Such appointments are made:
 - To manage a temporary increase in judicial work.
 - To reduce case arrears.
- The tenure cannot exceed **two years**.

Article 224(2) – Acting Judges

- Enables the appointment of **Acting Judges**.
- Such appointments may be made when:
 - A sitting judge is absent.
 - A judge is acting as the Chief Justice.
- The provision ensures uninterrupted functioning of the High Court.

Article 224A – Ad hoc Judges

- Allows the Chief Justice of a High Court to request a retired High Court judge to sit and act as a judge.
- Prior consent of the President is required.
- The retired judge may belong to:
 - The same High Court.
 - Any other High Court.

Purpose of Ad hoc Judges

- To reduce the backlog of pending cases.
- To strengthen judicial capacity when required.

Conditions

- The retired judge must consent to the appointment.
- Allowances and benefits are determined by the President.

Importance of Additional and Ad hoc Judges

Reducing Pendency

- They help High Courts address growing case backlogs and improve disposal rates.

Strengthening Judicial Capacity

- Temporary appointments provide flexibility in managing sudden increases in workload.

Ensuring Continuity

- Acting and Ad hoc Judges help maintain uninterrupted judicial functioning during vacancies or emergencies.

Challenges in High Court Judiciary

Vacancies

- A significant number of judicial posts remain vacant across High Courts.

Case Backlogs

- Rising pendency continues to place pressure on the judicial system.

Delay in Appointments

- Delays in the appointment process often affect the efficiency of courts.

Conclusion

- The appointment of **Additional Judges** under **Article 224** plays an important role in addressing temporary increases in judicial workload and reducing pendency.
- Together with provisions relating to **Acting Chief Justices, Acting Judges** and **Ad hoc Judges**, the Constitution provides a flexible framework to ensure the effective functioning of High Courts and timely delivery of justice.

DNA Testing, Paternity Disputes and the Right to Privacy



Why in News?

- Recently, the **Supreme Court of India** upheld a trial court order directing a **DNA test** in a long-pending paternity dispute.

- The case highlighted the constitutional tension between:
 - A child's right to know their biological parentage.
 - An alleged father's **Right to Privacy** under **Article 21**.

- The judgment reaffirmed the need to balance competing rights while ensuring justice.

Constitutional Conflict in DNA Testing Cases

Traditional Approach

- Historically, DNA testing was viewed primarily as a scientific tool for establishing biological parentage.
- Courts generally relied on such tests to resolve disputes relating to paternity and legitimacy.

Impact of the Right to Privacy Judgment

- The legal position evolved significantly after the landmark **Justice K S Puttaswamy v Union of India** judgment.
- The Supreme Court recognized the **Right to Privacy** as a fundamental right under **Article 21 of the Constitution**.

Implications for DNA Testing

- Compulsory DNA testing is now recognized as an intrusion into:
 - Bodily autonomy.
 - Personal privacy.
 - Informational privacy.
- Courts therefore exercise caution before directing such tests.

Statutory Presumption of Legitimacy

Section 112 of the Indian Evidence Act, 1872

- Under **Section 112 of the Indian Evidence Act, 1872**, a child born during a valid marriage is presumed to be legitimate.
- This provision sought to protect the social status and legitimacy of children.

Bharatiya Sakshya Adhiniyam

- The provision has now been incorporated under **Section 116 of the Bharatiya Sakshya Adhiniyam, 2023**.

Burden of Proof

- The burden lies on the husband disputing paternity.
- He must establish **non-access** during the relevant period of conception.

- Mere suspicion or allegations are insufficient to rebut the statutory presumption.

Supreme Court Jurisprudence on DNA Testing

Goutam Kundu v State of West Bengal (1993)

Key Ruling

- DNA and blood tests cannot be ordered as a matter of routine.
- Scientific testing should not be treated as the first option in paternity disputes.

Principle Established

- A strong **prima facie case** of non-access must first be demonstrated.
- Only thereafter can a court consider directing medical tests.

Banarsi Dass v Teeku Dutta (2005)

Key Ruling

- DNA testing should be ordered only in exceptional circumstances.
- Courts must avoid unnecessary interference with personal privacy and family relationships.

Significance

- Reinforced judicial restraint in directing DNA tests.

Nandlal Wasudeo Badwaik v Lata Nandlal Badwaik (2014)

Key Ruling

- Scientific evidence must prevail when it directly contradicts legal presumptions.
- DNA evidence was recognized as highly reliable and conclusive.

Significance

- Marked a shift toward giving greater evidentiary value to scientific truth.

Rohit Shekhar v Narayan Dutt Tiwari (2014)

Key Ruling

- The Court prioritized the child's right to establish biological parentage.
- A DNA test was ordered despite objections based on privacy.

Significance

- Recognized identity and parentage as important aspects of individual dignity and personal development.

Ivan Rathinam v Milan Joseph (2025)

Key Ruling

- The Court held that neither extreme position can be accepted:

- A child cannot possess an unrestricted right to demand DNA testing.
- An alleged father cannot claim absolute immunity through privacy rights.

Balancing Test

- Courts must determine whether there exists an **"eminent need"** for the DNA test.
- Judicial evaluation must balance:
 - The child's quest for identity.
 - Psychological closure.
 - Social consequences of illegitimacy.
 - The alleged father's privacy rights.

Significance

- Strengthened the doctrine of balancing competing constitutional interests.

Rights Involved in Paternity Disputes

Child's Rights

Right to Identity

- Knowledge of biological parentage is closely linked to personal identity and dignity.

Psychological Closure

- Determination of parentage may provide emotional certainty and closure.

Inheritance and Legal Rights

- Establishing paternity may affect:
 - Succession rights.
 - Maintenance claims.
 - Other legal entitlements.

Alleged Father's Rights

Right to Privacy

- DNA testing involves the collection of sensitive biological information.
- It directly impacts personal autonomy and privacy.

Bodily Integrity

- Forced extraction of biological samples constitutes an intrusion into bodily integrity.

Reputation and Family Life

- Paternity disputes may have significant social and reputational consequences.

Emerging Judicial Doctrine

Doctrine of Balancing Rights

- Modern judicial decisions increasingly adopt a balancing approach.
- Neither privacy rights nor the right to identity is treated as absolute.

Principle of Proportionality

- Courts evaluate:
 - Necessity of the DNA test.
 - Availability of alternative evidence.
 - Impact on privacy.
 - Interests of justice.

Case-by-Case Determination

- Decisions are made based on the specific facts and circumstances of each case.
- DNA testing is ordered only when it is essential for resolving the dispute.

Significance of DNA Evidence

Scientific Accuracy

- DNA testing provides highly reliable evidence regarding biological relationships.

Reduction of Uncertainty

- It assists courts in resolving complex family disputes with greater certainty.

Advancement of Scientific Justice

- The growing acceptance of scientific evidence reflects the modernization of judicial processes.

Conclusion

- The Supreme Court's evolving jurisprudence reflects an effort to balance two important constitutional values: the **fundamental right to privacy** and a child's **right to identity and parentage**.
- While DNA testing is recognized as a powerful scientific tool, courts continue to emphasize that it cannot be ordered routinely and must be permitted only when an **eminent need** exists and the interests of justice clearly demand it.

Federalism and Higher Education in India



Why in News?

- Higher education governance has emerged as a major flashpoint in **Centre-State relations**, with disputes over the implementation of the **National Education Policy 2020**, Vice-Chancellor appointments, centralized entrance examinations, university autonomy, and regulatory reforms raising broader concerns regarding federalism in India.

Federal Concerns in Higher Education

Legislative Overreach and Centralization

Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025

- The proposed **Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025** seeks to merge major higher education regulators such as:
 - **University Grants Commission**
 - **All India Council for Technical Education**
 - **National Council for Teacher Education** into a single apex regulatory body.

Concerns

- Excessive concentration of regulatory powers.
- Reduced institutional autonomy.
- Increased bureaucratization of academic governance.
- Limited consultation with states despite significant implications for state-funded universities.

Asymmetric Financial Leverage

Conditional Central Funding

- Major funding initiatives such as:
 - PM-USHA
 - Anusandhan National Research Foundation are linked to compliance with centrally designed reforms.

Concerns

- States have limited flexibility in setting local research priorities.
- Financial dependence may weaken state autonomy in higher education planning.

Structural Impositions under NEP 2020

Four-Year Undergraduate Programme (FYUP)

- The introduction of FYUP has raised concerns regarding:
 - Infrastructure deficits.
 - Faculty shortages.
 - Institutional preparedness in several states.

Three-Language Formula

- States such as **Tamil Nadu** have opposed the policy.
- Critics argue that it may undermine:
 - Regional linguistic identity.
 - Federal principles.
 - Constitutional recognition of linguistic diversity.

Executive Gridlock in University Governance

Vice-Chancellor Appointments

- Several disputes have emerged in:
 - Kerala
 - West Bengal
 - Tamil Nadu

Concerns

- Governors, acting as Chancellors of universities, have made appointments without adequate consultation with elected state governments.
- States view this as an intrusion into their administrative domain.

Digital Standardization versus Local Innovation

Academic Bank of Credits (ABC)

- The **Academic Bank of Credits (ABC)** enables digital storage and transfer of academic credits.

Concerns

- Excessive central monitoring of academic activities.
- Uniform frameworks may limit local experimentation and innovation in curriculum design.

Centralized Entrance Examinations

NEET and CUET

- The expansion of centralized examinations such as:
 - **National Eligibility cum Entrance Test**
 - **Common University Entrance Test**has generated concerns among several states.

Issues Raised

- Misalignment with state-board curricula.
- Disadvantages for rural and vernacular-medium students.
- Impact on state-specific reservation and admission policies.

Debt Burden on State Universities

Shift from Grants to Loans

- Traditional grants have increasingly been replaced by financing through the **Higher Education Financing Agency**.

Concerns

- Increased debt burden on state universities.
- Possibility of higher student fees.
- Reduced accessibility and affordability of higher education.

Regulatory Framework for Education in India

Education in the Concurrent List

Before the 42nd Constitutional Amendment

- Education was originally a State subject under **Entry 11 of the State List**.

After the 42nd Constitutional Amendment Act, 1976

- Education was transferred to the **Concurrent List (Entry 25)**.

Implications

- Both Parliament and State Legislatures can enact laws on education.
- In case of conflict, **Article 254** provides that Central legislation prevails.

Union List Supremacy

Entry 66 of the Union List

- Parliament has exclusive authority over:
 - Coordination of higher education.
 - Determination of academic standards.
 - Research institutions and institutions of national importance.

Role of the Centre

- The Union Government exercises influence through:
 - Ministry of Education.
 - UGC.
 - National accreditation and regulatory bodies.

Judicial Interpretation of Educational Federalism

State of Tamil Nadu v. Adhiyaman Educational & Research Institute (1995)

Judgment

- The Supreme Court held that Central laws governing academic standards prevail over state laws.

Significance

- Reinforced the primacy of **Entry 66 of the Union List** over **Entry 25 of the Concurrent List**.

Prof. Yashpal v. State of Chhattisgarh (2005)

Judgment

- The Supreme Court held that maintaining standards of higher education is an exclusive parliamentary function.

Significance

- States cannot dilute standards prescribed by central regulatory bodies such as the UGC.

Modern Dental College & Research Centre v. State of Madhya Pradesh (2016)

Judgment

- The Court clarified that:
 - The Centre determines minimum standards.
 - States may regulate admissions, fee structures and prevention of commercialization.

Significance

- Recognized a balance between national standards and state autonomy.

Commission Recommendations

Sarkaria Commission (1988)

Recommendation

- Emphasized **Cooperative Federalism**.
- Suggested that:
 - The Union should focus on standards and norms.
 - States should retain responsibility for implementation.

Punchhi Commission (2010)

Recommendation

- Recommended depoliticizing the role of Governors as University Chancellors.
- Sought to reduce conflicts between state governments and Governors.

Measures Needed to Strengthen Federalism in Higher Education

Revitalize the Central Advisory Board of Education (CABE)

Consultative Governance

- Major reforms should be discussed through:
 - **Central Advisory Board of Education**
 - **Inter-State Council**

Objective

- Promote consensus-based policymaking.

Allow Strategic Adaptation by States

Flexible Implementation

- States should be permitted to adapt national policies according to:
 - Socio-economic conditions.
 - Educational infrastructure.
 - Linguistic realities.

Examples

- Three-language formula.
- CUET implementation.
- Curriculum reforms.

Decentralized Funding Architecture

Need

- Financial support should strengthen state universities without excessive conditionalities.

Importance

- Achieving Gross Enrolment Ratio (GER) targets depends significantly on state-level institutions.

State Representation in National Regulators

VBSA Governance

- Any proposed apex regulator should include:
 - State Higher Education Councils.
 - Rotational representation from states.

Benefits

- Enhances inclusiveness.
- Prevents excessive centralization.

Strengthen Cooperative Federalism

Shared Governance

- The Centre should:
 - Establish national standards.
 - Provide resources and policy direction.

Role of States

- States should retain flexibility in implementation and administration.

Conclusion

- Higher education represents a crucial area where national standards must coexist with state autonomy.
- While the Centre possesses constitutional authority to maintain academic quality and coordination, effective reforms require meaningful consultation, fiscal cooperation and institutional flexibility.
- Strengthening **cooperative federalism** in higher education will ensure that national goals are achieved while respecting India's linguistic, cultural and regional diversity, thereby creating a more inclusive and globally competitive education system.

Delimitation of Parliamentary Constituencies in India



Why in News?

- Recently, the **Economic Advisory Council to the Prime Minister** released a working paper on India's upcoming delimitation exercise.
- The paper recommends a **multi-factor approach** for the redrawing and splitting of parliamentary constituencies, moving beyond population alone while retaining the existing proportion of Lok Sabha seats for major states.
- The recommendations gain significance as the constitutional freeze on seat reallocation is scheduled to end after the first Census conducted post-2026.

What is Delimitation?

About

- Delimitation is the process of:
 - Redrawing boundaries of electoral constituencies.
 - Reallocating seats among states and constituencies.
 - Ensuring equitable representation based on population changes.

Objective

- To ensure that each elected representative represents a broadly equal population.
- To maintain fairness in democratic representation.
- To reflect demographic changes revealed through Census data.

Key Recommendations of the EAC-PM Working Paper

Move Beyond Population-Based Splitting

Current Practice

- Traditionally, larger constituencies are divided primarily on the basis of population size.

Recommended Approach

- Constituency division should consider multiple demographic and social factors rather than population alone.

Use of Compositional Features

The study recommends considering:

Urban Share

- Degree of urbanization within a constituency.

Scheduled Caste (SC) Share

- Proportion of Scheduled Caste population.

Scheduled Tribe (ST) Share

- Proportion of Scheduled Tribe population.

Linguistic Polarisation

- Extent of linguistic concentration within a constituency.

Linguistic Diversity

- Presence of multiple linguistic communities.

Evidence-Based Delimitation

Data Used

- Election data from **2009–2024** was analysed.

Variables Studied

- Voter turnout.
- Constituency size.
- Demographic composition.
- Linguistic characteristics.

Objective

- Improve representational effectiveness.
- Ensure balanced constituency design.

Targeted Seat Splitting

Recommendation

- Constituencies should be split based on their demographic and linguistic characteristics.

Benefit

- More accurate representation of social and regional diversity.

Synchronization with Census and Electoral Data

Timing Suggested

The delimitation exercise should be conducted after:

- Release of **2027 Census** data.
- Fresh booth rationalisation exercises.
- Availability of gender-disaggregated electoral data.

Purpose

- Enhance accuracy and fairness in constituency formation.

Constitutional Framework of Delimitation

Article 82

Provision

- After every Census, Parliament is required to enact a Delimitation Act.

Objective

- Readjust allocation of Lok Sabha seats among states.
- Redraw territorial constituencies.

Article 170

Provision

- Provides for readjustment of seats in State Legislative Assemblies.

Objective

- Ensure proportional representation within states.

Delimitation Commission

About

- The Delimitation Commission is an independent statutory body constituted by the Central Government.

Composition

Chairperson

- A serving or retired Judge of the **Supreme Court of India**.

Election Commission Representative

- The **Election Commission of India** or its nominated Election Commissioner.

State Election Commissioners

- Election Commissioners of the concerned states.

Powers

Force of Law

- Orders of the Commission have the force of law.

Judicial Immunity

- Its decisions cannot be challenged before any court.

Parliamentary Role

- Orders are laid before Parliament and State Legislatures.
- Legislatures cannot modify them.

History of Delimitation Commissions in India

First Delimitation Commission

- Established in **1952**.

Second Delimitation Commission

- Established in **1963**.

Third Delimitation Commission

- Established in **1973**.

Fourth Delimitation Commission

- Established in **2002**.

Freeze on Delimitation

42nd Constitutional Amendment Act, 1976

Provision

- Froze the total number of Lok Sabha seats based on the **1971 Census**.

Reason

- Prevent states that successfully implemented population control measures from losing political representation.

States Benefited

- Primarily southern states that achieved lower population growth rates.

84th Constitutional Amendment Act, 2001

Provision

- Extended the freeze on inter-state seat allocation until the first Census conducted after **2026**.

Significance

- Maintained the existing allocation of Lok Sabha seats among states.

2002 Delimitation Exercise

Scope

- Redrew internal constituency boundaries.

Limitation

- Did not alter the allocation of seats among states.

Basis

- Conducted using **2001 Census** data.

Issues Associated with Future Delimitation

North-South Representation Debate

Concern

- States with higher population growth may gain more seats.

Impact

- Southern states fear losing political influence despite successful population control efforts.

Federal Concerns

Issue

- Significant changes in seat distribution could alter the balance of power among states.

Implication

- Potential strain on India's federal structure.

Population vs Development Debate

Question

- Should representation depend solely on population?

Alternative View

- Development indicators, demographic characteristics and governance performance should also be considered.

Representation of Diverse Communities

Challenge

- Ensuring adequate representation of:
 - SCs.
 - STs.
 - Linguistic minorities.
 - Urban populations.

Significance of Delimitation

Strengthening Democracy

- Ensures equal value of votes across constituencies.

Reflecting Demographic Changes

- Aligns political representation with population shifts.

Improving Electoral Fairness

- Reduces disparities in constituency sizes.

Enhancing Governance

- Enables more balanced representation of citizens.

Way Forward

Data-Driven Delimitation

- Use demographic, social and linguistic indicators in addition to population.

Consensus Building

- Engage states through extensive consultation to address federal concerns.

Protect Federal Balance

- Ensure that population control achievements are not unfairly penalized.

Transparent Methodology

- Adopt objective and evidence-based criteria for constituency reorganization.

Timely Census and Electoral Reforms

- Complete Census operations and update electoral databases before undertaking delimitation.

Conclusion

- Delimitation is essential for maintaining representative democracy and ensuring equal political participation.
- As India prepares for its first major delimitation exercise after the lifting of the constitutional freeze, balancing population-based representation with federal equity, demographic diversity and regional concerns will be crucial.

- The EAC-PM's recommendation for a multi-factor, evidence-based approach provides an important framework for achieving a fair, inclusive and politically balanced delimitation process.

Section 69A of the IT Act and Temporary Blocking of Telegram



Why in News?

- The **Delhi High Court** upheld the Union Government's decision to temporarily block the messaging platform Telegram ahead of the **NEET-UG 2026 re-examination**.
- The Government defended its action under **Section 69A of the Information Technology Act, 2000**, arguing that Telegram has increasingly been used by cybercriminals, fraud networks, and examination paper leak syndicates.
- The case has reignited debates on digital governance, freedom of expression, cybercrime, and platform regulation.

What is Section 69A of the Information Technology Act, 2000?

About

- Section 69A empowers the Central Government or its authorized officers to direct any intermediary or agency to block public access to information hosted, transmitted, received, stored, or generated through any computer resource.

Purpose

- Protect national security and public order.
- Prevent misuse of digital platforms for unlawful activities.

Grounds for Blocking Under Section 69A

The Government may issue blocking orders in the interest of:

Sovereignty and Integrity of India

- Protecting national unity and territorial integrity.

Defence of India

- Safeguarding military and strategic interests.

Security of the State

- Addressing threats to internal and external security.

Friendly Relations with Foreign States

- Preventing actions that may adversely affect diplomatic relations.

Public Order

- Maintaining peace and preventing disturbances.

Preventing Incitement to Cognizable Offences

- Preventing content that may encourage criminal acts related to the above grounds.

Emergency Blocking Powers

Legal Provision

- Under **Rule 9 of the Information Technology (Procedure and Safeguards for Blocking for Access of Information by Public) Rules, 2009**, emergency blocking powers are available.

Key Feature

- Government may bypass the pre-decisional hearing normally provided to intermediaries.

Purpose

- Enable immediate action during urgent situations.

Application

- Used when delay may result in serious public harm.

Supreme Court's Position on Section 69A

Shreya Singhal vs Union of India (2015) Judgment

- The **Supreme Court of India** upheld the constitutional validity of Section 69A.

Reasons

The Court observed that Section 69A contains sufficient safeguards such as:

- Written reasons for blocking.
- Defined grounds for restrictions.
- Review Committee oversight.
- Procedural accountability.

Significance

- Distinguished Section 69A from Section 66A, which was struck down for violating free speech.

Concerns Regarding the Temporary Blocking of Telegram Test of Proportionality

Issue

- India is Telegram's largest market with over 150 million users.

Concern

- Critics argue that blocking an entire platform for the misconduct of a limited number of users may violate the constitutional principle of proportionality.

Implication

- Legitimate users may suffer despite having no connection with unlawful activities.

Freedom of Speech and Expression

Constitutional Provision

- **Article 19(1)(a)** guarantees freedom of speech and expression.

Concern

- Blanket restrictions affect:
 - Students.
 - Businesses.
 - Content creators.
 - Professionals.

Impact

- May disrupt communication and economic activities.

The "Band-Aid Solution" Argument

Criticism

- Blocking platforms addresses symptoms rather than root causes.

Issue

- Examination paper leaks often originate from institutional weaknesses.

Concern

- Platform bans alone may not eliminate organized fraud networks.

Why is Telegram Called the "New Dark Web"?

Anonymity and Encryption

Features

- Hidden phone numbers.
- End-to-end encryption in Secret Chats.

Challenge

- Makes tracing criminals difficult.

Impact

- Creates a "going dark" problem for investigators.

Retroactive Message Editing

Feature

- Users can edit previously sent messages.

Alleged Misuse

- Fraudsters reportedly inserted exam papers into old messages after examinations.

Result

- Created false impressions of prior paper leaks.

Large File Sharing Capacity

Capability

- Telegram allows sharing files up to several gigabytes.

Concern

- Facilitates rapid circulation of:
 - PDFs.
 - Leaked documents.
 - Illegal digital content.

Automated Bots

Feature

- Supports automated bot networks.

Potential Misuse

- Dissemination of illegal content.
- Fraud coordination.
- Mass messaging operations.

Cybercrime and Financial Fraud

Government Concern

- Rising cybercrime complaints linked to Telegram-based networks.

Activities Allegedly Facilitated

- Money laundering.
- Illegal gambling.
- Extortion.
- Use of mule bank accounts.

What is the Dark Web?

Definition

- The Dark Web is a concealed and encrypted portion of the internet that cannot be accessed through conventional search engines.

Access Requirement

- Requires specialized software such as Tor.

Purpose

- Ensures user anonymity and privacy.

Difference Between Deep Web and Dark Web

Feature	Deep Web	Dark Web
Accessibility	Accessible through direct URL	Requires special software
Indexing	Not indexed by search engines	Hidden and encrypted
Legality	Generally legal	Legal access, but often associated with illegal activities
Anonymity	Limited	Very high anonymity

Legitimate Uses of the Dark Web

Journalism

- Protection of confidential sources.

Political Activism

- Communication in restrictive environments.

Law Enforcement

- Intelligence gathering and monitoring criminal activity.

Privacy Protection

- Safeguarding identity and communications.

Illegal Activities Associated with the Dark Web

Cybercrime

- Malware distribution.
- Ransomware operations.
- Hacking services.

Illegal Trade

- Drugs.
- Weapons.
- Stolen data.

Financial Crimes

- Money laundering.
- Cryptocurrency-based illicit transactions.

Legal Position in India

Access

- Merely accessing the Dark Web is not illegal in India.

Restriction

- Engaging in unlawful activities through the Dark Web is punishable under Indian law.

Challenges in Regulating Digital Platforms

Cross-Border Nature

Issue

- Platforms operate across multiple jurisdictions.

Impact

- Enforcement becomes difficult.

Encryption

Challenge

- Strong encryption limits investigative access.

Debate

- Balancing privacy and security concerns.

Rapid Technological Evolution

Issue

- Laws often struggle to keep pace with emerging technologies.

International Cooperation

Need

- Greater collaboration among countries.

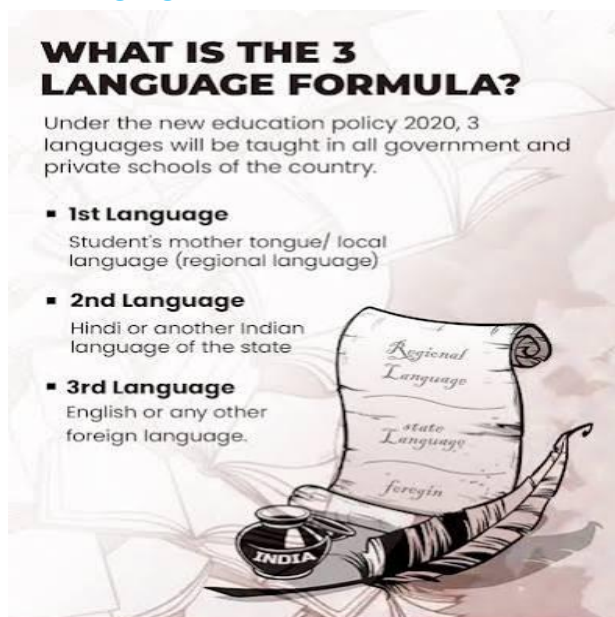
Examples

- Cooperation through forums such as **BRICS** and other multilateral mechanisms.

Conclusion

- The temporary blocking of Telegram under **Section 69A of the IT Act, 2000** reflects the growing challenges posed by encrypted digital platforms in combating cybercrime, examination fraud, and online criminal networks.
- While national security and public order concerns may justify emergency interventions, such actions must also satisfy constitutional principles of **proportionality, due process, and freedom of expression**.
- Going forward, a balanced framework combining robust cyber enforcement, institutional reforms, platform accountability, and protection of fundamental rights will be essential for effective digital governance in India.

Three-Language Formula under NEP 2020



Why in News?

- The **Association of Unaided CBSE Schools in Nagaland** has raised concerns regarding the implementation of the **Three-Language Formula** mandated by the **Central Board of Secondary Education** under the **National Education Policy 2020**.
- The association argues that the policy is difficult to implement due to Nagaland's unique linguistic diversity and shortage of language teachers, textbooks, and standardized curricula.

Background of the Issue

Linguistic Diversity in Nagaland

- Nagaland has **17 major tribes**, each speaking distinct languages.
- There is no single common regional language across the state.
- **English** serves as the official language and medium of instruction.

Challenges

- None of Nagaland's tribal languages are included in the **Eighth Schedule** of the Constitution.
- Lack of trained teachers for multiple tribal languages.
- Absence of adequate learning materials and standardized curriculum.
- Linguistically diverse classrooms make implementation complex.

What is the Three-Language Formula?

Background

- The Three-Language Formula was first recommended by the **Kothari Commission**.
- It was formally adopted through the **National Policy on Education (1968)**.

Objective

- Promote multilingualism.
- Strengthen national integration.
- Preserve linguistic diversity.
- Improve communication across regions.

Three-Language Formula under NEP 2020

Core Provision

- Students are required to learn **three languages** during their school education.

Native Indian Languages

- At least **two of the three languages** must be native Indian languages.

Flexibility

- States, schools, parents, and students are given flexibility in language selection.
- No language is imposed on any state.

Foreign Languages

- A foreign language may be chosen as the third language only if the other two are Indian languages.
- It may also be studied as an optional fourth language.

CBSE Proposal under NCF-SE Requirement

- Students should study three languages up to Class 10.

Condition

- At least two languages must be Indian languages.

Implementation Support

- Schools may use:
 - Teachers with functional proficiency.
 - Inter-school sharing through Sahodaya clusters.
 - Hybrid and virtual teaching models.
 - Retired language teachers.

Evolution of the Three-Language Formula

Kothari Commission (1964–66) Recommendation

- Proposed the Three-Language Formula to balance national integration with regional identities.

National Policy on Education, 1968 Hindi-Speaking States

- Hindi.
- English.
- One modern Indian language (preferably a South Indian language).

Non-Hindi Speaking States

- Regional language.
- Hindi.
- English.

Programme of Action, 1992

Focus

- Encouraged use of mother tongue or regional language at the pre-school stage.

Right to Education Act, 2009

Provision

- Medium of instruction should, as far as practicable, be the child's mother tongue.

National Education Policy, 2020 Recommendation

- Promote instruction through:
 - Home language.
 - Mother tongue.
 - Local language.
 - Regional language.

Objectives of the Three-Language Formula

Promote Multilingualism

- Encourage proficiency in multiple languages.

Strengthen National Integration

- Foster communication among diverse linguistic communities.

Preserve Linguistic Diversity

- Protect regional and indigenous languages.

Enhance Cognitive Development

- Improve learning outcomes through multilingual education.

Benefits of Multilingual Education

Improved Learning Outcomes

- Better conceptual understanding during early education.

Cognitive Development

- Enhances memory, problem-solving, and analytical skills.

Cultural Preservation

- Protects local languages and traditions.

National Unity

- Promotes mutual understanding among linguistic groups.

Challenges in Implementation

Teacher Shortage

- Lack of qualified language teachers.

Learning Resources

- Insufficient textbooks and curriculum materials.

Linguistic Diversity

- States with multiple languages face implementation difficulties.

Administrative Burden

- Increased workload for schools and education departments.

Regional Concerns

- Fear of linguistic imposition in some states.

Constitutional Provisions Related to Language

Article 29

- Protects the language, script, and culture of minorities.

Article 343

- Declares **Hindi in Devanagari script** as the official language of the Union.

Article 345

- Empowers states to adopt one or more official languages.

Article 346

- Deals with communication between states and the Union.

Article 347

- Allows recognition of a language if demanded by a substantial section of the population.

Article 350A

- Directs states to provide primary education in the mother tongue for linguistic minorities.

Article 351

- Directs the Union to promote the spread and development of Hindi.

Eighth Schedule

- Contains **22 recognized languages** of India.

Concerns Raised by Nagaland

No Common Regional Language

- Multiple tribal languages coexist without a dominant regional language.

Resource Constraints

- Shortage of teachers and learning materials.

Non-Inclusion in Eighth Schedule

- Tribal languages lack formal constitutional recognition under the Eighth Schedule.

Implementation Feasibility

- Practical difficulties in multilingual classrooms.

Way Forward

Flexible Implementation

- Allow state-specific adaptations based on local realities.

Teacher Capacity Building

- Train and recruit language teachers.

Digital Learning Solutions

- Use online and hybrid language-learning platforms.

Development of Learning Materials

- Prepare textbooks and curricula in local languages.

Protection of Linguistic Diversity

- Encourage preservation and promotion of indigenous languages alongside national integration goals.

Panchayati Raj Institutions (PRIs) : 12 Years of Rural Governance Reforms



Why in News?

- The **Ministry of Panchayati Raj** released a review of the last 12 years of rural governance, highlighting progress in strengthening **Panchayati Raj Institutions (PRIs)** through fiscal devolution, digital governance, capacity building, and grassroots participation.
- PRIs have been strengthened through increased fiscal transfers, digital governance platforms, AI-based tools, capacity-building programmes, and greater participation of women and tribal communities.
- However, challenges such as the **3Fs deficit (Functions, Funds and Functionaries)**, weak Own Source Revenue (OSR), poor Gram Sabha participation, and limited administrative autonomy continue to affect grassroots governance.

Major Reforms and Milestones in PRIs

Fiscal Devolution and Financial Empowerment

Finance Commission Grants

- Rural Local Bodies received around **₹2.82 lakh crore** under the **15th Finance Commission (2020–26)**.
- The **16th Finance Commission (2026–31)** has recommended **₹4.35 lakh crore**, representing a significant increase in financial support.

Own Source Revenue (OSR)

- Government launched:
 - SAMARTH Panchayat Portal
 - Atmanirbhar Panchayat Programme
- These initiatives help Panchayats improve tax assessment, revenue collection, and financial management.

Capacity Building and Social Inclusion

Rashtriya Gram Swaraj Abhiyan (RGSA)

About

- Revamped from 2022–23 to strengthen local governance capacities.

Achievements

- Training provided to over **4.10 crore elected representatives and functionaries**.
- More than **33 lakh women representatives** trained in governance and leadership.

Women Leadership

- **Sashakt Panchayat-Netri Abhiyan** promotes leadership among elected women representatives.
- Strengthens women's participation in local decision-making.

Youth Participation

- **Model Youth Gram Sabha (MYGS)** encourages youth engagement in grassroots governance.

Strengthening Tribal Self-Governance

PESA Act, 1996

About

- The **Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA)** extends self-governance to **Fifth Schedule Areas**.

Objective

- Empower Gram Sabhas in tribal regions.
- Protect traditional customs, resources, and community rights.

Recent Initiatives

- **PESA-GDP Portal** for PESA-compliant development planning.
- Introduction of **India's first PESA Ranking Framework**.
- Indigenous-language training manuals for tribal representatives.

Digital and AI-Driven Governance

e-GramSwaraj Portal

Purpose

- Digitizes planning, budgeting, accounting, and monitoring of Panchayats.

Achievements

- More than **2.5 lakh Gram Panchayats** onboarded.
- Integrated with the **Public Financial Management System (PFMS)** for real-time fund tracking.

SabhaSaar Platform

About

- AI-powered platform for Gram Sabha proceedings.

Features

- Automatically generates Minutes of Meetings (MoMs).
- Supports multiple Indian languages.
- Enhances transparency and record keeping.

Meri Panchayat App

Purpose

- Enables citizens to access information about local assets and development projects.

Impact

- Strengthens citizen participation and accountability.

Data-Driven Governance

Panchayat Advancement Index (PAI)

Launch

- Introduced in **2025**.

Objective

- Measures Panchayat performance based on **Localized Sustainable Development Goals (LSDGs)**.

Gram Manchitra

- GIS-based planning tool for evidence-based local development.

Hyper-Local Weather Forecasting

- Developed in collaboration with the **India Meteorological Department**.
- Provides Gram Panchayat-level weather forecasts for agricultural planning.

Persistent Challenges Facing PRIs

3Fs Deficit

Funds

- Heavy dependence on grants and state transfers.
- Own Source Revenue remains very low.

Functions

- Incomplete devolution of the **29 subjects** listed in the **11th Schedule**.

Functionaries

- Shortage of trained staff such as engineers, accountants, and technical personnel.

Weak Financial Autonomy

Low Own Source Revenue

- PRIs generate only a small proportion of revenue through local taxes and fees.

Irregular State Finance Commissions

- Delays in constitution and implementation of State Finance Commission recommendations weaken fiscal autonomy.

Governance Challenges

Bypassing of PRIs

- State governments often implement schemes through Special Purpose Vehicles (SPVs) and line departments instead of Panchayats.

Delay in Panchayat Elections

- Elections are often postponed due to administrative reasons, affecting democratic decentralization.

Social Challenges

Proxy Representation

- The phenomenon of "Sarpanch Pati/Pradhan Pati" continues to undermine women's political empowerment.

Poor Gram Sabha Participation

- Low public participation reduces accountability and community ownership.

Social Inequalities

- Caste and gender barriers continue to affect inclusive participation.

Measures Needed to Strengthen PRIs

Operationalize the 4Fs Framework

- Ensure devolution of:
 - Functions
 - Funds
 - Functionaries
 - Freedom

Strengthen Fiscal Empowerment

- Enhance Panchayats' powers to raise local revenue.
- Improve Own Source Revenue generation.

Activity Mapping

- Clearly define responsibilities across village, block, and district levels to avoid overlap.

Institutionalized Social Audits

- Strengthen Gram Sabhas and independent social audit mechanisms.

Leverage Technology

- Expand AI-based planning, asset management, and service delivery systems.

Climate-Resilient Rural Governance

- Integrate weather forecasting with agricultural advisory services.
- Strengthen local climate adaptation planning.

Right to Walk as a Fundamental Right



SC declares right to walk on safe footpaths a fundamental right, seeks law



Why in News?

- The Supreme Court of India in **Maniyar Iliyz @ Shaik Riyaz v. P. Ayyappan & Ors. (2026)** delivered a landmark judgment declaring that the **right to walk on safe and demarcated footpaths is a Fundamental Right**.

Background

Rising Pedestrian Fatalities

- Pedestrian deaths increased by nearly **163% between 2015 and 2024**.
- The share of pedestrians in total road fatalities rose from **9.5% to 20.61%**.
- The judgment was delivered against the backdrop of growing concerns over pedestrian safety and urban mobility.

Key Observations of the Supreme Court Right to Walk as a Fundamental Right Constitutional Basis

- The right to walk flows from:
 - **Article 19(1)(d)** – Freedom of movement.
 - **Article 19(1)(a)** – Freedom of expression.

- **Article 19(1)(b)** – Freedom of peaceful assembly.
- **Article 19(1)(c)** – Freedom of association.
- **Article 21** – Right to life and personal liberty.

Expanded Interpretation

- Walking is not merely a mode of transport but an essential component of dignity, liberty, and participation in public life.

Priority of Pedestrians

Footpaths Belong to Pedestrians

- The Court held that designated footpaths are meant primarily for pedestrians.

Priority over Vehicles

- Pedestrians' rights take precedence over the convenience and movement of motor vehicles.
- Public spaces cannot be monopolized by motorists.

Duty of Public Authorities

Enforceable Legal Obligation

- Existence of a public road creates a legal duty to provide safe pedestrian infrastructure.

Responsible Authorities

- Urban Development Authorities.
- Municipal Corporations.
- Municipalities.
- Panchayats.

Responsibilities

- Demarcation of footpaths.
- Construction of pedestrian pathways.
- Maintenance and safety of walkways.

Right to Legal Remedies

Constitutional Remedies

- Citizens can seek legal remedies if authorities fail to provide safe footpaths.

Independent Right

- This right exists independently of compensation mechanisms under the **Motor Vehicles Act 1988**.

Criticism of the Motor Vehicles Act, 1988

Vehicle-Centric Approach

- The Court observed that the Act primarily focuses on vehicles rather than pedestrians.

Neglect of Pedestrian Rights

- Human and pedestrian interests are treated as secondary concerns.

Need for Reform

- Existing legal framework requires modernization to accommodate pedestrian-centric planning.

Recommendations of the Court

Dedicated Pedestrian Legislation

- Enact specific laws focused on pedestrian rights and safety.

Independent Regulatory Body

- Establish a full-time institution with expertise in:
 - Urban mobility.
 - Pedestrian planning.
 - Road safety.

Pedestrian-Centric Urban Planning

- Integrate walkability and accessibility into infrastructure development.

Suo Motu Directions by the Court

Forwarding of Judgment

- Directed the Registry of the Supreme Court to send the judgment to:

Law Commission of India

- For examination of legal reforms.

Ministry of Housing and Urban Affairs

- For urban infrastructure planning.

Ministry of Rural Development

- For rural pedestrian infrastructure.

Ministry of Road Transport and Highways

- For road safety and mobility reforms.

Significance of the Judgment

Strengthening Article 21

- Expands the scope of the Right to Life by recognizing safe mobility as a constitutional entitlement.

Human-Centric Urban Development

- Shifts policy focus from vehicle-centric planning to people-centric planning.

Road Safety

- Addresses increasing pedestrian fatalities and injuries.

Inclusive Mobility

- Benefits children, elderly persons, women, and persons with disabilities.

Sustainable Urban Transport

- Encourages walking as an environmentally friendly mode of transportation.

Challenges

Inadequate Footpath Infrastructure

- Many cities lack continuous and accessible footpaths.

Encroachment

- Footpaths are frequently occupied by parking, vendors, and unauthorized structures.

Weak Enforcement

- Existing pedestrian protection measures are poorly implemented.

Urban Planning Deficits

- Road design often prioritizes vehicular movement over pedestrian safety.

Way Forward

Develop Walkable Cities

- Integrate pedestrian infrastructure into all urban development projects.

Strengthen Legal Framework

- Enact dedicated pedestrian rights legislation.

Improve Accessibility

- Design universal and disability-friendly footpaths.

Ensure Accountability

- Fix responsibility of local bodies for footpath construction and maintenance.

Promote Sustainable Mobility

- Encourage walking and non-motorized transport as key components of urban planning.

Indian Passport, Citizenship and Electoral Rolls

• WHO IS AN INDIAN CITIZEN?

Under The Citizenship Act, 1955, there are four ways to obtain citizenship:

- 1. Citizenship by birth:** For birthright citizenship, those born in India between 1950 and 1987 are citizens.
- For those born between 1987 and 2003, citizenship is accorded only if either parent is a citizen of India at the time of their birth.
 - For those born after 2003, citizenship is accorded if only if either parent is a citizen at the time of their birth and the other is not an illegal immigrant.



- Citizenship is treated as a legal status arising from facts such as birth, parentage, domicile or naturalisation.
- Documents serve as evidence of those facts. A **passport** is issued because the government is satisfied a person is a citizen. It does not create citizenship.

2. Citizenship by descent: A person born outside India and who has at least one Indian parent will be granted citizenship, provided that the birth is registered within one year with the Indian consulate in the jurisdiction.

3. Citizenship by registration: This is for persons related to an Indian citizen through marriage or ancestry.

4. Citizenship by naturalisation: Naturalisation certificate can be granted to a person who isn't an illegal immigrant and has lived in India for 12 months continuously before applying.

- In the 14 years before the 12-month period, the person must have lived in India for at least 11 years. This is relaxed for some categories.

Waiver clause: If the Centre believes the applicant has rendered distinguished service to science, philosophy, art, literature, world peace or human progress, it may waive all or any of the conditions in the Act. This is how the Dalai Lama or Adnan Sami, the Pakistani singer, got Indian citizenship.

- BY APURVA VISHWANATH

Why in News?

- The **Ministry of External Affairs (MEA)** clarified that an **Indian passport is primarily a travel document and not a conclusive proof of citizenship.**
- The issue gained prominence amid discussions surrounding the **Special Intensive Revision (SIR) of electoral rolls** and the determination of citizenship for voter enrolment.

Passport and Citizenship: Legal Position

Passport as a Travel Document

- An Indian passport primarily facilitates international travel and identification abroad.
- It serves as strong evidence of nationality but is not definitive proof of citizenship in disputed cases.

Legal Basis

- The Passport Manual describes a passport as a **strong indicator of nationality.**
- The Supreme Court in **Maneka Gandhi v. Union of India** acknowledged the significance of a passport but did not treat it as final proof of citizenship.

Passports for Non-Citizens

- Under **Section 20 of the Passports Act, 1967**, the Central Government may issue passports to non-citizens in exceptional circumstances and public interest.
- In 2023, the **Madras High Court** permitted a stateless Sri Lankan refugee to apply for a passport.

Citizenship and Electoral Rolls

Electoral Roll as Evidence

- The Supreme Court in **Lal Babu Hussein v. Electoral Registration Officer** held that inclusion in the electoral roll creates a presumption of citizenship.
- Such presumption can only be challenged through due legal procedure.

Special Intensive Revision (SIR)

- In **2026**, the Supreme Court upheld the constitutional validity of the Election Commission's SIR exercise in **Association for Democratic Reforms v. Election Commission of India.**

Legal Basis of SIR

- **Article 324 of the Constitution.**
- **Section 21(3) of the Representation of the People Act, 1950.**

Supreme Court's Observations

- The **Election Commission of India** can conduct limited inquiries regarding citizenship for electoral enrolment.
- However, voter registration and citizenship are not identical concepts.

Difference Between Voting Rights and Citizenship

ECI's Role

- Determines electoral eligibility and voting rights.
- Does not have authority to determine citizenship conclusively.

Citizenship Determination

- Falls under the jurisdiction of authorities empowered under the **Citizenship Act, 1955**.

Court's Safeguard

- Cases involving suspected citizenship issues should be referred to the **Ministry of Home Affairs** for adjudication before elections.
- Prevents arbitrary disenfranchisement.

Does India Have a Universal Citizenship Document?

No Single Citizenship Document

- India does not possess a universal citizenship certificate applicable to all citizens.
- Citizenship is established through various legal and documentary records.

Common Supporting Documents

- Birth certificates.
- Parentage records.
- School records.
- Government-issued identity documents.
- Other legally recognized evidence.

Burden of Proof

Supreme Court Ruling

- In **Sarbananda Sonowal v. Union of India**, the Court held that the burden of proving Indian citizenship lies upon the person claiming citizenship.

Citizenship Act, 1955

About

- Principal legislation governing acquisition and termination of Indian citizenship.

Modes of Acquiring Citizenship

1. By Birth.
2. By Descent.
3. By Registration.
4. By Naturalisation.
5. By Incorporation of Territory.

Citizenship by Birth

26 January 1950 – 1 July 1987

- Every person born in India was a citizen irrespective of parents' nationality.

- Based largely on the principle of **Jus Soli** (Right of the Soil).

1 July 1987 – 3 December 2004

- At least one parent must be an Indian citizen.

On or After 3 December 2004

- One parent must be an Indian citizen.
- The other parent must not be an illegal migrant.

Shift from Jus Soli to Jus Sanguinis

Jus Soli

- Citizenship based on place of birth.

Jus Sanguinis

- Citizenship based on descent or parentage.

Indian Trend

- India has gradually shifted from a broad **Jus Soli** approach towards a more restrictive **Jus Sanguinis** model.

Citizenship by Descent

Eligibility

- Persons born outside India to Indian parent(s).

Condition

- For births after **3 December 2004**, registration at an Indian Consulate is mandatory.

Citizenship by Registration

Eligible Categories

- Persons of Indian Origin (PIOs).
- Spouses of Indian citizens.
- Certain other categories specified under the Act.

Citizenship Certificate

- A formal citizenship certificate is issued in such cases.

Citizenship by Naturalisation

Eligibility

- Foreign nationals fulfilling prescribed conditions.

Residency Requirement

- Generally requires **12 years of residence** in India before application.

Citizenship Certificate

- Granted after approval by the Government of India.

Citizenship Certificate: Who Receives It?

Not Issued For

- Citizens by birth.
- Citizens by descent.

Issued For

- Citizenship acquired through registration.
- Citizenship acquired through naturalisation.

Important Amendments

Citizenship (Amendment) Act, 2003

Key Features

- Introduced stricter citizenship provisions.
- Prevented illegal migrants from acquiring citizenship through ordinary routes.
- Strengthened citizenship verification mechanisms.

Citizenship (Amendment) Act, 2019 (CAA)

Objective

- Provide a special pathway to citizenship for specified persecuted minorities from neighbouring countries.

Eligible Communities

- Hindus.
- Sikhs.
- Buddhists.
- Jains.
- Parsis.
- Christians.

Countries Covered

- Pakistan
- Bangladesh
- Afghanistan

Cut-off Date

- Must have entered India on or before **31 December 2014**.

Benefit

- Reduced residency requirement for citizenship through naturalisation.

Significance

Clarifies Citizenship Debate

- Distinguishes between citizenship, nationality, passport ownership, and voting rights.

Protects Electoral Integrity

- Ensures accurate electoral rolls while safeguarding constitutional rights.

Legal Certainty

- Reinforces the framework established under the Citizenship Act, 1955.

Balances Rights and Security

- Enables citizenship verification while preventing arbitrary exclusion.

Challenges

Documentation Gaps

- Many citizens may lack complete documentary records.

Administrative Complexity

- Citizenship determination often involves multiple documents and legal procedures.

Risk of Disenfranchisement

- Errors in verification processes may affect genuine citizens.

Public Awareness

- Misconceptions persist regarding passports, voter IDs, and citizenship status.

Way Forward

Strengthen Civil Registration Systems

- Improve birth and identity registration across the country.

Enhance Public Awareness

- Clarify legal distinctions between citizenship and identity documents.

Ensure Due Process

- Follow fair and transparent procedures during citizenship verification.

Improve Documentation Infrastructure

- Facilitate easy access to records and legal documentation.

Protect Constitutional Rights

- Balance national security concerns with individual rights and democratic participation.

Tungabhadra Basin Water-Sharing Dispute



Why in News?

- The Union Government has proposed a **High-Level Committee** to resolve the long-pending **Tungabhadra Basin water-sharing dispute**.
- The move follows a rare consensus among **Karnataka, Andhra Pradesh, and Telangana** during a joint meeting held to inaugurate **33 newly installed spillway gates** at the Tungabhadra Dam.
- The initiative is being viewed as an example of **cooperative federalism** in inter-state water governance.

Tungabhadra River

About

- The **Tungabhadra River** is a major perennial right-bank tributary of the **Krishna River**.
- It is one of the most important rivers of the Deccan Plateau.

Origin

- Formed by the confluence of:
 - **Tunga River**
 - **Bhadra River**
- Both rivers originate in the **Western Ghats** near:
 - Varaha Parvatha.
 - Gangamoola in Karnataka.

Confluence

- The two rivers meet at **Kudli**.

Course

- Total length: Approximately **531 km**.
- Flows through Karnataka.
- Forms parts of the Karnataka–Andhra Pradesh and Andhra Pradesh–Telangana boundaries.
- Joins the Krishna River at **Sangameswaram**.

Final Drainage

- The Krishna River ultimately empties into the **Bay of Bengal** at **Hamsaladevi**.

Tungabhadra Reservoir Project

About

- Constructed during the 1950s near **Hosapete** in Vijayanagara district.
- One of India's major inter-state irrigation projects.

Importance

- Lifeline for drought-prone regions of southern India.
- Irrigates approximately **16.38 lakh acres** across Karnataka, Andhra Pradesh, and Telangana.

Historical Water Sharing Arrangement Krishna Water Disputes Tribunal-I (KWDT-I)

About

- Constituted in **1969**.
- Chaired by **R.S. Bachawat**.

Allocation

- Water sharing between:
 - Karnataka.
 - Undivided Andhra Pradesh.

Ratio

- **65 : 35** allocation formula.

Tungabhadra Board

- Established to oversee implementation and management of water distribution.

Current Water Allocation

Post Telangana Formation (2014)

- Following the bifurcation of Andhra Pradesh, Telangana received an entitlement of **15.9 TMC** from the Tungabhadra system.

Major Issues in the Dispute

1. Siltation of Tungabhadra Reservoir

Problem

- Heavy sediment deposition over decades has significantly reduced storage capacity.

Impact

- Original capacity: **134 TMC**.
- Reduced effective storage affects downstream water availability.

Consequences

- Irrigation shortages.
- Water stress in dependent regions.
- Increased inter-state tensions.

2. Rajolibanda Diversion Scheme (RDS) Issues

About

- Interstate irrigation project involving Karnataka and Telangana.
- Constructed across the Tungabhadra River.

Purpose

- Diverts water through a **143-km canal**.
- Irrigates drought-prone regions in:
 - Karnataka.
 - Telangana.
 - Andhra Pradesh.

Problem

- Aging infrastructure and operational inefficiencies.

Impact on Telangana

- Despite an entitlement of 15.9 TMC, Telangana reportedly utilizes only 5–6 TMC.

3. Upper Bhadra Project Dispute

About

- **Upper Bhadra Project** is a lift irrigation project in Karnataka.

Concern

- Andhra Pradesh alleges that diversion of upstream water may reduce downstream flows.

Legal Action

- Andhra Pradesh filed an original suit in the **Supreme Court of India** in 2023.

Potential Impact

- Reduced inflows into critical reservoirs such as:
 - **Srisailem Reservoir**

Constitutional Provisions on Water State List (Entry 17)

- Water supply.
- Irrigation.
- Canals.
- Drainage and water storage.

Responsibility

- Primarily under State Governments.

Union List (Entry 56)

- Regulation and development of inter-state rivers and river valleys.

Responsibility

- Central Government can intervene when national interest is involved.

Article 262 of the Constitution Provision

- Empowers Parliament to adjudicate inter-state river water disputes.

Special Feature

- Parliament may exclude the jurisdiction of courts, including the Supreme Court, in such matters.

Inter-State River Water Disputes Act, 1956

Purpose

- Provides a legal framework for resolving inter-state river disputes.

Key Features

- Establishment of water dispute tribunals.
- Adjudication of river water-sharing conflicts.
- Binding decisions on states.

Supreme Court's Cauvery Judgment (2018)

Case

- **Cauvery Water Dispute Judgment**

Key Principle

"Inter-State Rivers are National Assets"

Observations

- States cannot claim exclusive ownership over inter-state rivers.
- Water must be distributed on principles of equity and fairness.

Significance

- Serves as an important precedent for other river disputes, including Tungabhadra.

Significance of the Proposed High-Level Committee

Promotes Cooperative Federalism

- Encourages dialogue and consensus among states.

Integrated Basin Management

- Facilitates coordinated planning for sustainable water use.

Conflict Resolution

- Reduces dependence on prolonged litigation.

Improved Water Governance

- Enables scientific assessment of water availability and utilization.

Challenges

Growing Water Demand

- Increasing agricultural and urban requirements.

Climate Variability

- Irregular monsoon patterns affecting river flows.

Reservoir Siltation

- Declining storage capacity reduces water security.

Inter-State Political Differences

- Complicate consensus-building efforts.

Infrastructure Deficiencies

- Aging irrigation systems reduce water-use efficiency.

Way Forward

Desiltation and Reservoir Modernisation

- Restore storage capacity of the Tungabhadra reservoir.

Strengthen Interstate Coordination

- Regular meetings among basin states.

Scientific Water Accounting

- Use real-time monitoring and data-sharing mechanisms.

Modernise Irrigation Infrastructure

- Upgrade the Rajolibanda Diversion Scheme and canal networks.

Integrated River Basin Management

- Adopt basin-wide planning for sustainable and equitable utilization.

Institutional Strengthening

- Empower the proposed High-Level Committee and the Tungabhadra Board.

Conclusion

- The proposed High-Level Committee on the **Tungabhadra Basin dispute** represents a significant step towards collaborative water governance. By balancing the interests of Karnataka, Andhra Pradesh, and Telangana through dialogue, scientific management, and cooperative federalism, it can help ensure equitable, sustainable, and efficient utilization of the Tungabhadra River's resources while strengthening India's framework for resolving inter-state river disputes.

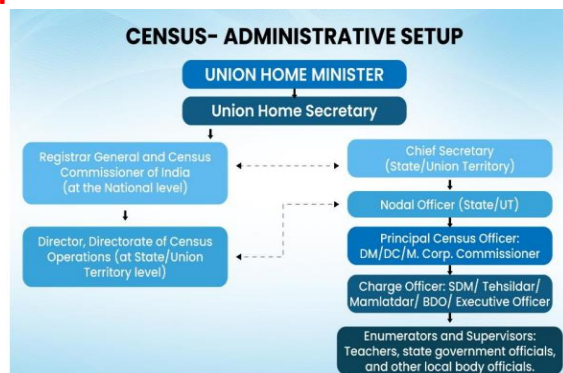


EDITORIALS

Crux of The Hindu & Indian Express

Indian Polity & Governance

Census 2027: Why It Matters for Development, Democracy and Representation



Why in News?

- India has formally initiated preparations for **Census 2027**, marking the country's first population census after a gap of 15 years.

- The exercise began with the launch of the first phase on **1 April 2026** and is expected to become the **largest population enumeration exercise ever undertaken in the world**.
- The Census assumes exceptional significance because it comes after a prolonged delay, introduces **digital enumeration**, includes **caste data collection**, and is expected to influence future decisions relating to **delimitation of constituencies, women's reservation, welfare policies, social justice measures, fiscal transfers and development planning**.
- At a time when India is experiencing rapid urbanisation, demographic transition, digital transformation and socio-economic change, Census 2027 will provide the most comprehensive picture of the country since the last Census conducted in 2011.

Census: Meaning and Historical Evolution

What is a Census?

- A **Census** is the official process of collecting, compiling, analysing and disseminating demographic, social, economic and cultural information relating to every individual and household in a country.
- Unlike sample surveys, which collect information from selected groups, a Census attempts to cover the **entire population**, making it the most reliable source of demographic information available to governments.

The Census provides the foundation for:

- Development planning.
- Welfare programme implementation.
- Resource allocation.
- Electoral representation.
- Academic research.
- Public policy formulation.

Because of its comprehensive nature, the Census is often described as the "**Mother of All Surveys**."

Historical Background of Census in India

- The idea of population enumeration is not new to India.
- References to systematic collection of demographic and economic information can be found in:

Kautilya's Arthashastra

- The **Arthashastra** discusses maintaining records relating to population, agriculture, occupations and taxation for efficient administration.

Ain-i-Akbari

- The **Ain-i-Akbari**, written by **Abul Fazl** during the reign of **Akbar**, also contained extensive information on population, land revenue and administrative structures.
- These examples demonstrate that population data has historically been viewed as an essential instrument of governance.

Evolution of Modern Census

During British Rule

- The first modern Census in India was conducted between **1865 and 1872**, although it was not carried out simultaneously across all regions.
- The first **synchronous Census** was conducted in **1881**, establishing the practice of decennial Census operations.

The colonial administration primarily used Census data for:

- Taxation.
- Administrative control.
- Governance of the colony.

Census in Independent India

After Independence, the purpose of the Census underwent a fundamental transformation.

Instead of serving colonial administrative interests, the Census became a tool for:

- Inclusive development.
- Welfare planning.
- Social justice.
- Democratic representation.

The **1951 Census** reflected a newly independent nation struggling with:

- Low literacy.
- High poverty.
- Poor health indicators.
- Weak infrastructure.

Today, India is vastly different, and Census 2027 will help measure the scale of this transformation.

Why Census 2027 is a Landmark Exercise : First Census After 15 Years

- India normally conducts a Census every ten years.
- However, the Census scheduled for 2021 could not be conducted because of:
 - The COVID-19 pandemic.

- Operational disruptions.
- Subsequent administrative and electoral priorities.

- As a result, Census 2027 comes after a gap of **15 years**, making it the longest interval between two censuses since Independence.

India Has Been Working with Outdated Data

- For over a decade, policymakers, researchers and governments have relied upon:
 - Census 2011 data.
 - Population projections.
 - Sample surveys.
 - Statistical extrapolations.
- Although surveys such as the **National Family Health Survey (NFHS)** provide valuable information, they cannot replace the comprehensiveness of a full Census.
- Consequently, many development programmes have been designed using population estimates rather than actual counts.

Massive Demographic Changes Since 2011

- India has experienced major changes over the last fifteen years, including:
 - Rapid urbanisation.
 - Increased migration.
 - Expansion of digital connectivity.
 - Growth of welfare schemes.
 - Changes in fertility patterns.
 - Rising education levels.
 - Improvements in healthcare access.

- According to the **United Nations Population Fund (UNFPA)**, India's population crossed **146 crore in 2025**, compared to **121 crore in 2011**.

- Census 2027 is therefore expected to record an increase of approximately **25–30 crore people**, highlighting the urgent need for updated demographic information.

Constitutional and Legal Framework

- The Census is a **Union Subject** under the Constitution.

Entry 69 of the Union List

- This entry empowers the Union Government to conduct Census operations throughout the country.
- Although implemented with support from States and Union Territories, the Census remains a centrally coordinated exercise.

Legal Basis

The Census is conducted under:

Census Act, 1948

- The Act provides the legal framework for conducting Census operations and defines the powers and responsibilities of Census authorities.

Census Rules, 1990

- These rules specify operational procedures relating to data collection and administration.

Institutional Framework

- The Census is conducted under the supervision of the **Registrar General and Census Commissioner of India**.

Implementation requires coordination among:

- Central Government.
- State Governments.
- District Administrations.
- Local Authorities.

Financial Outlay

- The Union Cabinet has approved an expenditure of approximately **₹11,718 crore** for conducting Census 2027.
- The scale of expenditure reflects the massive logistical requirements involved in counting more than 140 crore people.

Key Features and Methodology of Census 2027 : Two-Phase Census Structure

- The Census will be conducted in two distinct phases.

Phase I: Houselisting and Housing Census

This phase focuses on collecting information regarding:

- Housing conditions.
- Household assets.
- Drinking water facilities.
- Sanitation facilities.
- Cooking fuel.
- Availability of basic amenities.

The objective is to create a detailed profile of living conditions across the country.

Phase II: Population Enumeration

The second phase will collect information regarding:

- Age.
- Gender.
- Education.
- Occupation.

- Migration.
- Fertility.
- Religion.
- Language.
- Socio-economic conditions.
- Caste.

This phase will generate the core demographic database of the country.

Technological Innovations in Census 2027 : India's First Fully Digital Census

- One of the most transformative aspects of Census 2027 is the shift from traditional paper-based data collection to digital enumeration.
- This transition is expected to:
 - Improve efficiency.
 - Reduce human error.
 - Accelerate data processing.
 - Enhance transparency.

Census Management and Monitoring System (CMMS)

- A dedicated **Census Management and Monitoring System (CMMS)** has been developed for real-time supervision of Census operations.
- The system allows officials at various administrative levels to monitor:
 - Field progress.
 - Data collection.
 - Operational challenges.
- This represents a major modernization of Census administration.

Mobile-Based Enumeration

- Enumerators will use secure mobile applications for data collection.
- The applications support:
 - Offline data entry.
 - Digital verification.
 - Direct transmission to central servers.
- This eliminates dependence on paper schedules.

Houselisting Block Creator (HLBC)

- The Census will use digital mapping and satellite imagery through the **HLBC platform**.
- This will help:
 - Create accurate enumeration blocks.
 - Minimise duplication.
 - Prevent exclusion of households.

Online Self-Enumeration

- For the first time, citizens can voluntarily complete their Census information online before the enumerator visits.

Significance

- Self-enumeration:
 - Promotes citizen participation.
 - Improves convenience.
 - Strengthens data accuracy.
 - Reflects India's digital governance capabilities.
- However, online participation remains optional and does not replace physical verification.

Caste Enumeration: Significance and Debate

A Historic Inclusion

- One of the most debated features of Census 2027 is the inclusion of caste data.
- For many years, demands have been raised for updated caste information to support evidence-based policymaking and social justice measures.

Why Caste Data Matters?

Accurate caste data can help:

- Measure social inequalities.
- Improve welfare targeting.
- Evaluate reservation policies.
- Assess representation.
- Strengthen social justice initiatives.

The absence of updated caste data has often resulted in policy debates being driven by estimates rather than verified evidence.

Possible Political Implications

The publication of caste data may influence discussions regarding:

- Reservation policies.
- Political representation.
- Welfare distribution.
- Resource allocation.

Consequently, the release of caste figures is expected to become one of the most closely watched outcomes of Census 2027.

Why Census 2027 Matters for Democracy and Representation?

Delimitation of Constituencies

- One of the most important consequences of Census 2027 will be its impact on future delimitation exercises.

What is Delimitation?

- Delimitation refers to the process of redrawing electoral boundaries based on population changes.
- Updated Census figures will determine:
 - Electoral constituencies.
 - Distribution of seats.
 - Representation of states.

Emerging Federal Concerns

- The issue has generated political debate because states have experienced different population growth rates.
- Many southern states fear that successful population control efforts could reduce their relative representation if seat allocation becomes strictly population-based.
- Thus, Census 2027 has implications not only for democracy but also for India's federal balance.

Women's Reservation

- The implementation of **33% reservation for women in Parliament and State Legislatures** is linked to Census and subsequent delimitation.
- Therefore, Census 2027 will directly influence the future of women's political representation.

Strengthening Representative Democracy

- A democracy functions effectively only when all sections of society are properly counted and represented.
- The Census ensures that political institutions reflect demographic realities and changing population patterns.

Why Census 2027 Matters for Development and Governance?

Foundation of Welfare Planning

Most welfare schemes depend on accurate population data.

The Census helps identify:

- Poor households.
- Housing shortages.
- Educational gaps.
- Healthcare deficiencies.
- Infrastructure deficits.

Without updated population data, welfare programmes risk excluding deserving beneficiaries.

Targeted Delivery of Public Services

Reliable Census information enables governments to improve delivery of:

- Food security programmes.
- Housing schemes.
- Drinking water supply.
- Sanitation services.
- Healthcare facilities.
- Educational infrastructure.

Thus, the Census directly affects citizens' access to public services.

Fiscal Federalism and Resource Allocation

Census data plays a critical role in the work of the **Finance Commission**.

It influences:

- Distribution of funds among States.
- Grants to local bodies.
- Fiscal planning priorities.

As a result, Census findings have significant financial implications.

Support for Private Sector Planning

Businesses also rely heavily on Census data.

The information helps them:

- Assess market potential.
- Identify consumer demand.
- Choose investment locations.
- Plan infrastructure and services.

Therefore, the Census contributes to both public and private sector decision-making.

Privacy, Data Security and Citizen Rights

Legal Protection of Data

- The **Census Act, 1948** provides strong protection for personal information.

Section 15

Information collected during the Census:

- Cannot be disclosed publicly.
- Cannot be shared under RTI.
- Cannot be used in legal proceedings.
- Cannot be shared with other agencies.

This provision ensures confidentiality and encourages truthful responses.

Technological Safeguards

To protect digital information, Census 2027 incorporates:

- End-to-end encryption.
- Secure data transmission.
- Certified data centres.
- Cybersecurity protocols.
- Regular security audits.

These safeguards are essential for maintaining public trust.

Challenges Before Census 2027 : Ensuring Universal Coverage

The Census must ensure inclusion of:

- Migrant workers.
- Urban homeless.
- Nomadic communities.
- Remote tribal populations.

Failure to count these groups can distort policy outcomes.

Data Accuracy

- Maintaining accuracy while counting over 140 crore people remains a major challenge.
- Even small errors can affect policy decisions and resource allocation.

Political Sensitivity of Caste Data

The publication of caste figures may trigger intense political debates regarding:

- Reservation.
- Representation.
- Resource distribution.

Managing these debates responsibly will be crucial.

Digital Divide and Cybersecurity

- While digital enumeration improves efficiency, unequal digital access and cybersecurity concerns remain important challenges.

Way Forward

To maximise the benefits of Census 2027:

- Ensure universal and inclusive coverage.
- Strengthen public awareness campaigns.
- Maintain robust cybersecurity safeguards.
- Improve transparency in data dissemination.
- Use Census findings for evidence-based policymaking.
- Ensure objective and responsible use of caste data.

Most importantly, governments must translate Census findings into effective policies that improve citizens' lives.

Conclusion

Census 2027 is far more than a population-counting exercise. It is the foundation upon which India's future development strategy, welfare architecture, democratic representation and social justice framework will be built. As the first Census after a 15-year gap and the first fully digital Census in India's

history, it will provide an updated picture of a rapidly transforming society. Its findings will shape policies on representation, resource allocation, welfare delivery and development planning for years to come. In a democracy where every vote matters, Census 2027 reinforces an equally important principle — **every individual counts, and every count matters.**

Supreme Court on Doctrine of Forum Non Conveniens and Writ Jurisdiction



Why in News?

- The **Supreme Court of India** held that the **Doctrine of Forum Non Conveniens** should rarely be applied when a citizen invokes the **writ jurisdiction under Article 226(1) of the Constitution** to seek constitutional remedies.
- The judgment came while allowing the appeal of a dismissed **Border Security Force (BSF)** officer whose writ petition had earlier been rejected by the **Delhi High Court** on the ground of forum non conveniens.
- The case clarifies the relationship between **constitutional remedies, territorial jurisdiction of High Courts**, and the **Doctrine of Forum Non Conveniens**.

What Was the Case About?

Background

- The appellant joined the **Border Security Force (BSF)** on **31 December 2010**.
- He was posted in the **44th Battalion** at Malda, West Bengal.

Allegations Against the Officer

A complaint was received alleging that:

- A woman had gone missing.
- The appellant and another constable were suspected of involvement.
- The appellant's wife alleged that:
 - He had contracted a second marriage without her consent.

- He had subjected her to criminal force.

Departmental Proceedings

- A **Staff Court of Inquiry** was constituted to investigate the allegations.
- The appellant was issued a show-cause notice under:
 - BSF Rules, 1969.
 - Central Civil Services (Conduct) Rules, 1964.

Charges

- Contracting a second marriage during the subsistence of his first marriage.
- Violating service conduct rules.

Dismissal from Service

- After no satisfactory response was received, the Commandant:
 - Dismissed the appellant from service.
 - Denied pensionary benefits.
 - Removed him from BSF rolls.

Appeal within BSF

The appellant filed a:

Statutory Petition

under Rule 28A of the BSF Rules seeking:

- Reinstatement in service.
- However:
- The petition was rejected.

Writ Petition Before Delhi High Court

The appellant challenged:

- His dismissal order.
 - Rejection of the statutory petition.
- by filing a writ petition before the **Delhi High Court**.

However:

- The High Court dismissed the petition.
- It held that Delhi was not the most appropriate forum.
- It applied the **Doctrine of Forum Non Conveniens**.

What is the Doctrine of Forum Non Conveniens? Meaning

- The term **Forum Non Conveniens** is a Latin expression meaning:

- **"An Inconvenient Forum"**

Basic Principle

A court may decline to hear a case if:

- Another court is available.
- The other court is more appropriate.

- The other court is more convenient for adjudication.

Purpose

The doctrine aims to:

- Avoid unnecessary inconvenience.
- Ensure efficient administration of justice.
- Prevent forum shopping.

What Did the Supreme Court Hold?

Main Observation

The Supreme Court held:

When a person seeks a constitutional remedy under Article 226(1), the Doctrine of Forum Non Conveniens may rarely apply.

Bench

The judgment was delivered by:

- **Justice Dipankar Datta**
- **Justice Satish Chandra Sharma**

Supreme Court's Reasoning

- **Article 226 Provides Constitutional Remedy**
- The Court emphasized that:

Article 226(1)

allows a High Court to issue writs if:

- The respondent authority is located within its territorial jurisdiction.

Article 226(2)

allows jurisdiction where:

- The cause of action arises wholly or partly within its territory.

Presence of Necessary Respondents in Delhi

The Court observed that:

- **Union of India** was a respondent.
- **Director General, BSF** was also a respondent.
- Both offices are located in **New Delhi**.

Therefore:

- Delhi High Court possessed territorial jurisdiction under Article 226(1).

Role of Director General BSF

The Court noted that:

- Every dismissal order under BSF Rules must be reported to the Director General.
- Therefore, the Director General was directly connected with the matter.

This further strengthened Delhi High Court's jurisdiction.

Misapplication of Forum Non Conveniens

Supreme Court's Observation

The Court held that:

- The Delhi High Court incorrectly applied the doctrine.
- Constitutional remedies should not be denied merely because another forum may also be available.

Access to Justice Must Be Protected

- The Court observed that:
- Application of Forum Non Conveniens in such cases may defeat access to justice rather than promote it.

Constitutional Rights Have Higher Importance

The Court emphasized that:

- Writ jurisdiction is a constitutional remedy.
- Constitutional remedies occupy a special position in the legal framework.
- Courts must be cautious before refusing to exercise such jurisdiction.

Court's View on Multiple Forums

When Does Forum Non Conveniens Apply?

The doctrine generally applies when:

- Multiple courts are available.
- Each court has jurisdiction.
- One forum is significantly more convenient than another.

Supreme Court's Clarification

The Court clarified that:

- The doctrine is primarily applicable in ordinary civil disputes.
- Its application in constitutional writ proceedings is limited.
- High Courts should not routinely refuse writ petitions merely because another forum exists.

Importance of Certiorari Jurisdiction

What is a Writ of Certiorari?

A writ of **Certiorari** is issued to:

- Quash illegal orders.
- Review decisions of lower authorities.
- Correct jurisdictional errors.

Supreme Court's Observation

The Court stated that:

- Relevant records can always be produced before the High Court.
- Availability of records cannot become a reason for rejecting jurisdiction.

Thus:

- Forum Non Conveniens should not be used mechanically in writ proceedings.

Final Decision of the Supreme Court

The Supreme Court:

Allowed the Appeal

and held that:

- Delhi High Court had jurisdiction.
- Doctrine of Forum Non Conveniens was wrongly applied.

Outcome

The Court:

Revived the Writ Petition

- and restored it to the file of the **Delhi High Court** for fresh consideration on merits.

Understanding Article 226

About Article 226

Constitutional Provision

Article 226 empowers High Courts to issue writs for:

- Enforcement of Fundamental Rights.
- Enforcement of other legal rights.

Types of Writs

High Courts can issue:

Habeas Corpus

- Produce a detained person before the court.

Mandamus

- Direct a public authority to perform its duty.

Prohibition

- Prevent a lower court from exceeding jurisdiction.

Certiorari

- Quash an illegal order.

Quo Warranto

- Challenge the legality of a person's public office.

Significance of the Judgment

Strengthens Access to Justice

- Prevents unnecessary dismissal of writ petitions.
- Makes constitutional remedies more accessible.

Protects Constitutional Rights

- Reinforces the importance of Article 226.
- Ensures citizens can effectively seek judicial review.

Clarifies Jurisdictional Principles

- Distinguishes constitutional remedies from ordinary civil litigation.
- Provides guidance to High Courts regarding territorial jurisdiction.

Limits Mechanical Application of Forum Non Conveniens

- Prevents misuse of procedural doctrines.
- Ensures substantive justice takes precedence over technical objections.

□□□



Indian Society & Social Justice

India at the 114th International Labour Conference (ILC), 2026



Why in News?

- The Union Minister of State for Labour and Employment led the Indian delegation at the 114th International Labour Conference in Geneva.
- India showcased its labour reforms, expanding social protection coverage, employment achievements and Digital Public Infrastructure (DPI) initiatives.
- Despite the enactment of the four Labour Codes, concerns remain regarding weak implementation, inadequate labour protection and limited coverage of informal and gig workers.

Key Highlights of India's Address at the 114th ILC

Labour Law Reforms

Consolidation of Labour Laws

- India highlighted its labour reforms based on the principle of Antyodaya (upliftment of the weakest sections).
- The reforms consolidated 29 Central Labour Laws into four Labour Codes.
- **Objectives include:**
 - Simplifying compliance.
 - Reducing regulatory complexity.
 - Improving labour welfare.
 - Promoting ease of doing business.

Improvement in Employment Indicators

Youth Employability

- Increased from 34% in 2014 to more than 56% in 2025.

Unemployment Rate

- Declined from approximately 6% in 2017 to 3.1% in 2025.

Women's Labour Force Participation

- Increased significantly from 22% to 38.8%.

Expansion of Social Security Coverage

Growth in Coverage

- Social protection coverage expanded from 19% in 2015 to 64.3% in 2025.

Beneficiaries

- According to International Labour Organization estimates, social protection now covers nearly 1 billion people in India.

Digital Public Infrastructure (DPI)

National Career Service Portal

- Provides employment-related services and job-matching opportunities.

e-Shram Portal

- A national database of unorganized workers aimed at facilitating welfare delivery.

International Cooperation

- India offered technical assistance to:
 - Rwanda
 - Sri Lanka

for developing similar workforce databases and digital labour platforms.

International Labour Mobility

Global Workforce Integration

- India emphasized linking domestic skill development with international employment opportunities.

ILO Collaboration

- India is working with the ILO on a feasibility study to develop an international occupational classification framework.

New Employment Initiative

Pradhan Mantri Viksit Bharat Rozgar Yojana

- Highlighted as a flagship initiative aimed at accelerating employment generation and workforce participation.

International Labour Conference (ILC)

About

- The International Labour Conference (ILC) is the highest decision-making body of the International Labour Organization.
- It is often called the "International Parliament of Labour."

- It is held annually in Geneva, Switzerland.

Functions

- Formulates international labour standards.
- Discusses global labour issues.
- Determines the policy direction of the ILO.
- Reviews implementation of labour conventions.

Unique Tripartite Structure

Composition

Each member state sends:

- Two Government delegates.
- One Employer delegate.
- One Worker delegate.

Significance

- All delegates enjoy independent voting rights.
- Ensures representation of governments, employers and workers in labour policymaking.

Four Labour Codes in India

Code on Wages, 2019

Key Features

- Universalizes minimum wages.
- Ensures timely payment of wages.
- Covers both organized and unorganized sectors.

Industrial Relations Code, 2020

Key Features

- Regulates industrial disputes.
- Provides rules for trade union recognition.
- Governs lay-offs, retrenchment and closures.

Code on Social Security, 2020

Key Features

- Expands coverage of:
 - Employees' State Insurance Corporation
 - Employees' Provident Fund Organisation
- First legislation to recognize:
 - Gig workers.
 - Platform workers.
 - Unorganized workers.

Occupational Safety, Health and Working Conditions (OSH) Code, 2020

Key Features

- Consolidates workplace safety laws.
- Covers:
 - Inter-state migrant workers.
 - Contract labourers.
 - Occupational health and safety provisions.

Why Does Labour Vulnerability Persist Despite Reforms?

Gig Workers Remain in a Legal Grey Zone

Limited Recognition

- The Social Security Code recognizes gig workers but does not classify them as regular employees.

Consequences

- **Exclusion from:**
 - Minimum wage protections.
 - Collective bargaining rights.
 - Workplace safety guarantees.

Algorithmic Management and Platform Work Issues Faced

- **Earnings are determined through:**
 - Automated ratings.
 - Algorithmic performance assessments.
 - Dynamic pricing systems.

Concerns

- Lack of transparency.
- Absence of grievance redressal mechanisms.
- Unilateral reduction in incentive structures.

Higher Threshold for Lay-Off Approval

Industrial Relations Code

- Establishments employing up to 300 workers can undertake layoffs or retrenchment without prior government approval.

Concerns

- Reduced job security.
- Greater flexibility for employers.
- Increased vulnerability of workers in MSMEs.

Working Hour Ambiguities

OSH Code

- Prescribes a maximum 48-hour work week.

Issues

- Daily shift limits remain unclear.
- Potential misuse through:
 - Extended shifts.
 - Compressed workweeks.
 - Inadequate overtime compensation.

Weakening of Collective Bargaining

Trade Union Recognition

- A union requires support from 51% of workers to become the sole negotiating agent.

Impact

- Makes union formation more difficult, especially among:
 - Contract workers.

- Informal workers.
- Gig workers.

Restrictions on Strikes

- Mandatory 60-day notice period.
- Prohibition of strikes during conciliation proceedings.

Limited Coverage of Informal Sector

Applicability Threshold

- OSH Code primarily applies to establishments employing 10 or more workers.

Impact

- Many micro-enterprises and informal establishments remain outside formal safety regulations.

Gap Between Data Collection and Welfare Delivery e-Shram Challenge

- Millions of workers have been registered on the e-Shram portal.

Problem

- **Registration has not always translated into:**
 - Pensions.
 - Healthcare benefits.
 - Social security support.
 - Financial assistance.

Inflation-Induced Wage Erosion

Rising Cost of Living

- Inflation has increased significantly in recent years.

Issue

- While Variable Dearness Allowance (VDA) is periodically revised, basic minimum wages are often revised slowly.
- This has reduced real wages and purchasing power.

Challenges Faced by Migrant Workers

Economic Pressures

Inter-state migrant workers face:

- Rising urban rents.
- Food inflation.
- Higher transport costs.
- Increased energy expenses.

Impact

- Nominal wage growth has failed to keep pace with living costs.

Measures Needed to Strengthen Labour Welfare

Dependent Contractor Framework

- Introduce a legal category between employee and independent contractor.

Benefits

- Minimum income protection.
- Basic social security coverage.
- Workplace rights for platform workers.

Adopt the Rajasthan Model

Rajasthan Platform-Based Gig Workers Act, 2023

- Establish welfare boards.
- Ensure representation of gig workers.
- Finance welfare through platform transaction cess.

Promote Digital Compliance

Technology-Based Monitoring

- **Encourage:**
 - Digital wage payments.
 - Electronic employment records.
 - Data-driven labour inspections.

Strengthen Convergence of e-Shram

Integration with Welfare Schemes

The e-Shram database should be linked with:

- One Nation One Ration Card
- Ayushman Bharat
- Pradhan Mantri Shram Yogi Maandhan

Benefits

- Improved portability of welfare benefits.
- Better support for migrant workers.

Revive the Indian Labour Conference

Tripartite Dialogue

- Strengthen consultation among:
 - Governments.
 - Employers.
 - Trade unions.

Objective

- Resolve labour disputes through dialogue and consensus.

Challenges in Labour Governance

Implementation Deficit

- Many Labour Code provisions remain unimplemented due to delayed rules and administrative bottlenecks.

Large Informal Workforce

- Nearly 90% of India's workforce remains in the informal sector, making enforcement difficult.

Regional Variations

- Labour welfare implementation varies significantly across states.

Balancing Growth and Protection

- Policymakers must balance:

- Ease of doing business.
- Employment generation.
- Worker welfare and rights.

Conclusion

- India's presentation at the 114th International Labour Conference highlighted significant achievements in labour reforms, social security expansion and digital governance.
- However, the persistence of informal employment, gig worker vulnerabilities, wage stagnation and implementation gaps indicates that legislative reform alone is insufficient.
- A comprehensive approach combining effective enforcement, universal social protection, digital welfare delivery and stronger worker representation is essential for building a more inclusive, equitable and resilient labour market in India.

India's Progress Towards Universal Health Coverage (UHC)



Why in News?

- India's progress towards Universal Health Coverage (UHC) has come into focus following findings from the National Statistical Office (NSO) 2025 Survey, which highlighted:
 - **Increased utilization of public healthcare facilities.**
 - **Reduced out-of-pocket expenditure (OOPE).**
 - **Improved access to affordable healthcare.**
- These gains have been driven by initiatives such as Ayushman Bharat Pradhan Mantri Jan Arogya Yojana, the National Health Mission, digital health platforms and healthcare infrastructure expansion.

What is Universal Health Coverage (UHC)?

About

- Universal Health Coverage (UHC) ensures that all individuals and communities receive quality healthcare services without suffering financial hardship.
- **It includes:**
 - Health promotion.
 - Disease prevention.
 - Treatment.
 - Rehabilitation.
 - Palliative care.

Global Goal

- UHC is a key target under Sustainable Development Goal (SDG) 3 relating to good health and well-being.

Achievements in India's Healthcare Sector

Universal Health Coverage and Health Insurance

Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)

About

- Launched in 2018 under the National Health Policy 2017.
- Provides health insurance coverage of up to ₹5 lakh per family per year.

Coverage

- Covers approximately 12 crore socio-economically vulnerable families.

Achievements

- Over 44.14 crore Ayushman Cards issued.
- More than 12.03 crore hospitalizations supported.

Digital Access

- Ayushman App available in 19 languages for easier beneficiary access.

Ayushman Bharat Vay Vandana

Launch

- Introduced in October 2024.

Objective

- Extends health coverage to all citizens aged above 70 years.

Achievements

- Around 1.20 crore senior citizens enrolled by June 2026.
- Treatments worth approximately ₹3,000 crore provided.

Democratizing Primary Healthcare

Ayushman Arogya Mandirs (AAMs)

About

- Existing Sub-Centres, Primary Health Centres (PHCs), and AYUSH centres have been upgraded into Ayushman Arogya Mandirs.

Coverage

- More than 1.86 lakh facilities upgraded nationwide.

Services

- Provide 12 comprehensive healthcare services free of cost.

Achievements

- Recorded more than 540 crore cumulative footfalls.

Impact

- **Improved access to:**

- NCD screening.
- Maternal healthcare.
- Mental health services.
- Preventive healthcare.

Pandemic Preparedness and Health Infrastructure

Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM)

Objective

- Strengthen public health preparedness and resilience.

Infrastructure Development

- Establishment of:
 - 744 Integrated Public Health Laboratories.
 - 631 Critical Care Hospital Blocks.

COVID-19 Response

Achievements

- Administered over 220 crore vaccine doses.
- Expanded ICU beds from 2,168 to 1.45 lakh.
- Supplied nearly 300 million vaccine doses to over 100 countries under Vaccine Maitri.

Maternal and Child Healthcare

Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)

Achievements

- Over 7.47 crore pregnant women examined.

Janani Shishu Suraksha Karyakram (JSSK)

Objective

- Ensure free maternal and child healthcare services.

Benefit

- Eliminates out-of-pocket expenditure for deliveries.

Mission Indradhanush

Achievements

- Vaccinated over 5.46 crore previously unimmunized children.

Outcome

- India's zero-dose child population reduced to 0.06% by April 2026.

Disease Elimination and Public Health

Pradhan Mantri TB Mukh Bharat Abhiyaan

Achievements

- Screened nearly 20 crore people.
- Supported by 3.78 lakh Nikshay Mitras.
- Nutritional assistance provided to around 20 lakh TB patients.

Malaria Control

- Malaria-related mortality reduced by 78%.

HIV Prevention

- Mother-to-child HIV transmission reduced by 74.5% since 2010.

Management of Non-Communicable Diseases (NCDs)

Mass Screening Campaigns

Screening Achievements

- Hypertension: 41.5 crore screenings.
- Diabetes: 41.3 crore screenings.
- Oral, breast and cervical cancers: Over 60 crore screenings combined.

Dialysis Services

Pradhan Mantri National Dialysis Programme (PMNDP)

- Delivered more than 4 crore free dialysis sessions.

Cancer Care

- Cancer care facilities approved in all 22 new AIIMS.

Lifestyle Interventions

Major initiatives include:

- Eat Right India
- Fit India Movement

Recognition

- India received the 2025 Bloomberg Philanthropies Award for tobacco control efforts.

Digital Health Revolution

Ayushman Bharat Digital Mission (ABDM)

Achievements

- More than 20.49 crore Ayushman Bharat Health Accounts (ABHA IDs) created.

U-WIN Platform

Purpose

- Digital tracking of immunization.

Coverage

- 11.87 crore children.
- 3.96 crore pregnant women.

eSanjeevani Telemedicine

Achievements

- Delivered over 47 crore teleconsultations.

Tele-MANAS

- Mental health support available through:
 - 53 centres.
 - 20 languages.

i-DRONE Initiative

Achievements

- Delivered over 22,000 medicines.
- Covered approximately 7,700 km of difficult terrain.

Artificial Intelligence in Healthcare

Clinical Decision Support Systems (CDSS)

- Supports doctors in diagnosis and treatment decisions.

Cough Against TB

- Identifies hidden TB cases through AI-based screening.

MadhuNetrAI

- AI-driven screening tool for diabetic retinopathy.

Significance

- Enhances early diagnosis in resource-constrained settings.

Affordable Medicines and Diagnostics

Pradhan Mantri Bhartiya Janaushadhi Pariyojana

Achievements

- More than 18,000 Jan Aushadhi Kendras operational.
- Generic medicines available at 50–90% lower prices.

AMRIT Pharmacies

- Generated savings of approximately ₹8,400 crore for patients.

Free Diagnostics Initiative

- Provides up to 57 diagnostic tests free of cost at district hospitals.

Healthcare Workforce Expansion

Medical Education

- Number of medical colleges has nearly doubled.

Nursing Infrastructure

- Establishment of 157 new nursing colleges.

AYUSH Integration

- Traditional medicine integrated into 13,093 facilities.
- Introduction of AYUSH Visa in 2023 to promote medical tourism.

Challenges in India's Healthcare System

Low Public Health Expenditure

Issue

- The National Health Policy target of spending 2.5% of GDP on health by 2025 remains unmet.

Concern

- Government health expenditure remains relatively low compared to global standards.

Persistent Out-of-Pocket Expenditure (OOPE)

NITI Aayog Findings

- Around 65% of PMJAY beneficiaries reportedly incurred some out-of-pocket expenditure despite cashless treatment provisions.

Implication

- Indicates gaps in implementation and regulation.

Rising Burden of NCDs

Current Scenario

- NCDs account for nearly 60% of all deaths in India.

Major Diseases

- Cardiovascular diseases.
- Diabetes.
- Cancer.
- Chronic respiratory diseases.

Regional Disparities

- Significant variations exist in healthcare infrastructure and outcomes across states.

Mental Health Challenges

- Limited specialist availability.
- Social stigma.
- Uneven access in rural areas.

Healthcare Governance Issues

- Fragmented administration among multiple ministries.

- Weak coordination between health-related sectors such as sanitation, nutrition and water supply.

Measures Needed to Strengthen Healthcare

Increase Public Health Spending

- Raise expenditure to 2.5–3% of GDP through a legally backed fiscal roadmap.

Expand AI-Based Diagnostics

- **Scale tools such as:**
 - **MadhuNetrAI.**
 - **Cough Against TB.**
 - **AI-enabled screening systems.**

Strengthen Drone-Based Healthcare Delivery

- Expand the i-DRONE model nationwide for medicines, vaccines and diagnostic samples.

Promote Community Participation

- Replicate successful initiatives such as:
 - Nikshay Mitras.
 - Eat Right India.
 - Fit India Movement.

Deepen Digital Health Integration

- Universal adoption of:
 - ABHA IDs.
 - U-WIN.
 - Electronic Health Records.

Strengthen AYUSH Integration

- Expand the AYUSH Grid and promote medical tourism through the AYUSH Visa.

Enact a Right to Health Framework

- Establish health as a legally enforceable right.
- Ensure accountability for healthcare access and service delivery.

Conclusion

- India has made substantial progress toward Universal Health Coverage through initiatives such as Ayushman Bharat, Ayushman Arogya Mandirs, ABDM, digital healthcare platforms, expanded infrastructure and disease-control programmes.
- However, challenges such as low public health spending, persistent out-of-pocket expenditure, rising NCD burden, regional inequalities and governance gaps continue to hinder universal access.
- Achieving comprehensive UHC will require greater public investment, stronger regulation, digital integration, robust primary healthcare systems and a legally enforceable rights-based approach to healthcare.

India's Progress in Reducing Multidimensional Poverty



Why in News?

- India has achieved a significant reduction in Multidimensional Poverty, with nearly 25 crore people escaping poverty between 2013–14 and 2022–23.
- The multidimensional poverty rate declined from 29.17% (2013–14) to 11.28% (2022–23).
- This achievement reflects the impact of sustained welfare interventions, digital governance reforms, infrastructure expansion and inclusive development policies.

What is Multidimensional Poverty?

Definition

- Multidimensional Poverty measures deprivation across multiple dimensions of human well-being rather than income alone.

Key Dimensions

- Health.
- Education.
- Standard of living.

Importance

- Provides a comprehensive assessment of poverty and human development.

How Has India Achieved Universal Access to Basic Needs?

Jal Jeevan Mission (JJM)

Objective

- Provide functional household tap water connections to every rural household.

Achievements

- Rural tap water connections increased from 3.23 crore households (2019) to 15.84 crore households (May 2026).

Coverage

- Nearly 82% of rural households now have tap water access.

Institutional Coverage

- More than:
 - 9.23 lakh schools
 - 9.66 lakh Anganwadi Centres

have tap water connectivity.

Significance

- Improves public health.
- Reduces water-borne diseases.
- Enhances quality of life, particularly for women and children.

Swachh Bharat Mission (SBM)

Objective

- Eliminate open defecation and improve sanitation infrastructure.

Achievements

- Construction of over 12.11 crore household toilets.
- Rural sanitation achieved 100% initial coverage by 2019.

ODF Plus Villages

- More than 5 lakh villages have achieved ODF Plus (Model) status.

Significance

- Improved hygiene.
- Reduced disease burden.
- Better environmental sanitation.

Pradhan Mantri Ujjwala Yojana (PMUY)

Objective

- Provide clean cooking fuel to poor households.

Achievements

- More than 10.57 crore LPG connections provided to women from economically weaker households.

Benefits

- Reduced indoor air pollution.
- Improved women's health.
- Reduced dependence on traditional biomass fuels.

Universal Electrification

Major Scheme

- SAUBHAGYA (Pradhan Mantri Sahaj Bijli Har Ghar Yojana).

Achievements

- Achieved 100% village electrification by 2025.

Improved Power Supply

- Average rural electricity supply increased from:
 - 12.5 hours/day (2014)
 - To 22.6 hours/day (2025).

Significance

- Improved productivity.
- Enhanced education and healthcare access.
- Promoted economic activities.

Housing for All

Pradhan Mantri Awas Yojana – Urban (PMAY-U)

Achievement

- More than 98.10 lakh houses completed.

Pradhan Mantri Awas Yojana – Gramin (PMAY-G)

Achievement

- More than 3.03 crore rural houses completed.

Women Empowerment

- Majority of houses registered in women's names.

Significance

- **Promotes:**
 - Asset ownership.
 - Social security.
 - Women's empowerment.

Pradhan Mantri Gram Sadak Yojana (PMGSY)

Objective

- Improve rural road connectivity.

Achievement

- Connected 99.6% of eligible habitations with all-weather roads.

Benefits

- Better access to:
 - Markets.
 - Schools.
 - Hospitals.
 - Government services.

Advancements in Public Health and Food Security

Ayushman Bharat – PM Jan Arogya Yojana (PM-JAY)

About

- World's largest publicly funded health insurance scheme.

Achievements

- Issued 43.93 crore health cards.

Coverage

- Health insurance cover of ₹5 lakh per family per year.

Significance

- Reduces catastrophic health expenditure.
- Enhances healthcare access for vulnerable populations.

Ayushman Bharat Digital Mission (ABDM)

Achievements

- Created 88.33 crore ABHA IDs.
- Linked 97.81 crore health records.

Benefits

- Paperless healthcare ecosystem.
- Better continuity of care.
- Improved health data management.

Maternal and Child Health

Janani Suraksha Yojana (JSY)

Impact

- Maternal Mortality Ratio (MMR) declined from:
 - 130 (2014–16)
 - To 88 (2021–23) per 100,000 live births.

Significance

- Improved institutional deliveries.
- Better maternal healthcare outcomes.

Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)

Coverage

- Provides free food grains to over 81 crore beneficiaries.

Digital Transformation

- 99.8% Fair Price Shops digitized.

Benefits

- Transparent distribution.
- Aadhaar-based authentication.
- Reduced leakages.

How Are Education and Learning Outcomes Improving?

Samagra Shiksha Abhiyan

Objective

- Improve school infrastructure and educational inclusion.

Achievement

- Female primary school dropout rate declined from:
 - 4.6% (2013–14)
 - To 0.3% (2024–25).

Significance

- Improved retention of girl students.

Beti Bachao Beti Padhao (BBBP)

Objective

- Promote survival, protection and education of the girl child.

Achievements

- National Sex Ratio improved to 1,020.

- Female secondary school enrollment increased to 80.2%.

Kasturba Gandhi Balika Vidyalaya (KGBV)

Objective

- Residential education for disadvantaged girls.

Achievement

- Enrollment increased to 7.11 lakh girls by 2024.

Significance

- Enhances educational opportunities in underserved regions.

Digital Education Platforms

SWAYAM

Achievement

- Recorded more than 5.80 crore enrollments.

DIKSHA

Role

- Provides digital learning resources for students and teachers.

Significance

- Democratizes access to quality education.

Women Empowerment and Livelihood Development Deendayal Antyodaya Yojana – National Rural Livelihood Mission (DAY-NRLM)

Achievements

- Women participating in SHGs increased from:
 - 2.37 crore
 - To 10 crore.
- Number of SHGs increased from:
 - 21.31 lakh
 - To 91.75 lakh.

Significance

- Promotes financial inclusion and community development.

Lakhpati Didi Initiative

Achievement

- Enabled 3.07 crore rural women to become entrepreneurs.

Objective

- Increase household income through women-led enterprises.

Skill Development and Employment

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

Achievements

- More than 1.64 crore youth trained.

Emerging Focus Areas

- Artificial Intelligence (AI).
- Industry 4.0 technologies.

- Advanced manufacturing.

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

Achievement

- Generated more than 3,036 crore person-days of employment since 2014.

Significance

- Provides livelihood security.
- Supports rural incomes.

eShram Portal

Achievement

- Registered 31.64 crore unorganized workers.

Benefits

- Social security inclusion.
- Formalization of informal workforce.

Financial Inclusion and Digital Governance Pradhan Mantri Jan Dhan Yojana (PMJDY)

Achievement

- Reached 58.16 crore beneficiaries.

Significance

- Expanded access to banking services.

Pradhan Mantri MUDRA Yojana

Objective

- Provide collateral-free loans to small entrepreneurs.

Achievement

- Approximately 66% of loans disbursed to women entrepreneurs.

BharatNet

Achievement

- High-speed broadband connectivity extended to 2.19 lakh Gram Panchayats.

Significance

- Strengthens rural digital infrastructure.

Unified Payments Interface (UPI)

Achievement

- Processes over 2,100 crore monthly transactions.

Impact

- Revolutionized digital payments and financial inclusion.

Integrated Interventions for Tribal Development

PM-JANMAN Mission

Full Form

- Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan.

Objective

- Improve living conditions of 75 Particularly Vulnerable Tribal Groups (PVTGs).

Services Provided

- Housing.
- Tap water.
- Electrification.
- Healthcare access.

Significance

- Targets the most marginalized tribal communities.

Eklavya Model Residential Schools (EMRS)

Objective

- Provide quality residential education to tribal students.

Achievements

- Number of operational schools increased from 129 to 499.

Enrollment

- Approximately 1.54 lakh Scheduled Tribe students enrolled.

Van Dhan Vikas Kendras

Objective

- Promote tribal entrepreneurship and value addition to forest produce.

Achievement

- 1,146 Kendras sanctioned.

Benefits

- Enhances tribal incomes.
- Strengthens forest-based livelihoods.

Significance of India's Poverty Reduction Strategy

Inclusive Development

- Focuses on reaching vulnerable populations.

Human Capital Formation

- Investments in health, education and skills.

Women-Led Development

- Enhances economic participation of women.

Digital Governance

- Improves transparency and service delivery.

Social Protection

- Expands welfare coverage through targeted interventions.

Challenges Ahead

Regional Disparities

- Development outcomes vary across states.

Urban Poverty

- Growing urbanization presents new challenges.

Quality of Services

- Continued improvement needed in healthcare and education quality.

Employment Generation

- Sustained job creation remains critical.

Climate Vulnerability

- Climate change may disproportionately affect poor households.

Farm Loan Waivers and Fiscal Discipline in India



Why in News?

- The Tamil Nadu government announced a full waiver of cooperative crop loans up to ₹75,000 for farmers.
- The announcement came shortly after the release of the state's White Paper on Fiscal Management, which highlighted a rising debt burden of ₹13.18 lakh crore.
- The development has revived debate on balancing farmer welfare with long-term fiscal sustainability.

What are Farm Loan Waivers?

Definition

- Farm loan waivers are government interventions in which the state assumes responsibility for repaying agricultural loans on behalf of farmers.

Objective

- Provide immediate relief to farmers facing:
 - Crop failures.
 - Natural disasters.
 - Price crashes.
 - Agrarian distress.

Nature

- Considered a short-term relief measure rather than a structural solution to agricultural challenges.

Concerns Regarding Farm Loan Waivers

Political Economy versus Genuine Distress

RBI Observation

- The Reserve Bank of India Internal Working Group (2019) observed a strong correlation between loan waiver announcements and election cycles.

Concern

- Waivers are often influenced by political considerations rather than objective assessment of agrarian distress.

Impact

- Weakens evidence-based policymaking.

Exclusion Errors**Who Benefits?**

- Farmers with access to formal institutional credit.

Who Gets Excluded?

- Tenant farmers.
- Sharecroppers.
- Landless agricultural labourers.
- Farmers dependent on informal moneylenders.

Significance

- The most vulnerable sections often receive no benefit.

Moral Hazard Problem**Meaning**

- When individuals change their behaviour because they expect protection from losses.

Impact on Farmers

- Farmers may delay repayments expecting future waivers.

Consequences

- Weakens repayment discipline.
- Encourages strategic defaults.

Effect on Honest Borrowers

- Farmers who regularly repay loans may feel disadvantaged.

Impact of Loan Waivers on State Finances and Economy**Rising Debt Burden****Current Situation**

- State debt levels are estimated at around 27–29% of GDP.

FRBM Benchmark

- The Fiscal Responsibility and Budget Management (FRBM) Review Committee recommended a debt level of around 20% of GDP.

Concern

- Frequent waivers increase fiscal stress.

Crowding Out Capital Expenditure (CapEx)**FRBM Constraints**

- States must generally maintain fiscal deficits within 3% of Gross State Domestic Product (GSDP).

Problem

- Loan waivers are treated as revenue expenditure.

Result

- States often reduce spending on:
 - Irrigation projects.
 - Rural roads.
 - Warehousing.
 - Cold storage infrastructure.

Impact

- Weakens long-term agricultural productivity.

Revenue Deficit Trap**Issue**

- States often borrow funds to finance waivers.

Consequences

- Increase in revenue deficits.
- Reduced fiscal flexibility.

Long-Term Effect

- Creation of a debt trap where future revenues are used to service past liabilities.

Off-Budget Borrowings**Meaning**

- Borrowings undertaken outside the regular budget framework.

Mechanism**Through:**

- Special Purpose Vehicles (SPVs).
- Public Sector Undertakings (PSUs).

Concern

- Masks the true extent of state liabilities.
- Reduces fiscal transparency.

Increase in Non-Performing Assets (NPAs)**Impact on Banking Sector**

- Anticipation of future waivers encourages defaults.

Result

- Increase in agricultural NPAs.

Consequences

- Weakens the financial health of lending institutions.

Historical Evolution of Farm Loan Waivers**Central Government Initiatives****Agriculture and Rural Debt Relief Scheme (ARDRS), 1990****Objective**

- Provide relief to indebted farmers.

Coverage

- Relief up to ₹10,000 per farmer.

Fiscal Cost

- Approximately ₹10,000 crore.

Agricultural Debt Waiver and Debt Relief Scheme (ADWDRS), 2008**Significance**

- One of the largest farm loan waiver programmes in India.

Fiscal Cost

- Around ₹52,500 crore.

Target Group

- Small and marginal farmers owning up to five acres.

State-Led Waiver Era**Trend**

- Responsibility for loan waivers has increasingly shifted to state governments.

Major States

- Andhra Pradesh
- Telangana
- Uttar Pradesh
- Maharashtra
- Karnataka
- Punjab
- Madhya Pradesh
- Chhattisgarh
- Jharkhand
- Tamil Nadu

Aggregate Cost

- State loan waivers since 2014 have collectively exceeded ₹2.5 lakh crore.

Economic Impact

- Accounted for nearly 1.4% of India's GDP (2016–17).

Alternatives to Farm Loan Waivers**Direct Income Support****PM-KISAN****Full Form**

- Pradhan Mantri Kisan Samman Nidhi.

Approach

- Direct cash transfer to farmers.

Advantages

- Predictable support.
- Does not disrupt credit culture.

State-Level Models**KALIA Scheme**

- Implemented by Odisha.

Rythu Bandhu

- Implemented by Telangana.

Benefits

- Covers a wider range of farmers.
- Supports cultivation expenses directly.

Strengthening Institutional Credit**Kisan Credit Card (KCC)****Objective**

- Provide affordable credit to farmers.

Benefit

- Reduces dependence on informal lenders.

Agricultural Market Reforms**e-NAM****Full Form**

- Electronic National Agriculture Market.

Objective

- Improve market access and price discovery.

Benefits

- Better price realization.
- Increased bargaining power for farmers.

Farmer Producer Organizations (FPOs)**Role**

- Aggregate small farmers.

Benefits

- Better market access.
- Economies of scale.
- Improved income opportunities.

Strengthening Crop Insurance**Pradhan Mantri Fasal Bima Yojana (PMFBY)****Objective**

- Protect farmers against crop losses.

Benefits

- Reduces vulnerability to:
 - Climate shocks.
 - Natural disasters.
 - Pest attacks.

Need

- Faster claim settlement.
- Wider coverage.

Investment in Agricultural Infrastructure**Micro-Irrigation****Per Drop More Crop**

- Promotes efficient water use.

Warehousing Infrastructure

- Reduces post-harvest losses.

Cold Chain Development

- Improves value realization.

Agro-Processing

- Creates rural employment and value addition.

Important Committee Recommendations

RBI Internal Working Group on Agricultural Credit (2019)

Recommendations

- Shift towards direct income support.
- Strengthen agricultural infrastructure.
- Improve market access through e-NAM.
- Reduce dependence on loan waivers.

Expert Group on Agricultural Indebtedness (2007)

Recommendations

- Expand institutional credit coverage.
- Promote Joint Liability Groups (JLGs).
- Improve access to affordable finance for vulnerable farmers.

Advantages of Farm Loan Waivers

Immediate Relief

- Reduces short-term debt burden.

Political and Social Stability

- Addresses farmer distress during crises.

Consumption Support

- Improves rural purchasing power in the short run.

Disadvantages of Farm Loan Waivers

Fiscal Stress

- Increases state debt and deficits.

Weak Credit Culture

- Encourages repayment indiscipline.

Exclusion of Vulnerable Groups

- Benefits only formal borrowers.

Reduced Capital Investment

- Diverts resources from productive infrastructure.

Higher NPAs

- Weakens banking sector stability.

Way Forward

Targeted Income Support

- Prefer direct benefit transfers over blanket waivers.

Expand Formal Credit Access

- Include tenant farmers and sharecroppers.

Strengthen Agricultural Infrastructure

- Prioritize irrigation, storage and logistics.

Improve Crop Insurance

- Ensure timely compensation.

Promote Fiscal Responsibility

- Align welfare measures with FRBM objectives.

Enhance Market Reforms

- Improve price realization and reduce income volatility.

Conclusion

- Farm loan waivers provide immediate relief during periods of severe agrarian distress, but they are not a sustainable solution to structural agricultural problems.
- Frequent waivers can weaken fiscal discipline, increase debt burdens, distort credit culture and reduce productive public investment.
- A balanced strategy combining direct income support, institutional credit expansion, market reforms, crop insurance, and agricultural infrastructure development offers a more sustainable pathway for improving farmer welfare while preserving long-term fiscal stability.

GI Tags for 11 Traditional Products of Jharkhand



Why in News?

- Jharkhand has received Geographical Indication (GI) Tags for 11 traditional products, showcasing its rich tribal heritage in art, handloom, handicrafts, and traditional food products.
- The recognition strengthens the state's cultural identity while promoting indigenous craftsmanship and local livelihoods.

Products Granted GI Tag

Handloom and Textiles

- Bhoya Saree and Fabric
- Kuchai Silk Saree
- Tumka Chadar
- Pancho Saree and Fabric
- Tussar Silk and Sarees

Traditional Crafts

- Dokra Craft
- Jharkhand Bamboo Craft

- Munda Jewellery

Traditional Paintings

- Baroni Paintings
- Jadopatia Painting

Food Product

- Kesaria Kalakand

Previous GI Recognition

Sohrai Painting

- Earlier, Sohrai Painting from Jharkhand had also received GI status.

Significance

- Improved market recognition.
- Enhanced livelihood opportunities for tribal artists and artisans.
- Promoted preservation of indigenous art traditions.

What is a Geographical Indication (GI) Tag?

Definition

- A Geographical Indication (GI) is a sign or name used on products that possess a specific geographical origin and qualities, reputation, or characteristics essentially attributable to that place.

Purpose

- Establishes a link between the product and its geographical origin.

Examples

- Darjeeling Tea
- Basmati Rice
- Mysore Silk

Key Features of GI Tags

Exclusive Usage Rights

Provision

- Only authorized producers from the designated geographical area can use the registered product name.

Benefit

- Prevents unauthorized use of the product identity.

Protection Against Imitation

Purpose

- Protects traditional products from copying and counterfeiting.

Benefit

- Safeguards authenticity and reputation.

Recognition of Traditional Knowledge

Importance

- Preserves indigenous knowledge and cultural heritage.

Outcome

- Encourages continuation of traditional practices.

Validity of GI Registration

Duration

- A GI registration remains valid for 10 years.

Renewal

- Can be renewed indefinitely every 10 years.

Authority Responsible for GI Registration

Nodal Department

- Department for Promotion of Industry and Internal Trade

Ministry

- Ministry of Commerce and Industry

Legal Framework Governing GI Tags

National Framework

Geographical Indications of Goods (Registration and Protection) Act, 1999

Purpose

- Provides legal protection to GI products in India.

Objectives

- Prevent misuse of geographical names.
- Protect producers' rights.
- Promote rural and traditional industries.

International Framework

TRIPS Agreement

Full Form

- Trade-Related Aspects of Intellectual Property Rights.

Institution

- Administered by the World Trade Organization.

Purpose

- Provides international protection for Geographical Indications.

Significance of GI Tags for Jharkhand

Preservation of Tribal Heritage

Importance

- Protects centuries-old tribal traditions and craftsmanship.

Outcome

- Strengthens cultural identity.

Economic Empowerment

Benefits

- Better market access.
- Higher product value.
- Increased income for artisans and weavers.

Promotion of Indigenous Crafts

Impact

- Encourages demand for traditional products.

Result

- Supports sustainable livelihoods.

Brand Building

Advantage

- Enhances national and international recognition of products.

Outcome

- Improves competitiveness in domestic and global markets.

Rural Development

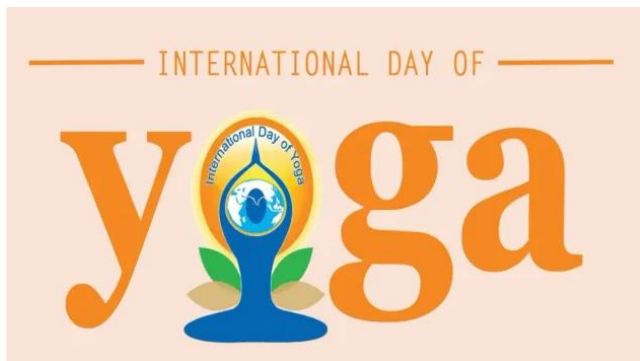
Contribution

- Generates employment in rural and tribal regions.

Benefit

- Reduces migration and promotes local entrepreneurship.

International Day of Yoga (IDY) 2026



Why in News?

- As India celebrates the 12th International Day of Yoga (IDY) on 21 June 2026, the Ministry of Ayush announced that the Yoga Sangam Portal has crossed a major milestone with over 6 lakh organizations registering to participate in nationwide yoga sessions.
- Participants across the country will perform yoga simultaneously with the Prime Minister, making it one of the largest coordinated wellness events globally.
- The International Day of Yoga 2026, themed "Yoga for Healthy Ageing", emphasizes Yoga's role in promoting physical, mental, emotional, and spiritual well-being.
- The event highlights Yoga's transformation from an ancient Indian knowledge system into a globally recognized wellness practice.

- India is increasingly using Yoga as a tool of soft power diplomacy, wellness tourism, cultural outreach, and global engagement.

Key Highlights of International Day of Yoga (IDY) 2026

Theme: "Yoga for Healthy Ageing"

- The theme focuses on promoting:
 - Physical vitality.
 - Mental resilience.
 - Emotional well-being.
 - Holistic health across all stages of life.

Alignment with WHO Initiative

- Aligns with the World Health Organization initiative "Decade of Healthy Ageing (2021–2030)".

Objectives

- Promote healthy and active ageing.
- Improve quality of life among older adults.
- Reduce fall-related risks.
- Encourage person-centered approaches to health and well-being.

Yoga Sangam Initiative

About

- A flagship initiative of the Ministry of Ayush.

Objective

- Connect institutions and communities across India through synchronized yoga sessions.

Methodology

- Sessions are conducted based on the Common Yoga Protocol (CYP).

Unique Feature

- Organizations conduct yoga sessions at their own venues while remaining part of a collective national movement.

Significance

- Encourages mass participation.
- Strengthens community engagement.
- Promotes nationwide awareness about Yoga.

International Day of Yoga (IDY)

UNGA Declaration

- In 2014, the United Nations General Assembly adopted an India-sponsored resolution declaring 21 June as the International Day of Yoga.
- The resolution was adopted under the agenda of Global Health and Foreign Policy.

Significance of 21 June

- 21 June marks the Summer Solstice, the longest day in the Northern Hemisphere.

- In Indian tradition, it is associated with the beginning of Yogic science.

Recognition by the United Nations

- **The UN recognized Yoga for:**
 - Promoting holistic health.
 - Building resilience against non-communicable diseases (NCDs).
 - Reducing stress and improving mental well-being.

First International Day of Yoga (2015)

Theme

- "Yoga for Harmony and Peace"

Venue

- Rajpath, New Delhi.

Achievements

Guinness World Record

- World's largest yoga class with 35,985 participants.

Second Guinness World Record

- Participation of 84 nationalities in a single yoga event.

Symbolism of the IDY Logo

Folded Hands

- Represent harmony and union of consciousness.

Brown Leaves

- Symbolize Earth.

Green Leaves

- Represent Nature.

Blue Colour

- Symbolizes Water.

Brightness

- Represents Fire.

Sun

- Symbolizes energy, vitality, and the source of life.

Overall Message

- Reflects harmony between human beings and nature.

Nodal Ministry

Ministry of Ayush

- The Ministry of Ayush is the nodal ministry responsible for organizing and coordinating International Day of Yoga celebrations in India.

Functions

- Promote Yoga nationally and internationally.
- Coordinate Yoga-related initiatives.
- Develop standards and awareness programmes.
- Facilitate global cooperation in traditional wellness systems.

Yoga as India's Soft Power Tool

Cultural Diplomacy

- Projects India's civilizational heritage globally.

Yoga Diplomacy

- Strengthens India's international engagement through cultural outreach.

Wellness Tourism

- Attracts international visitors seeking holistic health experiences.

Global Outreach

- Promotes Yoga through international events, cultural exchanges, and digital platforms.

Vision of Vishwabandhu

- Reinforces India's image as a "Friend of the World" committed to global well-being.

Social Media, Mainstream Media and Democratic Journalism



Why in News?

- Amid concerns over misinformation on social media, the NEET 2026 paper leak controversy, and the misuse of digital platforms, debates over the credibility and sustainability of Mainstream Media (MSM) have resurfaced.
- Experts emphasize the need for a strong, independent, and subscriber-supported media ecosystem to safeguard informed public discourse and democratic governance.
- Social media has democratized information sharing and citizen participation but has also accelerated fake news, misinformation, echo chambers, and societal polarization.
- Mainstream Media faces challenges from the attention economy, corporate influence, regulatory weaknesses, and political pressures.
- Strengthening media institutions, improving media literacy, ensuring algorithmic transparency, and supporting independent journalism are essential for protecting democracy.

How has Social Media Disrupted Information Flow?

Shift to Horizontal Information Flow

- Information dissemination has shifted from a traditional vertical model (media to citizens) to a horizontal model (peer-to-peer sharing).
- Citizens can directly share information, opinions, and experiences without traditional gatekeepers.

Democratization of Information

- Social media has empowered citizens to hold governments and institutions accountable.
- It has enabled rapid dissemination of information during public issues and crises.

Rapid Spread of Misinformation

- Unverified information spreads quickly across platforms.
- Fake news can manipulate public opinion and create social unrest.

Algorithmic Amplification

- Social media platforms use AI-driven algorithms that prioritize engagement.
- Content matching users' existing beliefs is promoted more aggressively.

Echo Chambers and Filter Bubbles

- Users are increasingly exposed only to similar viewpoints.
- This limits exposure to diverse opinions and increases polarization.

Current Crisis Facing Mainstream Media (MSM)

Attention Economy

- Media organizations increasingly compete with social media for audience attention.
- Clickbait headlines, sensational debates, and short-form content often replace substantive reporting.

Decline of Ground Reporting

- Studio-centric discussions are increasingly replacing field-based journalism.
- Public-interest reporting receives less attention.

Yellow Journalism

- Sensationalism is often prioritized over factual and balanced reporting.
- Commercial interests may outweigh journalistic ethics.

Corporate Influence on Media

Conflict of Interest

- Corporate ownership of media houses may influence editorial decisions.

Self-Censorship

- Reporting that could negatively affect parent companies may be suppressed.

SLAPP Suits

- Strategic Lawsuits Against Public Participation (SLAPPs) are often used to intimidate investigative journalists.

Political and Regulatory Challenges

Executive Pressure

- Governments may exert influence through regulatory or financial mechanisms.

Advertising Dependence

- Dependence on government advertising can affect editorial independence.

Regulatory Gaps

- India lacks strong statutory safeguards against excessive cross-media ownership.

Institutional Weaknesses

Press Council of India (PCI)

About

- Established under the Press Council Act, 1978.

Limitations

- Lacks punitive enforcement powers.
- Jurisdiction primarily limited to print media.
- Cannot effectively regulate digital and electronic media.

IT Rules 2021 Concerns

- Raised concerns regarding government oversight of digital news platforms.
- Triggered debates regarding freedom of expression under Article 19(1)(a).

Important Judicial Pronouncements

Raj Narain vs State of Uttar Pradesh (1975)

- Recognized citizens' Right to Information as part of freedom of speech and expression.

Bennett Coleman & Co. vs Union of India (1972)

- Held that financial restrictions affecting media viability can violate Article 19(1)(a).

Secretary, Ministry of I&B vs CAB (1995)

- Declared airwaves as public property requiring plurality of opinions.

Shreya Singhal vs Union of India (2015)

- Struck down Section 66A of the IT Act.
- Emphasized protection against laws causing a chilling effect on free speech.

Madhyamam Broadcasting Ltd. vs Union of India (2023)

- Restricted arbitrary use of national security grounds against media organizations.

Challenges to Press Freedom

Violence and Intimidation

- Journalists continue to face threats, harassment, and attacks.

Declining Trust

- Public confidence in traditional media institutions has weakened.

Digital Competition

- Social media platforms increasingly dominate information consumption.

Financial Sustainability

- Independent journalism struggles due to declining advertising revenues.

Democratic Implications

Accountability Deficit

- Weak journalism reduces scrutiny of governments and powerful institutions.

Information Disorder

- Citizens may find it difficult to distinguish facts from misinformation.

Polarization

- Algorithm-driven content contributes to social and political divisions.

Measures Needed to Restore Democratic Journalism

Strengthen Fact-Checking

- Establish robust fact-checking mechanisms.
- Create internal ombudsman systems within media organizations.

Strengthen Press Council of India

- Expand powers and oversight mechanisms.
- Improve complaint redressal systems.

Subscriber-Funded Journalism

- Encourage user-supported media models.
- Reduce dependence on corporate and political funding.

Revive Beat Reporting

- Promote specialized reporting on governance, economy, health, environment, and public policy.

Enact Anti-SLAPP Laws

- Protect journalists from malicious lawsuits designed to suppress investigative reporting.

Protect Freedom of Expression

- Safeguard constitutional guarantees under Article 19(1)(a).

Algorithmic Transparency

- Require digital platforms to disclose how content is promoted and prioritized.

Promote Media Literacy

- Integrate media literacy into educational curricula.
- Equip citizens to identify misinformation and verify sources.

International Best Practices

Australia's News Media Bargaining Code

- Requires large technology companies to compensate news publishers for content usage.
- Supports sustainability of independent journalism.

European Union's Digital Services Act (DSA)

- Enhances accountability of large online platforms.
- Promotes transparency in algorithms and content moderation.
- Addresses misinformation, hate speech, and election manipulation.

Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)



Why in News?

- The Prime Minister released over ₹18,880 crore as the 23rd instalment of the PM-KISAN scheme in West Bengal.
- Nearly 9.44 crore farmers, including over 2.18 crore women farmers, received financial assistance through the Direct Benefit Transfer (DBT) system during PM Kisan Utsav Diwas.

What is PM-KISAN?

About

- Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) is a Central Sector Scheme launched in 2019.
- It provides direct income support to eligible landholding farmer families across India.

Objective

- Enhance farmers' income security.
- Support the purchase of agricultural inputs such as seeds, fertilizers, and pesticides.
- Improve agricultural productivity.
- Reduce dependence on informal credit sources.

Financial Assistance**Amount Provided**

- Each eligible farmer family receives ₹6,000 annually.

Mode of Payment

- Paid in three equal instalments of ₹2,000 each every year.

Budget Allocation

- The Union Budget 2026–27 allocated ₹60,000 crore for the scheme.

Direct Benefit Transfer (DBT)**Mode of Transfer**

- Funds are transferred directly into Aadhaar-seeded bank accounts.

Benefits

- Eliminates middlemen.
- Reduces leakages.
- Ensures timely payments.
- Enhances transparency and accountability.

Achievements of PM-KISAN**Largest DBT Programme**

- More than ₹4.46 lakh crore has been transferred through 23 instalments.

Women Beneficiaries

- Over 23% of beneficiaries are women farmers.

Financial Inclusion

- Promotes formal banking and digital payments among farmers.

Beneficiary Identification**Role of State Governments**

- States identify eligible farmer families.

Database Maintained**Includes:**

- Name.
- Age.
- Category.
- Aadhaar number.
- Bank account details.
- Mobile number.

Monitoring Mechanism**Multi-Tier Monitoring**

- National level.
- State level.
- District level.

National Oversight

- Periodic review is chaired by the Cabinet Secretary.

Digital Governance Features**PM-KISAN Portal**

- Online registration.
- Beneficiary verification.
- Payment tracking.
- Grievance redressal.

Mobile Application

- Facilitates easy access to scheme services.

e-KYC

- Ensures authentication and prevents duplication.

Transparency Measures**Public Display of Beneficiary Lists**

- Lists are displayed at village level.

Benefits

- Enhances transparency.
- Prevents duplication.
- Enables excluded farmers to seek inclusion.

Significance of PM-KISAN**Income Security**

- Provides assured financial support to farmers.

Improved Liquidity

- Helps farmers meet seasonal agricultural expenses.

Enhanced Farm Investment

- Encourages investment in quality inputs and modern farming practices.

Agricultural Resilience

- Supports farmers during adverse agricultural conditions.

Farmer Empowerment

- Strengthens financial independence and decision-making capacity.

Kisan-eMitra: AI-Based Farmer Support System**About**

- Kisan-eMitra is an AI-enabled chatbot launched in 2023 under the PM-KISAN digital ecosystem.

Technical Support**Developed with support from:**

- EkStep Foundation

- BHASHINI

Objective

- Provide real-time information related to:
 - PM-KISAN payments.
 - Registration status.
 - Eligibility criteria.
 - Scheme-related services.

Languages Supported

Available in 11 major Indian languages:

- Hindi.
- English.
- Tamil.
- Bengali.
- Odia.
- Malayalam.
- Gujarati.
- Punjabi.
- Telugu.
- Marathi.
- Kannada.

Features

- Voice-based interaction.
- Text-based queries.
- Application status tracking.
- Payment updates.
- 24×7 assistance.

Challenges

Exclusion Errors

- Some eligible farmers remain outside the beneficiary database.

Land Record Issues

- Inaccurate or outdated land records affect eligibility verification.

Digital Divide

- Limited digital literacy in certain rural areas.

e-KYC Compliance

- Delays in e-KYC completion may affect fund transfers.

Way Forward

Strengthen Land Record Digitization

- Improve accuracy and updating of land records.

Enhance Digital Awareness

- Promote digital literacy among farmers.

Improve Grievance Redressal

- Ensure timely resolution of beneficiary issues.

Expand AI-Based Support

- Further strengthen Kisan-eMitra and other digital services.

Promote Inclusive Coverage

- Ensure all eligible farmers are enrolled and receive benefits without delay.

Padma Awards 2026



Why in News?

- The President of India conferred the second set of Padma Awards 2026 during the Civil Investiture Ceremony held at Rashtrapati Bhavan.
- A total of 65 Padma Awards were presented to distinguished individuals for their exceptional contributions across various fields.

About Padma Awards

Overview

- The Padma Awards are among India's highest civilian honours.
- Announced annually on the occasion of Republic Day.
- Recognize exceptional achievements and service in diverse fields such as:
 - Art.
 - Literature.
 - Education.
 - Science and Engineering.
 - Medicine.
 - Public Affairs.
 - Social Work.
 - Sports.
 - Civil Service.

Categories of Padma Awards

Padma Vibhushan

- Awarded for exceptional and distinguished service.

- Second-highest civilian award after the Bharat Ratna.

Padma Bhushan

- Awarded for distinguished service of a high order.

Padma Shri

- Awarded for distinguished service in any field.

Padma Vibhushan Awardees 2026

K. T. Thomas

Field

- Public Affairs.

Contribution

- Distinguished service in the judiciary and public life.

P. Narayanan

Field

- Literature and Education.

Contribution

- Significant contributions to journalism and literary development.

Key Padma Bhushan Awardees

Dattatreya N. N. Nori

- Renowned cancer specialist and medical researcher.

S. K. M. Maeilanandhan

- Recognized for contributions to industry and economic development.

Vellappally Natesan

- Honoured for contributions to social welfare and education.

Shibu Soren (Posthumous)

- Recognized for contributions to public affairs and tribal welfare.

Sports and Entertainment Personalities Awarded Padma Bhushan

Vijay Amritraj

- Former tennis legend and sports ambassador.

Mammooty

- Veteran actor known for contributions to Indian cinema.

Alka Yagnik

- Celebrated singer with significant contributions to Indian music.

Notable Padma Shri Awardees

Chandramouli Gaddamanugu

Contribution

- Scientist at the Defence Research and Development Laboratory (DRDL).

- Played a key role in the development and deployment of the Akash Missile System.
- Contributed significantly during Operation Sindoor.

Budhri Tati

Contribution

- Worked for education and women empowerment in the Naxal-affected Bastar region.

Guru Sangyusang Pongener

Contribution

- Preserved and promoted the cultural heritage of Nagaland.

Vladimir Mestvirishvili (Posthumous)

Contribution

- Mentored Indian Olympic wrestlers including:
 - Sushil Kumar
 - Yogeshwar Dutt
 - Ravi Dahiya

Asok Kumar Haldar

Contribution

- Prominent writer known for contributions to literature and social discourse.

Prominent Public Figures Awarded Padma Shri

Rohit Sharma

- Honoured for outstanding contributions to cricket.

Savita Punia

- Recognized for achievements in Indian hockey.

R. Madhavan

- Honoured for contributions to Indian cinema.

Satish Shah (Posthumous)

- Recognized for contributions to Indian entertainment.

Significance of Padma Awards

Recognition of Excellence

- Honour individuals who have made exceptional contributions to society.

Promotion of National Service

- Encourages dedication and excellence across diverse fields.

Celebration of Diversity

- Recognizes contributions from science, arts, sports, literature, social service, and public affairs.

Inspiration for Future Generations

- Motivates citizens to contribute meaningfully to nation-building.

Challenges

Ensuring Wider Representation

- Need for greater recognition of grassroots innovators and unsung heroes.

Public Awareness

- Many awardees from remote regions remain less known despite significant contributions.

Way Forward

Promote Inclusive Recognition

- Continue identifying deserving individuals from diverse backgrounds and regions.

Highlight Grassroots Achievements

- Increase visibility of local heroes and community leaders.

Strengthen Transparency

- Ensure a fair and transparent nomination process.

Encourage Excellence

- Use national honours to inspire innovation, service, and leadership across society.

EDITORIALS

Crux of The Hindu & Indian Express

Indian Society & Social Justice Unified Health Interface (UHI)



Why in News?

- Union Health Minister **Jagat Prakash Nadda** launched the **Unified Health Interface (UHI)**, an interoperable digital network for health services.
- UHI is the service layer of the **Ayushman Bharat Digital Mission**, enabling patients and healthcare providers to connect seamlessly across different digital platforms.

What is Unified Health Interface (UHI)? About

- UHI is an open digital network built on common technical standards.
- It allows patients and healthcare providers to interact irrespective of the application they use.
- It removes platform dependency and enables seamless access to healthcare services.

Need for UHI

- In the existing digital health ecosystem, both patients and providers must be on the same platform to interact.
- This limits:
 - Choice of healthcare providers.
 - Accessibility of services.
 - Market access for smaller healthcare providers.

Objective

- Create a unified, interoperable, and citizen-centric digital health ecosystem.
- Ensure universal access to verified healthcare services.

How UHI Works?

Core Infrastructure

- UHI operates through open protocols on the ABDM Gateway.
- The system is developed and maintained by the **National Health Authority**.

Process

1. A citizen searches for a health service through a UHI-enabled application.
2. The request is routed through the UHI Gateway.
3. Registered healthcare providers receive and respond to the request.
4. Discovery, booking, and service delivery occur seamlessly across platforms.

ABDM Building Blocks Used

ABHA

- Unique digital health identity of individuals.

Healthcare Professionals Registry (HPR)

- Registry of verified healthcare professionals.

Health Facility Registry (HFR)

- Registry of verified healthcare facilities.

Health Information Exchange

- Enables consent-based sharing of health records.

Core Principles of UHI

Interoperability

- Patients and providers can use any UHI-enabled platform.
- Eliminates dependence on a single application.

Fair Discoverability

- Every verified healthcare provider gets equal visibility.
- Promotes inclusiveness irrespective of size or location.

Verification

- Only verified healthcare professionals and facilities can participate.
- Ensures trust and reliability.

Open Protocols

- Built on open standards accessible to all developers.
- Supports innovation across languages and devices.

Benefits of UHI

For Citizens

- Access to verified healthcare services through any compatible application.
- Greater choice of healthcare providers.
- Transparent and seamless service delivery.

For Rural and Semi-Urban Areas

- Reduces dependence on informal healthcare networks.
- Improves accessibility to quality healthcare services.

For Healthcare Providers

- Equal opportunity to access patients across the network.
- Reduced reliance on specific digital platforms.

For Developers and Innovators

- Open architecture encourages innovation.
- Facilitates development of healthcare applications in multiple languages and formats.

Services Available on UHI

Blood Bank Discovery

- Citizens can check real-time blood availability across the country.
- Integrated with e-RaktKosh.

PM-JAY Empanelled Hospital Search

- Enables beneficiaries of **Pradhan Mantri Jan Arogya Yojana** to locate empanelled hospitals.
- Search can be based on location and speciality.

Jan Aushadhi Kendra Discovery

- Helps citizens locate nearby **Pradhan Mantri Bhartiya Janaushadhi Pariyojana** centres.
- Promotes access to affordable generic medicines.

Ambulance Discovery and Booking

- Real-time discovery and booking of verified ambulance services.
- Enhances emergency healthcare access.

Doctor Consultations

- Search and book in-person consultations.
- Access multiple healthcare providers through a single platform.

Future Services Planned Under UHI

Lab Diagnostics Discovery

- Search and book diagnostic tests nearby.

Vaccination Centre Discovery

- Locate vaccination centres and book appointments.

Pharmacy Discovery

- Access information about licensed private and government pharmacies.

Government Health Service Integration

- Integration of major government health programmes into a unified network.

Ayushman Bharat Digital Mission (ABDM)

About

- Flagship digital health initiative of the Government of India.
- Launched to create a comprehensive digital health ecosystem.

Objectives

- Develop interoperable digital health infrastructure.
- Enable secure health data exchange.
- Improve accessibility and efficiency of healthcare services.

Significance of UHI

Citizen-Centric Healthcare

- Places citizens at the centre of healthcare delivery.

Universal Discoverability

- Makes healthcare services easily searchable and accessible.

Digital Health Inclusion

- Expands access to quality healthcare in underserved areas.

Healthcare Market Efficiency

- Creates a level playing field for healthcare providers.

Innovation Ecosystem

- Encourages startups and technology companies to build health solutions.

Challenges

Digital Literacy

- Adoption may be slower among digitally less-aware populations.

Connectivity Issues

- Rural and remote regions may face internet access constraints.

Data Privacy and Security

- Requires strong safeguards for health data protection.

Provider Onboarding

- Large-scale enrolment of healthcare providers is necessary for network success.

Way Forward

Expand Network Participation

- Increase onboarding of hospitals, clinics, laboratories, and pharmacies.

Strengthen Digital Infrastructure

- Improve internet connectivity and digital accessibility.

Enhance Awareness

- Promote citizen awareness regarding UHI-enabled services.

Ensure Data Security

- Strengthen privacy safeguards and consent-based data sharing mechanisms.

Integrate More Health Services

- Gradually bring all major public and private healthcare services onto the platform.

NATIONAL FAMILY HEALTH SURVEY-6 (NFHS-6) (2023–24)



National Family Health Survey (NFHS-6), 2023-24

Why in News?

- The **Ministry of Health and Family Welfare (MoHFW)** released the findings of **National Family Health Survey-6 (NFHS-6)** for the period **2023–24**.
- The survey reveals major improvements in **maternal health, child nutrition, immunization coverage, women's empowerment and healthcare access**.
- However, it also highlights emerging concerns such as rising **obesity, non-communicable diseases (NCDs), excessive Caesarean deliveries**, and the removal of several important indicators from the survey framework.

About National Family Health Survey (NFHS)

- The **National Family Health Survey (NFHS)** is India's largest multi-round household survey that collects data related to **health, nutrition, fertility, family welfare and population dynamics**.
- It provides nationally representative and district-level estimates which are extensively used for policy formulation and programme monitoring.

Key Facts

Particular	Details
First Survey	1992–93 (NFHS-1)
Latest Survey	NFHS-6 (2023–24)
Nodal Agency	International Institute for Population Sciences (IIPS), Mumbai
Commissioned By	Ministry of Health and Family Welfare
Coverage	6.79 lakh households
Districts Covered	715 districts
Exclusion	Manipur

Major Findings of NFHS-6

1. Significant Improvement in Maternal Healthcare

- Maternal healthcare indicators have shown steady improvement, indicating better access to healthcare services and stronger implementation of government programmes.

Institutional Deliveries

- The proportion of births occurring in healthcare facilities increased from **88.6% in NFHS-5** to **90.6% in NFHS-6**.
- This indicates that India is moving closer to achieving universal safe childbirth.

Skilled Birth Attendance

- Births attended by trained health personnel increased from **89.4% to 91.3%**, reducing risks associated with childbirth complications.

Antenatal Care (ANC)

- The survey reports that **95.9% of pregnant women registered for antenatal care**, while registration during the crucial first trimester increased from **70% to 76.2%**.
- The proportion of women receiving at least four ANC visits also improved significantly, reflecting better continuity of maternal care.

Postnatal Care

- Postnatal care for newborns within two days of delivery increased from **79.1% to 85.3%**, ensuring timely identification of complications among mothers and infants.

Improved Iron-Folic Acid Consumption

- Consumption of **Iron Folic Acid (IFA)** tablets for more than 100 days during pregnancy increased from **44.1% to 54.9%**, while consumption for over 180 days increased from **26% to 37.8%**.

Government Programmes Behind the Progress

The improvement in maternal health indicators is linked to the implementation of:

- Janani Suraksha Yojana (JSY)
- Janani Shishu Suraksha Karyakram (JSSK)
- Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)
- SUMAN (Surakshit Matritva Aashwasan)
- Pradhan Mantri Matru Vandana Yojana (PMMVY 2.0)

2. Child Nutrition Indicators Show Improvement

- The survey records a decline in major forms of child malnutrition, suggesting positive outcomes from nutrition-focused interventions.

Reduction in Stunting

- The proportion of children under five suffering from **stunting (low height-for-age)** declined significantly from **35.5% to 29.3%**.

Reduction in Severe Wasting

- **Severe wasting (low weight-for-height)** reduced from **7.7% to 5.2%**, indicating improvement in acute nutritional status.

Underweight Children

- The proportion of underweight children declined marginally from **32.1% to 31.8%**.

Better Complementary Feeding Practices

- The percentage of children aged 6–8 months receiving complementary food along with breastmilk increased from **45.9% to 59.5%**.

Policy Drivers

These improvements are attributed to:

- POSHAN Abhiyaan
- POSHAN 2.0
- Saksham Anganwadi
- Integrated Child Development Services (ICDS)

3. Expansion of Immunization Coverage

- NFHS-6 records significant progress in childhood immunization.
- Full vaccination coverage among children aged 12–23 months increased from **83.8% to 87.1%**, while **95.6% of vaccinations** were administered through public healthcare facilities.

Vaccine-Specific Improvements

- **Rotavirus vaccination coverage** increased from **36.4% to 85.4%**.
- **Second dose of Measles vaccine coverage** increased from **58.6% to 71.8%**.

Supporting Initiatives

The gains are linked to:

- Universal Immunization Programme (UIP)
- U-WIN Digital Platform
- Strengthening of **cold-chain infrastructure**

As a result, the prevalence of **Acute Respiratory Infections (ARI)** and severe diarrhoea among children also declined.

4. Population Stabilisation Continues

- India's **Total Fertility Rate (TFR)** remains stable at **2.0**, which is below the replacement-level fertility rate of **2.1**.
- This indicates that India has largely entered a phase of population stabilisation.
- The **Contraceptive Prevalence Rate (CPR)** increased from **66.7% to 69.1%**, suggesting improved access to family planning services.

5. Women's Empowerment Indicators Improve

- One of the most striking findings of NFHS-6 is the rapid improvement in indicators related to women's empowerment.

Digital Inclusion

- The proportion of women who have ever used the internet nearly doubled from **33.3% to 64.3%**.
- Similarly, women owning and using a personal mobile phone increased from **53.9% to 63.6%**.

Financial Inclusion

- Women operating their own bank or savings accounts increased from **78.6% to 89%**, reflecting greater financial autonomy.

Menstrual Hygiene

- Use of hygienic menstrual products among young women increased from **77.6% to 79.2%**.

Reduced Spousal Violence

- Women reporting spousal violence declined from **29.3% to 22.3%**, indicating gradual improvement in gender-related outcomes.

6. Health Insurance Coverage Expands Rapidly

- The share of households covered by health insurance increased from **41% to 60.2%**.
- A major contributor to this growth has been **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY)**, which aims to reduce out-of-pocket healthcare expenditure.

Major Concerns Highlighted by NFHS-6

Rising Caesarean Section Deliveries

- The proportion of births delivered through **Caesarean Section (C-Section)** increased sharply from **21.5% to 27.2%**, significantly exceeding the **World Health Organization's recommended range of 10–15%**.
- Private hospitals reported an exceptionally high C-section rate of **54.1%**, compared to **16.9% in public hospitals**, raising concerns regarding commercialization of maternal healthcare.

Dual Burden of Malnutrition

- Despite improvements, India continues to face a dual challenge.
- While nearly **one-third of children remain stunted**, obesity levels among adults have increased sharply.
- Among women, obesity increased from **24% to 30.7%**, while among men it increased from **22.9% to 27.3%**.

- This indicates that India simultaneously faces problems of **undernutrition and overnutrition**.

Rising Non-Communicable Diseases (NCDs)

Increasing obesity is accompanied by rising prevalence of:

- **Diabetes**
- **Hypertension**
- Other lifestyle-related diseases

This reflects India's ongoing epidemiological transition from infectious diseases to chronic diseases.

Controversy: Removal of Important Indicators

- One of the most debated aspects of NFHS-6 is the reduction in the number of indicators.
- The preliminary NFHS-6 fact sheet contains only **101 indicators**, compared to **131 indicators in NFHS-5**.
- Overall, **43 indicators were removed**, while only **13 new indicators were added**.

Important Indicators Removed

The following indicators have been excluded:

Health Indicators

- Anaemia
- Neonatal Mortality Rate (NMR)
- Infant Mortality Rate (IMR)
- Under-Five Mortality Rate (U5MR)

Gender Indicators

- Sex Ratio at Birth
- Overall Sex Ratio

Social Development Indicators

- Sanitation Coverage
- Clean Cooking Fuel Usage

Public Health Indicators

- **Cancer Screening**
- **Several HIV Awareness Indicators**

Why Was Anaemia Removed?

- The removal of anaemia data generated significant debate.
- NFHS traditionally measured haemoglobin using a **finger-prick blood sample**, which several researchers argued tended to overestimate anaemia prevalence.
- Consequently, anaemia measurement has been shifted to the **Diet and Biomarkers Survey in India (DBSI)** conducted by the Indian Council of Medical Research and National Institute of Nutrition.

- Unlike NFHS, this survey uses **venous blood samples**, which are considered more accurate.
- However, the absence of anaemia data from NFHS weakens direct monitoring of the **Anaemia Mukht Bharat Mission**.

New Areas Added in NFHS-6

NFHS-6 introduces several new themes reflecting India's digital transformation.

These include:

- Direct Benefit Transfers (DBTs)
- Self-Help Groups (SHGs)
- Digital Literacy
- Digital Financial Transactions
- Hepatitis-B Testing
- Hepatitis-C Testing
- Reintroduction of HIV Testing

Way Forward

- India must focus on regulating excessive C-sections, strengthening nutrition interventions, addressing the growing burden of obesity and NCDs, and improving continuity of antenatal care.
- At the same time, experts argue that future rounds of NFHS should restore critical indicators such as **anaemia, mortality, sanitation coverage, sex ratio at birth, and cancer screening** to preserve the survey's role as India's most comprehensive health database.

Conclusion

NFHS-6 presents a mixed but largely positive picture of India's health and social development journey. The survey demonstrates substantial gains in maternal and child health, immunization, digital inclusion, financial empowerment and healthcare access. However, persistent child undernutrition, rising obesity, increasing lifestyle diseases and the removal of key monitoring indicators highlight areas that require sustained policy attention. For India to achieve its **Sustainable Development Goals (SDGs)**, future efforts must focus on strengthening preventive healthcare, nutrition security, women's empowerment and evidence-based public policy.

RISA (Timeless Tribal): Premium Brand for Tribal Textiles and Handicrafts

Why in News?

- On **10 June 2026**, the **Ministry of Tribal Affairs**, through the **Tribal Cooperative Marketing Development Federation of India (TRIFED)**, launched **RISA – Timeless Tribal**, a dedicated premium brand for tribal textiles, embroideries and handicrafts.
- An exclusive **RISA Store** was inaugurated at **Rajiv Gandhi Handicrafts Bhawan, Connaught Place, New Delhi**.
- The initiative aims to promote tribal products in premium domestic and international markets while ensuring better livelihood opportunities for tribal artisans.

What is RISA?

RISA – Timeless Tribal

- RISA is a premium branding initiative for:
 - Tribal textiles.
 - Traditional embroideries.
 - Tribal handicrafts.
 - Indigenous artisan products.
- It seeks to create a distinct national and global identity for tribal craftsmanship.

Objectives of RISA

Promote Tribal Heritage

- Showcase India's rich tribal cultural traditions.
- Preserve indigenous knowledge and craftsmanship.

Create Strong Brand Identity

- Establish a premium market image for tribal products.
- Position tribal crafts as high-value cultural products.

Strengthen Market Linkages

- Connect tribal artisans directly with consumers.
- Expand access to national and international markets.

Product Diversification

- Develop contemporary products while retaining traditional authenticity.

Economic Empowerment

- Increase income opportunities for tribal artisans.
- Promote sustainable livelihoods in tribal regions.

Key Vision Behind RISA

Supporting Viksit Bharat

The initiative aligns with the government's vision of:

Viksit Bharat (Developed India)

through:

- Inclusive economic growth.
- Tribal empowerment.
- Cultural preservation.
- Sustainable development.

Major Tribal Textile Traditions Selected

In the first phase, **seven tribal textile and embroidery traditions** have been identified.

1. Eri Silk

State

- Assam

Significance

- Also known as "Peace Silk".
- Produced without killing the silkworm.
- Environment-friendly and sustainable.

2. Muga Silk

State

- Assam

Significance

- Famous for its natural golden sheen.
- Unique to Northeast India.
- Holds GI tag recognition.

3. Santal Cotton

State

- Jharkhand

Community

- Santal Tribe

Importance

- Traditional tribal weaving tradition.
- Reflects indigenous cultural identity.

4. Changpa Pashmina

Region

- Ladakh

Community

- Changpa Nomadic Tribe

Significance

- Produced from Changthangi goats.
- Known globally for premium quality wool.

5. Kotpad Cotton

State

- Odisha

Features

- Natural vegetable dyes.
- Traditional tribal weaving techniques.

6. Dongria Embroidery

State

- Odisha

Community

- Dongria Kondh Tribe

Importance

- Distinctive embroidery patterns.
- Represents tribal cultural heritage.

7. Toda Embroidery

State

- Tamil Nadu

Community

- Toda Tribe

Features

- Intricate red and black geometric embroidery.
- Recognized as a unique tribal art form.

Promotion of Tribal Handicrafts

Apart from textiles, the initiative also promotes selected tribal handicrafts.

Longpi Pottery

State

- Manipur

Special Feature

- Black pottery made without a potter's wheel.
- Uses traditional handcrafting techniques.

Turtuk Brass Cutlery

Region

- Ladakh

Significance

- Traditional handcrafted brass products.
- Reflects local cultural heritage.

Dokhra Art

State

- Chhattisgarh

Special Feature

- Ancient metal casting technique.
- Uses the lost-wax casting method.

Role of Fashion Designers

To improve product appeal and marketability, several renowned designers have been associated with the project.

Their Role

- Develop contemporary product lines.
- Improve market appeal.
- Maintain traditional authenticity.
- Create premium collections for domestic and international consumers.

Institutional Support

National Design Centre (NDC)

Role

The initiative is being implemented through:

National Design Centre

Functions

- Design development.
- Product innovation.
- Prototype creation.
- Capacity building.
- Cluster strengthening.
- Skill upgradation.

Role of National Institute of Design (NID)

National Institute of Design Haryana

has been engaged for:

- Premium packaging design.
- Sustainable packaging solutions.
- Brand presentation improvement.

Key Components of the RISA Initiative

Design Development

- Modern product designs.
- Market-oriented innovation.

Capacity Building

- Training tribal artisans and weavers.
- Enhancing technical skills.

Infrastructure Support

- Establishment of stitching facilities.
- Strengthening production clusters.

Product Presentation

- Improved packaging.
- Better branding and marketing.

Market Expansion

- Access to premium retail markets.
- International promotion of tribal products.

Significance of RISA

Economic Empowerment

- Enhances income of tribal artisans.
- Creates sustainable livelihood opportunities.
- Supports rural and tribal economies.

Women Empowerment

- Many tribal craft traditions are led by women artisans.
- Improves financial independence of tribal women.

Cultural Preservation

- Protects traditional crafts from extinction.
- Preserves indigenous knowledge systems.
- Promotes tribal identity and heritage.

Sustainable Development

- Encourages eco-friendly production methods.
- Promotes traditional sustainable practices.

Global Recognition

- Enhances visibility of tribal products.
- Creates opportunities in export markets.
- Positions Indian tribal crafts in premium global segments.

About TRIFED

Tribal Cooperative Marketing Development Federation of India (TRIFED)

Established

- 1987

Ministry

- Ministry of Tribal Affairs

Objective

- Socio-economic development of tribal communities.
- Marketing support for tribal products.
- Promotion of tribal entrepreneurship.

Major Initiatives of TRIFED

- Van Dhan Vikas Yojana
- Tribes India
- Minimum Support Price (MSP) for Minor Forest Produce

- **RISA – Timeless Tribal**

Way Forward

Expand Global Market Access

- Promote tribal products through exports and international exhibitions.

Strengthen Branding

- Build a strong premium identity for tribal crafts.

Increase Digital Marketing

- Utilize e-commerce platforms for wider outreach.

Enhance Skill Development

- Continuous training and design innovation.

Promote Sustainable Production

- Encourage environmentally responsible manufacturing practices.

Conclusion

The launch of **RISA – Timeless Tribal** marks a significant step towards the **economic empowerment of tribal communities**, preservation of India's rich tribal heritage, and promotion of indigenous crafts in premium markets. By combining **traditional knowledge with modern design, branding and market access**, the initiative aims to transform tribal artisans into key contributors to India's cultural economy while advancing the vision of **inclusive growth and Viksit Bharat**.

Kisan Sarathi Platform



Why in News?

- The Government highlighted the achievements and expanding reach of the **Kisan Sarathi Platform**, India's largest integrated digital agro-advisory platform.
- As of June 2026, the platform has registered **2.95 crore farmers** and is providing agricultural advisory services across **36 States/UTs**, **768 districts**, and **6.63 lakh villages**.

What is Kisan Sarathi?

About

- Kisan Sarathi** is a national digital agricultural advisory platform launched in **July 2021**.
- It provides timely, authentic, multilingual, and location-specific advisories to farmers.
- It serves as a one-stop platform for agricultural information, expert consultation, government schemes, weather updates, and market intelligence.

Developed By

- Ministry of Agriculture and Farmers Welfare
- Ministry of Electronics and Information Technology

Implemented By

- Indian Agricultural Statistics Research Institute
- Digital India Corporation

Objectives of Kisan Sarathi

Digital Agricultural Extension

- Deliver scientific agricultural knowledge directly to farmers.

Farmer Empowerment

- Enable informed decision-making through real-time information.

Technology Integration

- Create a unified digital ecosystem for agricultural services.

Lab-to-Land Transfer

- Facilitate the transfer of research findings and technologies from institutions to farmers.

Technology Backbone: Interactive Information Dissemination System (IIDS)

About IIDS

- Kisan Sarathi is powered by the **Interactive Information Dissemination System (IIDS)**.
- It enables two-way communication between farmers and agricultural experts.

Communication Modes

- Voice calls.
- Video calls.
- Text messages.
- Image sharing.
- Video exchange through chat.

Key Functions

- Personalized advisories.
- Service subscriptions.
- Modification of subscriptions.
- Access to farmer interaction history.
- Tailored recommendations.

Know Your Farmer (KYF) Approach

Features

- Maintains farmer profiles and interaction history.
- Helps experts understand local conditions and farmer needs.
- Improves the accuracy and relevance of advisories.

Institutional Network Connected to Kisan Sarathi

Krishi Vigyan Kendras (KVKs)

- More than **730 KVKs** connected to the platform.

ICAR Institutions

- Over **100 ICAR institutes** integrated.
- Network of **4,767 ICAR scientists**.
- Support from **113 ICAR institutions**.

Agricultural Universities

- More than **65 agricultural universities** participate.

Integration with National Digital Platforms

Kisan Call Centre

- Direct telephonic support for farmers.

Common Service Centres

- Digital access points in rural areas.

India Meteorological Department

- Weather forecasts and climate advisories.

MyScheme Portal

- Access to government welfare schemes.

BHASHINI

- Multilingual communication and translation support.

Access Channels for Farmers

Farmers can access Kisan Sarathi through:

- Kisan Call Centres.
- Common Service Centres (CSCs).
- Web Portal.
- Mobile Application.
- WhatsApp.

Significance

- Ensures inclusion despite differences in internet access and digital literacy.

Major Services Offered

Agricultural Advisory

- Region-specific and crop-specific recommendations.
- Real-time expert guidance.

Weather Information

- Timely weather forecasts and alerts.

Market Intelligence

- District-wise mandi prices.
- Market trends for major crops.

Government Schemes

- Information on eligible schemes.
- Status tracking of benefits.

Scheme Coverage

- Total schemes available: **610**
- Central government schemes: **102**

Expert Consultation

- Direct interaction with KVK experts.
- Advisory services in local languages.

Training and Capacity Building

- Online training sessions.
- Video consultations and demonstrations.

Coverage of Agricultural Sectors

Crop Sector

Advisories cover:

- Cereals.
- Pulses.
- Oilseeds.
- Horticulture crops.
- Plantation crops.
- Fodder crops.

Allied Sectors

- Livestock.
- Poultry.
- Fisheries.
- Allied agricultural activities.

Key Features of Kisan Sarathi

Personalized Advisory

- Based on farmer profile and farm characteristics.

Multilingual Support

- Live interaction in **13 regional languages**.

Push Notifications

- Location-specific alerts and advisories.

Knowledge Database

- Access to scientific agricultural information.

Easy Registration

- Registration through toll-free numbers and online platforms.

Call and Conferencing Facilities

- Direct communication with experts.

Achievements and Reach (As of June 2026)

Geographical Coverage

- 36 States and Union Territories.
- 768 districts.
- 6.63 lakh villages.

Farmer Registration

- 2.95 crore registered farmers.
- 56.16 lakh women beneficiaries.

Registration Channels

- 2.89 crore through KVKs.
- 5.35 lakh through Kisan Call Centres.
- 39,193 through CSCs.
- 21,517 through mobile applications.
- 2,416 through the web portal.

Service Delivery

- 19.21 lakh farmer queries addressed.
- 21,900 advisories released.

- Coverage of **351 commodities** across **34 States/UTs**.

Benefits for Agricultural Stakeholders

For Farmers

- Easy access to reliable and localized information.
- Better farm-level decision-making.
- Improved productivity and income opportunities.

For ICAR Institutions and Universities

- Wider dissemination of research findings.
- Better outreach to farming communities.

For KVKs and Experts

- Faster and more efficient advisory delivery.
- Improved technology transfer from laboratory to field.

For Policymakers

- Access to real-time field data and analytics.
- Better evidence-based policy formulation.

Challenges

Digital Divide

- Variations in internet access and digital literacy.

Awareness Gaps

- Many farmers remain unaware of digital advisory services.

Language and Regional Diversity

- Need for continuous expansion of localized content.

Infrastructure Constraints

- Connectivity issues in remote and tribal areas.

eSushrut@Clinic and Aarogya Setu 2.0



Why in News?

- The Union Health Ministry is set to launch **eSushrut@Clinic**, an affordable digital health management system for small clinics across India.
- The Ministry will also launch **Aarogya Setu 2.0**, transforming the pandemic-era application into a comprehensive personal health record and digital health platform.

eSushrut@Clinic

About

- eSushrut@Clinic is a lightweight **Hospital Management Information System (HMIS)** designed specifically for small outpatient clinics.
- It has been developed by the **Centre for Development of Advanced Computing**.
- The platform aims to support digitisation of healthcare services at affordable costs.

Need for eSushrut@Clinic

- Many small clinics continue to rely on manual record-keeping.
- Existing HMIS solutions are often:
 - Expensive.
 - Complex to operate.
 - Difficult to implement in small healthcare facilities.
- States and Union Territories have also expressed demand for a simple government-backed HMIS solution.

Objectives

Digital Transformation of Small Clinics

- Promote digitisation of healthcare records and services.

Affordable Healthcare Technology

- Provide low-cost digital solutions for small healthcare facilities.

Support Ayushman Bharat Digital Mission (ABDM)

- Increase adoption of digital health infrastructure across India.

Key Features of eSushrut@Clinic

Cloud-Based HMIS

- Lightweight and cloud-enabled platform.

Patient Management

- Patient registration.
- Appointment management.
- Billing services.

User-Friendly Interface

- Easy to use.
- Requires minimal technical expertise.

Device Accessibility

- Can be accessed from multiple devices without complex installations.

Reduced Administrative Burden

- Simplifies routine clinic operations.
- Reduces paperwork and errors.

Implementation and Coverage

Current Status

- More than **800 healthcare facilities** have already been onboarded.

eSushrut Software Deployment

- The broader eSushrut software is being implemented in:
 - More than **15 AIIMS institutions**.
 - Several state government hospitals.

Cost Structure

Standard Cost

- ₹499 per month for five users.

Government Support

- The **National Health Authority** will provide a subsidy of ₹200.

Effective Cost

- ₹299 per month for five users.

Additional Benefits

- Free access during the first three months.
- Additional users can be added at ₹50 per user per month.

NHA–C-DAC Partnership

Memorandum of Understanding (MoU)

- NHA and C-DAC will collaborate for implementation.

Responsibilities

C-DAC

- Maintenance of the platform.
- Software upgrades and technical support.

NHA

- Financial support.
- Promotion and facilitation under ABDM.

Ayushman Bharat Digital Mission (ABDM)

About

- National digital health initiative launched to build an integrated digital health ecosystem.

Objectives

- Create interoperable digital health infrastructure.
- Improve healthcare accessibility.
- Enable seamless health data exchange.

Aarogya Setu 2.0

Background

- Originally launched during the **COVID-19 Pandemic** for contact tracing and risk awareness.
- Now redesigned as a comprehensive citizen-centric digital health platform.

Objective

- Serve as a personal health record (PHR) application.
- Provide access to multiple digital health services through a single platform.

Key Features of Aarogya Setu 2.0

Personal Health Records

- Storage of:
 - Medical reports.
 - Laboratory reports.
 - Health documents in PDF and image formats.

Personalised Health Dashboard

- Health information based on individual medical history.

Health Monitoring

- Integrated tracking of:
 - Heart rate.
 - Glucose levels.
 - Calories burned.
 - Physical activity and steps.

Wearable Device Integration

- Synchronisation with fitness and health-tracking devices.

Medicine Management

- Medication reminders.
- Prescription tracking.

PM-JAY Wallet Integration

Feature

- Displays healthcare coverage under **Pradhan Mantri Jan Arogya Yojana**.

Information Available

- Total coverage amount.
- Amount utilised.
- Family-wise healthcare expenditure.

Healthcare Service Discovery

Hospital Search

- Search empanelled PM-JAY hospitals.
- Filters available for:
 - State.
 - District.
 - Speciality.
 - PIN code.
 - Facility name.

Blood Availability

- Real-time blood unit availability through **e-RaktKosh**.

Ambulance Booking

- Access verified ambulance services.

Healthcare Facility Discovery

- Locate nearby hospitals and healthcare centres.

Significance of eSushrut@Clinic

Affordable Digitisation

- Enables small clinics to adopt digital healthcare systems.

Improved Record Management

- Reduces paperwork and enhances efficiency.

Better Patient Care

- Faster service delivery and improved data management.

Support to ABDM

- Expands the digital health ecosystem to grassroots healthcare facilities.

Significance of Aarogya Setu 2.0

Citizen-Centric Healthcare

- Provides a single platform for health management.

Integrated Health Services

- Combines health records, monitoring, insurance information, and healthcare access.

Digital Health Inclusion

- Improves accessibility to healthcare services nationwide.

Preventive Healthcare

- Encourages proactive health monitoring and management.

Challenges

Digital Literacy

- Adoption may be limited among digitally less-aware populations.

Data Privacy and Security

- Requires robust safeguards for personal health data.

Internet Connectivity

- Rural and remote areas may face access constraints.

Capacity Building

- Healthcare workers and clinic staff require training for effective utilization.

Way Forward

Expand Adoption

- Increase onboarding of private clinics and public health facilities.

Strengthen Digital Infrastructure

- Improve connectivity and digital access in underserved regions.

Ensure Data Security

- Strengthen privacy protections and consent-based data sharing.

Promote Awareness

- Encourage citizens and healthcare providers to adopt digital health solutions.

Integrate More Services

- Continue expanding healthcare services under the ABDM ecosystem.

Conclusion

- The launch of **eSushrut@Clinic** and **Aarogya Setu 2.0** marks an important step in India's digital health transformation by making healthcare management more affordable, accessible, efficient, and citizen-centric, while advancing the objectives of the **Ayushman Bharat Digital Mission**.

Bharat Taxi: Cooperative Ride-Hailing Platform



Why in News?

- Union Home Minister **Amit Shah** launched **Bharat Taxi**, a cooperative-model ride-hailing platform, in **Gandhinagar**.
- The initiative aims to provide a fair and transparent alternative to private ride-hailing aggregators while promoting driver ownership and welfare.

What is Bharat Taxi?

About

- Bharat Taxi is a cooperative-based mobility platform inspired by the **Amul** model.
- It seeks to ensure equitable benefits for both service providers and customers.

- The platform operates on the principle of collective ownership by transport operators.

Objective

- Reduce exploitation of drivers by private aggregators.
- Promote economic security and social welfare of transport operators.
- Strengthen cooperative participation in the digital economy.

Key Highlights of the Launch

Driver Ownership Model

- Around **7 lakh drivers** have become shareholders and co-owners of the cooperative enterprise.
- Drivers will participate in decision-making and share the benefits generated by the platform.

Fair Revenue Distribution

- The cooperative structure aims to ensure that profits are distributed among members rather than concentrated with corporate entities.
- Seeks to provide long-term financial security to transport operators.

Multi-Segment Operations

The platform will operate across:

- Two-wheelers.
- Auto-rickshaws.
- Four-wheelers.

Institutional Partnerships

- Bharat Taxi signed Memorandums of Understanding (MoUs) with:
 - Ahmedabad Airport.
 - Local municipal authorities.
- These agreements will facilitate wider operational integration.

Issues Raised Against Existing Ride-Hailing Platforms

Driver Exploitation

According to the government, private aggregators have been accused of:

- Retaining a large share of revenues.
- Arbitrarily suspending operators.
- Creating systems that disadvantage drivers.

Lack of Ownership

- Drivers generally function as service providers without ownership stakes in platform companies.

Income Uncertainty

- Earnings often fluctuate due to changing commission structures and platform policies.

Cooperative Model in India

What is a Cooperative?

- A cooperative is an organization owned and managed by its members for their mutual benefit.
- Members share profits, responsibilities, and decision-making powers.

Key Features

- Democratic governance.
- Shared ownership.
- Equitable distribution of benefits.
- Focus on community welfare.

Amul Model as Inspiration

About Amul

- **Gujarat Cooperative Milk Marketing Federation** is India's most successful dairy cooperative.
- It empowered millions of dairy farmers through collective ownership and marketing.

Relevance to Bharat Taxi

- Demonstrates how cooperative enterprises can compete successfully with private corporations.
- Encourages inclusive growth and member participation.

Significance of Bharat Taxi

Driver Empowerment

- Provides ownership rights and financial participation to transport operators.

Inclusive Economic Growth

- Promotes cooperative entrepreneurship and wealth creation.

Digital Platform Cooperatives

- Represents a new model of platform-based economic organization in India.

Employment Generation

- Strengthens livelihood opportunities in the mobility and transportation sector.

Consumer Welfare

- Seeks to create a transparent system benefiting both customers and service providers.

Challenges

Competition from Established Aggregators

- Existing platforms possess large customer bases and extensive market presence.

Pricing Pressures

- Competitive pricing strategies may affect the growth of new entrants.

Technology and Scaling

- Continuous technological upgrades and service quality improvements will be required.

Operational Sustainability

- Ensuring profitability while maintaining cooperative principles may be challenging.

Government's Vision

Cooperative Development

- The initiative aligns with the government's emphasis on strengthening the cooperative sector.

Atmanirbhar Bharat

- Supports self-reliance through community-owned enterprises.

Digital Inclusion

- Expands participation of workers in India's digital economy.

Way Forward

Strengthen Cooperative Governance

- Ensure transparent management and accountability mechanisms.

Expand Digital Infrastructure

- Invest in technology, customer support, and service quality.

Enhance Driver Welfare

- Provide social security, insurance, and skill development opportunities.

Promote Public Participation

- Encourage citizens to support cooperative platforms.

Scale Across India

- Gradually expand operations beyond Gujarat to create a nationwide cooperative mobility ecosystem.

Samagra Shishu Bal Swasthya Karyakram (SSBSK)



Why in News?

- Union Health Minister **Jagat Prakash Nadda** launched the **Samagra Shishu Bal Swasthya**

Karyakram (SSBSK) during the 16th Conference of Central Council of Health and Family Welfare (CCHFW).

- The programme aims to provide a **seamless continuum of home and community-based care** for every child from birth to **36 months of age**.

About SSBSK

Vision

- Based on the concept of **(Comprehensive Care During the First Three Years)**.
- Focuses on ensuring holistic child development during the most critical phase of life.

Objective

- Strengthen newborn and child healthcare services.
- Improve child survival, nutrition, growth, and development.
- Provide integrated care from birth to three years of age.

Coverage

- Children from birth to **36 months**.
- Special focus on vulnerable and high-risk children.

Key Features of SSBSK

Integration of Existing Programmes

SSBSK integrates:

- **Home-Based Newborn Care (HBNC)**.
- **Home-Based Care for Young Child (HBYC)**.

Significance

- Creates a unified framework for child healthcare.
- Ensures continuity of care during the first three years of life.

Risk-Stratified Approach

Identification of 'At-Risk' Children

Children are categorized as "At-Risk" if they have:

- Low birth weight.
- Premature birth.
- Delayed initiation of breastfeeding.
- Discharge from newborn care units.
- Malnutrition.
- Recurrent illness.
- Developmental delays.

Enhanced Home Visits

For At-Risk Newborns

- Up to **9 home visits** during the first **42 days** of life.

For At-Risk Children

- Up to **8 home visits** up to the age of **36 months**.

Purpose

- Early detection of complications.
- Timely intervention and referral.
- Continuous monitoring of growth and development.

Community-Based Care Framework

Key Functionaries Involved

- Accredited Social Health Activists (**ASHAs**).
- Auxiliary Nurse Midwives (**ANMs**).
- Community Health Officers (**CHOs**).
- Anganwadi Workers (**AWWs**).

Joint Home Visits

For At-Risk Newborns

- Day 3.
- Day 7.

For At-Risk Children

- Third month.
- Sixth month.

Benefits

- Coordinated care delivery.
- Better counselling and follow-up.
- Improved referral mechanisms.

Well-Baby Sessions

Village Health, Sanitation and Nutrition Day (VHSND)

- Well-Baby Sessions will be conducted regularly.

Objectives

- Growth monitoring.
- Developmental assessment.
- Early identification of health concerns.

Monthly Shishu Shivir

Venue

- Conducted at **Ayushman Arogya Mandirs**.

Functions

- Screening of children.
- Developmental assessments.
- Community-based management of health conditions.

Maternal Mental Health Component

Importance

- Recognizes the close link between maternal and child well-being.

Role of ASHAs

- Conduct postpartum mental health screening.
- Facilitate referral for counselling and treatment when required.

Significance

- Supports both maternal health and healthy child development.

Nurturing Care for Early Childhood Development (ECD)

Key Components

- Responsive caregiving.
- Early learning opportunities.
- Age-appropriate play.
- Child safety.
- Family participation.

Objective

- Promote cognitive, emotional, social, and physical development.

Digital Health Integration

Decision Support Systems (DSS)

- Assist healthcare workers in service delivery and follow-up.

Child-Wise Digital Tracking

- Monitor individual children throughout the care continuum.

Referral and Alert Systems

- Enable timely interventions for vulnerable children.

Integration with National Digital Health Platforms

SSBSK will be linked with:

JANANI Portal

- Maternal and newborn care tracking.

U-WIN Portal

- Vaccination and immunisation management.

MPCDSR Portal

- Monitoring maternal and child mortality.

RBSK 2.0 Portal

- Child health screening and intervention.

POSHAN Tracker

- Nutrition monitoring and service delivery.

Digital Identity

- Utilizes:
 - ABHA ID.
 - Baal-ABHA ID.

Focus on Urban Vulnerable Populations

Target Groups

- Slum dwellers.
- Migrant populations.
- Underserved urban communities.

Objective

- Ensure equitable access to child healthcare services.

Addressing Digital Era Challenges

Emerging Concerns

- Excessive screen exposure.
- Reduced physical interaction among children.

Potential Risks

- Delayed brain development.
- Emotional and behavioural issues.
- Reduced social skills.

SSBSK Response

- Encourages:
 - Physical activity.
 - Interactive play.
 - Mental stimulation.
 - Family engagement.

Significance of SSBSK

Improved Child Survival

- Strengthens care during the critical neonatal period.

Early Childhood Development

- Supports healthy cognitive and physical growth.

Integrated Healthcare Delivery

- Brings together health, nutrition, and developmental services.

Technology-Enabled Monitoring

- Enhances efficiency and accountability through digital platforms.

Support for Vulnerable Children

- Provides targeted interventions for high-risk groups.

Challenges

Implementation Capacity

- Requires effective coordination among frontline workers.

Digital Infrastructure Gaps

- Rural and remote areas may face connectivity challenges.

Human Resource Constraints

- Additional responsibilities for ASHAs and health workers.

Monitoring and Follow-Up

- Ensuring timely and quality service delivery across the country.

Way Forward

Strengthen Frontline Workforce

- Provide training and capacity-building support.

Enhance Digital Infrastructure

- Improve connectivity and interoperability of health platforms.

Promote Community Participation

- Increase awareness among families regarding child development.

Focus on Early Intervention

- Strengthen screening and referral systems for at-risk children.

Ensure Universal Coverage

- Expand access to quality child healthcare services across rural and urban India.

Conclusion

- The **Samagra Shishu Bal Swasthya Karyakram (SSBSK)** marks a major step towards strengthening India's maternal, newborn, and child healthcare ecosystem through an integrated, community-based, and digitally enabled approach, ensuring healthier beginnings and better developmental outcomes for every child.

□□□

Economics

Progress of India's Design Linked Incentive (DLI) Scheme



Why in News?

The Union Minister announced that India's Design Linked Incentive (DLI) scheme is showing positive outcomes in developing the country's domestic semiconductor ecosystem.

About the Design Linked Incentive (DLI) Scheme

- **Core Objective:** It is a strategic program aimed at positioning India as a global hub for semiconductor design by building robust fabless (design-only) capabilities.
- **Nodal Ministry:** Implemented by the Ministry of Electronics and Information Technology (MeitY) as part of the umbrella **Semicon India Programme**.
- **Key Goals:** Aimed at reducing import reliance on microelectronics, boosting supply chain resilience, and escalating local value addition.
- **Nodal Implementing Agency:** Centre for Development of Advanced Computing (C-DAC).
- **Technical Coverage:** Supports semiconductor layout design across the entire lifecycle (from creation to deployment) for Integrated Circuits (ICs), chipsets, Systems-on-Chip (SoCs), complex systems, and IP cores.

Eligibility Criteria

- **Start-ups & MSMEs:** Eligible for both direct fiscal incentives and shared design infrastructure access for semiconductor product design and market deployment.
- **Other Domestic Companies:** Eligible for fiscal incentives linked explicitly to the deployment of qualified semiconductor designs.

Fiscal Incentives & Policy Support

1. Product Design Linked Incentive

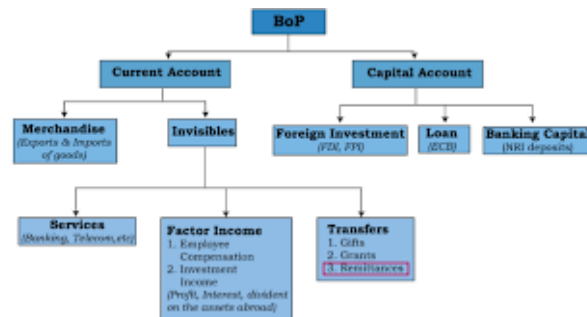
- **Financial Support:** Reimbursement of up to **50%** of total eligible development expenditure.
- **Ceiling Limit:** Capped strictly at **Rs 15 crore** per application.
- **Eligible Fields:** Development of ICs, chipsets, SoCs, and related semiconductor intellectual properties.

2. Deployment Linked Incentive

- **Financial Support:** Cash incentives ranging from **6% to 4%** of the net sales turnover over a fixed block of 5 years.
- **Ceiling Limit:** Capped strictly at **Rs 30 crore** per application.

- **Minimum Sales Threshold:** To unlock incentives over years 1-5, cumulative net sales must hit a minimum of **Rs 1 crore** for startups or MSMEs, and **Rs 5 crore** for larger domestic firms.

Remittances as an Anchor for India's External Balances



Why in News?

The critical role of inward remittances in managing India's external balances has been highlighted by economists. Amidst global economic headwinds, volatile Foreign Portfolio Investments (FPIs), and a widening merchandise trade deficit, remittances have emerged as the unsung hero of India's macroeconomic stability.

How India's External Balances are Anchored by Remittances

- **Cushioning the Current Account Deficit (CAD):**
 - **Balance of Payments (BoP) Structure:** The BoP is divided into the Current Account and the Capital Account. Remittances are categorized under the Current Account as "Invisibles." In India's BoP, invisibles include services, income, and transfers. Private transfers or personal transfers comprise remittances, which form a part of Net Secondary Income (NSI) in the Current Account.
 - **Offsetting Trade Deficit:** India operates structurally as a CAD economy driven by a widening merchandise trade gap, which ballooned from roughly USD 6 billion in 2000-01 to USD 284 billion in 2024-25. In 2024-25, 47.5% of this massive trade deficit was covered by remittances alone.
 - **A Liability-Free Surplus:** A massive, liability-free surplus is provided by remittances to offset a significant portion of this trade deficit, keeping the overall CAD within a manageable and safe threshold (usually targeted below 2.5% of GDP). Since mid-

2013, more than the entire volume of India's merchandise trade deficit has been financed, on average, by remittance inflows.

- **Stabilizing the Rupee:** Unlike FPIs, which are considered "hot money" and can trigger rapid capital outflows during global uncertainties (such as US Federal Reserve rate hikes), a stable and continuous supply of foreign currency (like US Dollars, Euros, and UAE Dirhams) is provided by remittances to the Indian economy.
- **Currency Demand:** A persistent demand for the Rupee is created when these foreign currencies are converted into INR for domestic use by families. This buffers the domestic currency against sharp depreciations caused by volatile foreign investor sell-offs.

Significance for the Indian Economy

- **Non-Debt Creating Inflows:** Unlike External Commercial Borrowings (ECBs) or Foreign Direct Investment (FDI), which involve future repayment obligations or dividend repatriations, remittances are private, non-returnable transfers.
- **Forex Reserves:** The burden on the Reserve Bank of India (RBI) to actively intervene in the forex market is reduced by these inflows, aiding in the accumulation and preservation of India's robust forex reserves.
- **Socio-Economic Development:** At the micro level, domestic consumption is directly boosted by these funds, health and education outcomes are improved for recipient families, and regional growth is driven (historically notable in states like Kerala, Maharashtra, Karnataka, and Tamil Nadu).

What are Remittances?

- **Definition:** Cross-border financial transfers sent by migrant workers and Non-Resident Indians (NRIs) back to their home country to support families and local communities are defined as remittances.
- **Drivers:** These flows are largely driven by "altruistic motives" (family obligations) rather than "investment motives," making them highly stable and less vulnerable to sudden global financial shocks.
- **Regulatory Framework:** All foreign exchange transactions in India are regulated by the Foreign Exchange Management Act (FEMA), 1999.

- **The Liberalized Remittance Scheme (LRS):** Under the LRS, which functions as a part of FEMA, up to USD 250,000 per year can be remitted by Indian residents for personal and investment purposes, with higher amounts requiring RBI approval. However, remittances for gambling, speculative trading, and terrorist financing are prohibited under the LRS.

- **Account Types:** Remittances to India can be received through NRE (Non-Resident External), NRO (Non-Resident Ordinary), and FCNR (Foreign Currency Non-Resident) accounts.

Status of Remittances in India

- **World's Top Recipient:** India has been maintained as the world's largest recipient of remittances since 2008.
- **Massive Scale of Inflows:** A level of USD 135 billion was reached by remittances in 2024-25, comfortably outpacing gross FDI inflows—a trend that has held true for most years between 2000-01 and 2024-25.
- **India's Remittance Profile:** According to the RBI survey on remittances published in 2025 (tracking data between 2016-17 and 2023-24), a decisive structural shift has occurred:
 - **Dominance of Advanced Economies:** More than 50% of total remittance inflows to India are now accounted for by advanced nations (the US, UK, Singapore, Canada, and Australia).
 - **The Rise of the US:** The UAE has been overtaken by the US as the single largest source of remittances. The US share increased from 22.9% to 27.7%.
 - **Decline of the GCC Share:** The combined share of the Gulf countries has slipped down to 38%, with the UAE's individual share falling from 26.9% to 19.2%.
 - **Skill-Base Transformation:** This geographical shift indicates that high-wage, skilled professionals working in OECD countries are now out-remitting semi-skilled and unskilled blue-collar labor based in the Gulf.

Key Concerns

- **Policy and Visa Vulnerabilities:** India's vulnerability to host-country immigration policies and tightening visa regimes is increased by the rising concentration of remittances from advanced economies.

- **Technological Disruption:** High-wage white-collar tech jobs, which form the mainstay of recent remittance success, are threatened by rapid AI-driven automation in the West.
- **Geopolitical Risks:** Large volumes of blue-collar workers risk being displaced by geopolitical friction in the GCC region and local nationalization drives. Ultimately, the current account deficit will be severely widened and the rupee destabilized if any stagnation in these inflows occurs amid negative FDI and FPI trends.

India's First Blue Bond for Maritime Infrastructure



Why in News?

Plans to issue India's first blue bond were recently announced by the **Sagarmala Finance Corporation**. The move aims to diversify its funding sources and finance key maritime and coastal infrastructure projects.

What is a Blue Bond?

- **Definition:** A **blue bond** is a financial debt tool used to raise money specifically for projects linked to **oceans, seas, coasts, rivers**, and other water-based ecosystems.
- **Target Audience:** It generally targets global investors who are looking to put money into **environmentally focused** and sustainable finance options.
- **Purpose:** The collected funds will be used to give out loans for building **maritime and coastal infrastructure**, including ports, port connectivity, **shipbuilding**, inland waterways, and coastal road networks.

Blue Bond vs. Green Bond

Feature	Blue Bond	Green Bond
Primary Focus	Ocean, marine, and water-related sustainable projects	Broader climate, clean energy, and environmental projects
Target Area	Fisheries, ports, and marine conservation	Solar power, electric vehicles, and green buildings

Global and National Context

- **Global Examples:** The world's first sovereign blue bond was issued by **Seychelles** in **2018**, while **Belize** used a debt-for-ocean swap in **2021** to fund marine conservation.
- **India's Relevance:** India has a **long coastline**, large fishing communities, an extensive port network, and climate-vulnerable coastal zones. This makes blue bonds vital for funding sustainable projects.
- **Blue Economy Link:** India's blue economy covers fisheries, shipping, offshore energy, and coastal tourism. It adds about **4% to the GDP** and supports around **4 million livelihoods**.

Significance of the Move

- **Global Funds:** It helps India attract international **sustainable finance** and reduces the heavy reliance on government budgets.
- **Community Support:** It helps protect and support **coastal communities** while balancing maritime business growth with **marine conservation**.

About Sagarmala Finance Corporation

- **Overview:** It is a state-owned, maritime-focused lender set up in **2016** under the **Ministry of Ports, Shipping and Waterways**.
- **Status:** It officially received its **Non-Banking Financial Company (NBFC)** license from the RBI in **June 2025**.

Mission Senehjori for Assam Muga Silk



Why in News?

The launch of **Mission "Senehjori"** – Assam Muga Silk USP was recently executed by the Union

Minister for Development of North Eastern Region (MDoNER) alongside the Assam Chief Minister. The cluster-based initiative is designed to completely transform the state's Muga silk sector.

About Muga Silk

- **Unique Nature:** It is recognized as the world's only **naturally golden silk**. The fiber is obtained from the silkworm *Antheraea assamensis*, which is fed on Som and Soalu host plants.
- **Heritage Status:** The craft is deeply intertwined with Assam's cultural heritage and stands as **India's first GI-tagged silk**. It is highly valued across luxury textile markets for its durability and unique golden color.

Strategic Framework of Mission Senehjori

Component	Operational Details and Institutional Targets
Implementation Area	Active implementation is directed across major Muga-producing clusters in districts like Jorhat, Sivasagar, Lakhimpur, Dhemaji, Dibrugarh, Tinsukia, Majuli, and Suaikuchi .
Primary Objective	The development of a premium, traceable, export-oriented, and globally competitive luxury silk ecosystem is targeted while strengthening the regional cultural economy.
Financial Outlay	An estimated investment of ₹396-411 crore is allocated over a three-year period, which includes a dedicated ₹136-151 crore contribution from MDoNER.
Livelihood Support	Vital economic backing is provided to nearly 2.6 lakh rearer and weaver families to systematically enhance rural incomes and better monetize the sector.
Value Chain Upgrades	Comprehensive strengthening is planned for host-plant cultivation, silkworm seed production, reeling, weaving, branding, quality assurance, digital traceability, and export promotion.
Institutional Backing	Structural growth is driven through Farmer Producer Organisations (FPOs), Common Facility Centres (CFCs), Farmer Interest Groups, and strict GI authentication under the unified " Senehjori " brand.

Key Targets by 2028

- **Processing Infrastructure:** The establishment of five modernized Muga reeling units and a dedicated Muga Spun Mill is planned.
- **Community Groups:** The creation of **30 FPOs** and over **1180 Farmer Interest Groups** will be completed.
- **Ecological Renewal:** The regeneration of **5000 hectares** of Som and Soalu host plants is targeted to safeguard the silkworm habitat.
- **Traceability Goals:** Over **80% of traded Muga silk** is expected to be GI-authenticated and linked with digital traceability systems.

Silk Tourism Integration

- **Heritage Trails:** The development of a specialized **Muga Silk Trail** and a dedicated Silk Tourism Park is envisioned.

- **Cultural Festivals:** Annual **Muga Utsav** festivals will be organized to actively promote Assam's unique silk heritage and boost the local cultural economy.

RBI Annual Report 2025-26



Why in News?

The **Annual Report for 2025-26** was released by the **Reserve Bank of India (RBI)**. It highlights that the Indian economy is expected to remain resilient in the financial year **2026-27 (FY27)**, successfully navigating a challenging external environment marked by the ongoing West Asia conflict, elevated energy prices, and global supply chain disruptions.

Key Highlights of the Report (2025-26)

- **Domestic Growth and Output:** India maintained its position as one of the fastest-growing major economies. Real GDP growth for 2025-26 is estimated at **7.3%** (revised upward from 6.5%). This momentum was driven by an **11.5% growth in Manufacturing GVA** (Gross Value Added), alongside strong rural demand and a service sector expansion of 8.7%.
- **Inflation and Prices:** The average headline Consumer Price Index (CPI) for 2025-26 was revised downward to as low as **2.0%** by December 2025 due to dropping food prices. However, core inflation remained steady around **4.0%**, limiting the scope for aggressive policy easing.
- **Government and State Finances:** The Central Gross Fiscal Deficit (GFD) dropped to **4.4% of GDP** in 2025-26, with a target of **4.3%** for 2026-27. Non-tax revenue grew by 24.4%. Under the **16th Finance Commission**, the states' share of the divisible tax pool was retained at **41%**, introducing a 10% weight for a state's contribution to national GDP while post-devolution revenue deficit grants were stopped.

India's External Sector Performance

Economic Component	Status and Trends (2025-26)
Merchandise Trade	The merchandise trade deficit widened to USD 333.2 billion . In a major trade shift, China overtook the US as India's largest trading partner. Trade pacts were signed with the UK, Oman, and New Zealand.
Services and Remittances	Net services exports grew by 15.3%. Workers' remittances posted a 10.1% growth , with the average cost of sending USD 200 to India sitting at 5.3% (below the 6.4% global average).
Current Account (CAD)	The Current Account Deficit was safely contained at USD 30.2 billion (1.1% of GDP) between April and December 2025.
Foreign Exchange Reserves	Forex reserves declined on a Balance of Payments (BoP) basis by USD 30.8 billion due to capital flow shortfalls, yet they still provide an 11-month import cover. The external debt-to-GDP ratio stayed low at 20.4%.

Monetary Policy and Banking Performance

- **Repo Rate Actions:** A cumulative **100 bps cut** was executed by the Monetary Policy Committee (MPC) during 2025-26, bringing the policy repo rate down to **5.25%**.
- **Liquidity Infusion:** The Cash Reserve Ratio (CRR) was slashed by 100 bps to **3.0%**, injecting roughly **Rs 2.5 lakh crore** of durable liquidity into the banking system.
- **Lending Transmission:** Bank credit grew in double digits. In response to the central bank's cuts, weighted average lending rates (WALRs) on fresh rupee loans dropped by 95 bps.

Economic Outlook and Strategic Initiatives for 2026-27

- **Growth and Inflation Targets:** Real GDP growth is projected at **6.9%** for 2026-27, with inflation expected to rise to **4.6%**. The central bank has kept the repo rate at 5.25%.
- **Fiscal Buffer:** To shield the budget from global shocks, an **Economic Stabilisation Fund (ESF)** has been set up by the Central Government.
- **Climate and Technology Goals:** India's updated Nationally Determined Contributions (NDCs) for 2031-2035 target **60% non-fossil electric capacity**. Additionally, India now ranks third globally in AI competitiveness, backed by the **IndiaAI Mission**.
- **Digital Financial Progress:** Expansion pilots are planned for the Central Bank Digital Currency (CBDC) and the **Unified Lending Interface (ULI)**, alongside the implementation of the **Digital**

Payments Intelligence Platform (DPIP) to fight scams.

Primary Global Risks Identified by the RBI

Way Forward

- **Supervisory Analytics:** Advanced micro-data tools and the **Supervisory Data Quality Index (sDQI)** must be deployed to spot early stress in high-risk loan books.
- **Combating Digital Fraud:** Consumer trust should be preserved by scaling up the machine-learning-based **MuleHunter.ai** registry across banks.
- **Rupee Internationalisation:** The network of **Special Rupee Vostro Accounts (SRVAs)** must be expanded to insulate local cross-border trade from exchange rate volatility.
- **Agricultural Extension:** Real-time, AI-driven crop advice should be sent to small farmers using the language capabilities of the **Bharat-VISTAAR** platform.

Conclusion

Supported by robust domestic demand and steady public investment, India's economy is well-positioned to remain resilient in 2026-27. However, external geo-political conflicts and volatile commodity prices mean policymakers must maintain strict vigilance.

India Transitions to Producer Price Index: Revamped WPI Base Year Declared



Why in News?

The Office of Economic Adviser under the Department for Promotion of Industry and Internal Trade (DPIIT) announced the revision of the Wholesale Price Index (WPI) base year from 2011-12 to 2022-23. Alongside this revision, India introduced a new Producer Price Index (PPI) framework launched on 15 June 2026, marking a significant

structural upgrade to the nation's inflation-tracking architecture.

Key Highlights of WPI (Base Year 2022-23)

- **Expanded Data Basket:** To capture modern consumption and production shifts, the total number of items monitored in the WPI basket has been scaled up from 697 to 957.
- **Integration of Green Energy:** Aligning with India's sustainable energy pivot, Solar and Wind energy, along with Nuclear Electricity, have been incorporated into the 'Electricity' category.
- **Fuel Category Consolidation:** Crude Petroleum and Natural Gas have been moved out of the 'Primary Articles' classification and merged into the 'Fuel and Power' segment to build a more logical tracking layout.
- **Shift to Gross Value of Output (GVO):** The weighting system has been upgraded to utilize the Gross Value of Output method (tracking domestic production from a seller's view), replacing the old Net Traded Value approach (GVO + Imports - Exports).
- **Advanced Computational Methods:** Elementary indices will now be derived using a short-term, chain-based formula instead of long-term calculations. Missing data points will be addressed via the 'Targeted Mean Imputation' method, moving away from the outdated 'Carry-forward' approach.
- **Launch of the PPI Framework:** The new series simultaneously rolls out the Output Producer Price Index (OPPI), an experimental Trial Input Producer Price Index (IPPI) (currently limited to the manufacturing sector), and a quarterly Service Producer Price Index (Service PPI) covering seven core sectors: Banking, Securities Transaction, Insurance, Management of Pension Funds, Railways, Passenger Aviation, and Telecom.
- **Distinct Pricing Mechanisms:** While WPI, Output PPI, and Service PPI are calculated based on the 'Basic Price' (which excludes trade/transport margins and net indirect taxes), the Input PPI uses the 'Purchaser's Price' since businesses buy their input materials directly from the commercial market.

Core Overview of the Wholesale Price Index (WPI)

- **Definition:** WPI is a key macroeconomic metric that monitors the average price fluctuations of commodities traded in large volumes at the initial wholesale stage.
- **Key Attributes:**
 - **Goods-Centric Focus:** It solely evaluates physical commodities, leaving out service sectors like education, healthcare, and telecommunications.
 - **First Point of Transaction:** By recording values at the factory-gate or producer level, it serves as a primary gauge for supply-side price pressures.
 - **Updated Base Year:** Price movements are benchmarked against the new base period of 2022-23 (set at a standard index value of 100).
- **Primary Structural Components:**
 - **Manufactured Products (Maximum Allocation):** Encompasses industrial items such as processed food, apparel, chemicals, heavy machinery, and metal alloys.
 - **Primary Articles:** Tracks raw, unrefined resources including grains, seasonal vegetables, crude minerals, and oilseeds.
 - **Fuel & Power:** Comprises vital energy infrastructure inputs like coal, electricity, refined petroleum, and natural gas.
- **Macroeconomic Utility:**
 - **Commercial Adjustments:** Frequently integrated into price escalation clauses for long-term supply contracts and large infrastructure investments to neutralize inflation risks.
 - **Policy Design:** Provides critical inputs for the government to frame trade policies and fiscal measures to curb supply-chain disruptions.
 - **National Accounts Deflator:** Used by statisticians to strip inflation out of nominal GDP figures to calculate real economic expansion.

Demystifying the Producer Price Index (PPI)

- **Definition:** The PPI measures the average change over time in the selling prices received by domestic creators of goods and services. It measures inflation entirely from the producer's viewpoint, capturing value changes before they reach the consumer market.
- **Three Functional Pillars of PPI:**
 - **Input PPI:** Assesses cost variations in raw materials, components, and services purchased

by industries to generate final items (e.g., rubber, steel, and power acquired by an automaker).

- **Output PPI:** Monitors price adjustments for final goods and services as they leave the production facility (e.g., the factory-gate invoice price of a completed vehicle).
- **Service PPI:** Explicitly maps price behavior across commercial services, capturing a segment that constitutes over 50% of India's GDP but was entirely omitted under the traditional WPI framework.
- **Core Characteristics:**
 - **Factory-Gate Tracking:** Reflects real pricing variations at the first commercial transaction point, eliminating post-factory inflation factors.
 - **Tax Neutrality:** Calculated using the 'Basic Price,' which omits indirect levies like GST along with distribution markups, purely reflecting actual production outlays and core manufacturer margins.
 - **Comprehensive Coverage:** Unlike the commodity-restricted WPI, the inclusion of services enables comprehensive tracking across aviation, banking, and telecom networks.
- **The Full Structural Migration:** In compliance with global statistical norms and International Monetary Fund (IMF) guidelines, WPI will be entirely phased out after a 5-year transition window. It will be fully replaced by the PPI framework, allowing corporate entities sufficient time to realign their legal contract escalation clauses.

Strategic Advantages of the PPI Transition

- **Elimination of the Tax Illusion:** Because the old WPI framework included indirect taxes, any upward revision in tax rates caused an artificial spike in the inflation index. PPI eliminates this anomaly by utilizing basic production prices.
- **Isolating Imported Inflation:** The traditional WPI factored in the costs of imported commodities at the wholesale level. PPI isolates these variables by tracking domestic production metrics, providing policymakers and the Reserve Bank of India (RBI) with a precise indicator of domestic industrial health.
- **Global Standardization:** Transitioning to a PPI-driven format aligns India's economic tracking system with advanced global economies (such as the US, UK, and EU), rendering domestic inflation

data directly comparable on the international stage.

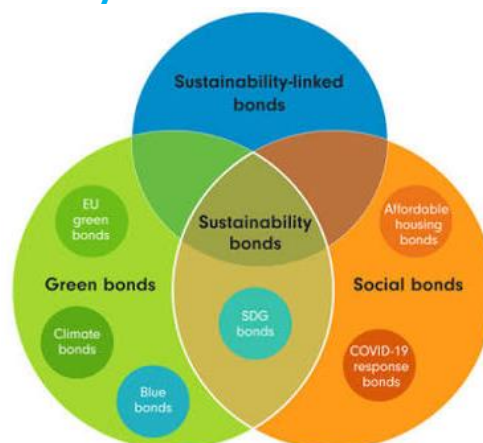
Comparative Matrix: Inflation Tracking Indicators

Parameter	Consumer Price Index (CPI)	Wholesale Price Index (WPI)	Producer Price Index (PPI)
Measurement Focus	Prices paid by final consumers	Bulk transaction values of goods	Prices received by domestic creators
Transaction Tier	Retail level	Wholesale distribution level	Factory-gate level
Services Integration	Yes	No	Yes
Import Inclusions	Yes	Yes	No (Strictly domestic output)
Publishing Authority	National Statistical Office (NSO), MoSPI	Office of Economic Adviser (OEA), DPIIT	Office of Economic Adviser (OEA), DPIIT
Primary Economic Use	RBI's monetary policy inflation targeting	GDP deflator calculations, contract escalations	Supply-side cost tracking, industrial diagnostics
Index Layout	Consolidated single index	Single goods-restricted index	Dual tracking via Input & Output PPI series

Conclusion

The migration from a traditional WPI to the comprehensive PPI architecture represents a landmark modernization of India's statistical frameworks. By eliminating tax distortions, integrating the vast services sector, and mapping the input-output dependencies of modern production, this structural pivot equips policymakers with the diagnostic precision needed to sustain stable, non-inflationary growth on the road to Viksit Bharat 2047.

Sustainability Bonds



Why in News?

- Sustainability Bonds have emerged as important financial instruments for mobilizing capital

towards both environmental and social development objectives.

- They are increasingly being used by governments, financial institutions and corporations to support sustainable development while aligning investments with the **Sustainable Development Goals (SDGs)**.

What are Sustainability Bonds?

About

- **Sustainability Bonds** are debt instruments in which the proceeds are exclusively used to finance or refinance a combination of:
 - Green projects.
 - Social projects.
- They combine environmental and social objectives within a single financial instrument.
- The funds raised must be allocated to eligible projects that generate measurable sustainability benefits.

Dual Impact Approach

- Unlike Green Bonds or Social Bonds, Sustainability Bonds address multiple development objectives simultaneously.
- They enable issuers to contribute to both environmental protection and social welfare through a single bond issuance.

Environmental Objectives

Projects may include:

- Renewable energy.
- Energy efficiency.
- Pollution control.
- Sustainable water management.
- Climate change mitigation.
- Clean transportation.

Social Objectives

Projects may include:

- Affordable housing.
- Healthcare infrastructure.
- Education.
- Employment generation.
- Food security.
- Financial inclusion.

Global Framework for Sustainability Bonds

Recognition by ICMA

- Sustainability Bonds were formally recognized by the **International Capital Market Association** in 2018.

- They form an important segment of the global **Green, Social, Sustainability and Sustainability-Linked (GSS+) Bond Market**.

International Standards

- ICMA provides guidelines regarding:
 - Use of proceeds.
 - Project evaluation and selection.
 - Management of proceeds.
 - Impact reporting.
- These standards enhance transparency and investor confidence.

Regulation of Sustainability Bonds in India

Role of SEBI

- In India, Sustainability Bonds are regulated by the **Securities and Exchange Board of India**.

Key Regulatory Requirements

Use-of-Proceeds Disclosure

- Issuers must clearly specify how the proceeds will be utilized.

Third-Party Verification

- Independent external review and verification are generally required.
- This helps ensure that funds are used for eligible sustainability projects.

Continuous Reporting

- Issuers are required to provide periodic disclosures regarding:
 - Allocation of funds.
 - Project implementation.
 - Sustainability outcomes and impacts.

Transparency and Accountability

- Regulatory oversight seeks to prevent:
 - Greenwashing.
 - Misallocation of funds.
 - Misleading sustainability claims.

Sustainability Bonds vs Sustainability-Linked Bonds

Sustainability Bonds

Project-Based Financing

- Sustainability Bonds are **use-of-proceeds instruments**.
- Funds are earmarked for specific green and social projects.

Restricted Utilization

- The proceeds must be ring-fenced and used only for approved sustainability initiatives.

Sustainability-Linked Bonds (SLBs)

Performance-Based Financing

- Sustainability-Linked Bonds are not tied to specific projects.
- Funds may be used for general corporate purposes.

Linked to Sustainability Targets

- Financial terms depend on the issuer's achievement of predefined sustainability goals and Key Performance Indicators (KPIs).

Examples of KPIs

- Carbon emission reduction.
- Renewable energy adoption.
- Water-use efficiency.
- Gender diversity targets.

Types of Sustainable Bonds

Green Bonds

Objective

- Generate positive environmental outcomes.

Use of Proceeds

- Funds are exclusively allocated to green projects.

Examples

- Renewable energy projects.
- Energy-efficient infrastructure.
- Sustainable transport systems.

Key Feature

- Focuses solely on climate and environmental benefits.

Social Bonds

Objective

- Promote positive social outcomes.

Use of Proceeds

- Funds are dedicated to social projects.

Examples

- Affordable housing.
- Public healthcare.
- Education infrastructure.
- Employment generation programmes.

Key Feature

- Targets vulnerable, marginalized and underserved populations.

Sustainability Bonds

Objective

- Generate both environmental and social benefits.

Use of Proceeds

- Funds are allocated to a combination of green and social projects.

Key Feature

- Hybrid use-of-proceeds instrument addressing multiple SDGs simultaneously.

Sustainability-Linked Bonds (SLBs)

Objective

- Improve the overall sustainability performance of an organization.

Use of Proceeds

- Funds may be utilized for general corporate purposes.

Key Feature

- Financial characteristics are linked to sustainability performance targets.

Advantages of Sustainability Bonds

Supports Multiple SDGs

- Enables simultaneous advancement of environmental and social development goals.

Broader Investor Base

- Attracts both impact investors and conventional investors seeking sustainable investments.

Promotes Responsible Finance

- Encourages integration of sustainability considerations into financial decision-making.

Mobilizes Long-Term Capital

- Provides a mechanism for financing large-scale sustainable infrastructure and development projects.

Challenges

Risk of Greenwashing

- Misrepresentation of sustainability benefits may undermine investor confidence.

Measurement Difficulties

- Assessing social and environmental impacts can be complex.

Reporting Burden

- Continuous monitoring, verification and disclosure requirements may increase compliance costs.

Lack of Standardization

- Differences in global sustainability frameworks may create implementation challenges.

Significance for India

Financing Sustainable Development

- Sustainability Bonds can help mobilize resources for achieving the **Sustainable Development Goals (SDGs)**.

Climate Action

- They support India's commitments under the **Paris Agreement** and national climate targets.

Inclusive Growth

- The instrument promotes both environmental sustainability and social equity.

Strengthening Sustainable Finance

- It contributes to the development of India's sustainable finance ecosystem.

Conclusion

- **Sustainability Bonds** are innovative financial instruments that combine environmental and social objectives within a single framework.
- By financing projects that generate both ecological and societal benefits, they play an important role in advancing sustainable development, supporting climate action and promoting inclusive economic growth.

State Finance Commissions (SFCs) and the Report on Datasets for State Finance Commissions



Why in News?

- The **Ministry of Panchayati Raj** released the **Report on Datasets for State Finance Commissions** in June 2026.
- The report identified critical data gaps affecting the functioning of **State Finance Commissions (SFCs)** and proposed measures to strengthen the local government data ecosystem.
- It emphasized the need for better data quality, digital infrastructure, institutional capacity and fiscal transparency to improve fiscal decentralization in India.

Key Findings of the Report

Systemic Bottlenecks

Fragmented Data Systems

- SFCs face difficulties due to fragmented and disconnected databases maintained by different departments.

- The absence of consolidated financial accounts makes it difficult to assess sector-wise expenditure on services such as:

- Sanitation.
- Roads.
- Water supply.
- Public infrastructure.

Difficulty in Assessing Outcomes

- Poor integration of datasets prevents accurate evaluation of whether public expenditure is translating into improved service delivery.

Local Capacity Constraints

Shortage of Trained Personnel

- Gram Panchayats suffer from a severe shortage of trained accounting and financial management personnel.
- As a result:
 - Financial records remain incomplete.
 - Accounting practices are non-standardized.
 - Data quality remains poor.

Chronic Reporting Delays

Delayed Submission of SFC Reports

- The **Fifteenth Finance Commission** observed an average delay of approximately **16 months** in the submission of SFC reports.
- Consequently, states often rely on outdated recommendations while making fiscal decisions.

Quality and Usability Issues

Lack of Standardization

- Significant variations exist across states in:
 - Methodology.
 - Data collection practices.
 - Reporting formats.

Impact on Finance Commission Recommendations

- The **Sixteenth Finance Commission** found many SFC reports unsuitable for effectively guiding recommendations on transfers to local bodies.

Proposed Constitutional Amendment

Recommendation of the Sixteenth Finance Commission

- Due to persistent weaknesses in SFC reports, the Sixteenth Finance Commission recommended amending:
 - Article 280(3)(bb)
 - Article 280(3)(c)

- These provisions currently require the Central Finance Commission to base local body transfer recommendations on SFC reports.

Existing Data Sources and Their Limitations

eGramSwaraj Portal

Utility

- Serves as a digital governance platform for Panchayats.

Limitation

- Data entry practices vary significantly across states.
- This reduces reliability and comparability of information.

Panchayat Advancement Index (PAI 2.0)

Utility

- Facilitates performance assessment of Panchayats.

Limitation

- Indicators are not yet structured for fiscal devolution.
- Parameters relating to:
 - Needs.
 - Performance.
 - Backwardness remain inadequately classified.

Census and SECC Data

Limitation

- Much of the available socio-economic data is based on:
 - Census 2011.
 - Socio-Economic and Caste Census (SECC) 2011.
- The data has become outdated for current fiscal planning.

CAG Audit Reports and AuditOnline

Utility

- Provide reliable audit information.

Limitation

- Lack sufficient Gram Panchayat-level granularity.
- This restricts their usefulness for local fiscal planning.

Key Recommendations of the Report

- **Data Standardization and Digital Infrastructure**
- Restructuring the Panchayat Advancement Index (PAI)

Classification of Indicators

- Indicators should be categorized into:
 - Needs of Panchayats.
 - Performance of Panchayats.
 - Backwardness and equity indicators.

State-Wise Disaggregation

- Data should be available at state-specific levels to improve fiscal analysis.

Gram Panchayat-Level Databases

- States should establish robust time-series databases at the Gram Panchayat level.
- These databases should capture:
 - Revenues.
 - Expenditure.
 - Fiscal capacity.
 - Resource mobilization.

Transition to GP-Level Reporting

- The Ministry of Panchayati Raj should coordinate with the **Ministry of Statistics and Programme Implementation**.
- Data collection should increasingly use the **Local Government Directory** to generate Gram Panchayat-level statistics.

Institutional and Auditing Reforms

CAG Performance Audit

- The Ministry should request the **Comptroller and Auditor General of India** to conduct a performance audit of the implementation of the **73rd Constitutional Amendment Act, 1992**.
- This would assess the extent of:
 - Functional devolution.
 - Financial devolution.
 - Administrative decentralization.

Permanent State Finance Commission Cells

- States should establish permanent SFC Cells within:
 - Finance Departments.
 - Planning Departments.
- These units would continuously maintain and update fiscal data.

Institutional Forum

- A permanent forum should be created to facilitate:
 - Knowledge sharing.
 - Peer learning.
 - Best practice dissemination among SFCs.

Budgetary and Reporting Reforms

Standardized Accounting Heads

- Uniform accounting heads should be notified across states.
- This would improve:
 - Transparency.
 - Comparability.
 - Fiscal tracking.

Supplementary Budget Documents

- State budgets should include detailed information on:
 - Union Finance Commission transfers.
 - State Finance Commission transfers.
 - Centrally Sponsored Schemes.
- Information should be available up to the Gram Panchayat level.

Common Reporting Format

- SFCs should adopt the reporting template proposed by the **Thirteenth Finance Commission**.
- This would improve consistency and comparability across states.

Capacity Building and Inter-Ministerial Coordination

Role of NIRDPR

- The **National Institute of Rural Development and Panchayati Raj** should:
 - Conduct training programmes.
 - Compile best practices.
 - Revive publication of Panchayat Statistics.

SFC Manual

- The **National Institute of Public Finance and Policy** should prepare a comprehensive manual to guide future State Finance Commissions.

Local Statistics Initiative

- An Expert Group comprising:
 - MoPR.
 - MoSPI.
 - Ministry of Urban Development.
 - **NITI Aayog** should revive the Local Statistics Initiative.

State Finance Commission (SFC)

About

- The **State Finance Commission (SFC)** is a constitutional body established to strengthen fiscal decentralization and local self-governance.
- It was introduced through the:
 - 73rd Constitutional Amendment Act, 1992

- 74th Constitutional Amendment Act, 1992

- SFCs review the financial position of:
 - Panchayati Raj Institutions (PRIs).
 - Urban Local Bodies (ULBs).

Objective

- To recommend principles for the equitable distribution of financial resources between the state government and local bodies.

Constitutional Provisions

Article 243-I

- Mandates the constitution of a Finance Commission every five years to review the financial position of Panchayats.

Article 243-Y

- Extends the mandate of the State Finance Commission to Municipalities and Urban Local Bodies.

Article 280

- Requires the Central Finance Commission to recommend measures to augment state resources for Panchayats and Municipalities based on SFC recommendations.

Composition

Determined by States

- Unlike the Central Finance Commission, the Constitution leaves the composition and qualifications of SFC members to state legislatures.

Legislative Accountability

- The Governor must place:
 - SFC recommendations.
 - Action Taken Memorandum before the State Legislature.

Functions of State Finance Commissions

Vertical Devolution

- Recommend distribution of financial resources between the State Government and local bodies.

Horizontal Devolution

- Recommend allocation of resources among different Panchayats and Municipalities.

Assignment of Taxes

- Identify taxes, duties, tolls and fees that may be assigned to local bodies.

Grants-in-Aid

- Recommend grants from the Consolidated Fund of the State.

Financial Strengthening

- Suggest measures to improve the fiscal position and financial autonomy of local governments.

Challenges Facing State Finance Commissions

Delayed Constitution of SFCs

- Many states fail to constitute SFCs on time.

Weak Data Ecosystem

- Lack of reliable and standardized local-level data affects evidence-based recommendations.

Limited Implementation

- Several states do not fully implement SFC recommendations.

Inadequate Fiscal Devolution

- Local bodies continue to depend heavily on higher levels of government for financial resources.

Conclusion

- State Finance Commissions constitute the cornerstone of fiscal decentralization envisaged under the **73rd and 74th Constitutional Amendments**.
- The Ministry of Panchayati Raj's report highlights the urgent need for robust local government datasets, standardized reporting systems and stronger institutional capacity.
- Strengthening SFCs through better data, digital infrastructure and fiscal transparency will enhance the financial autonomy of local governments and deepen grassroots democracy in India.

RBI Monetary Policy Committee (MPC) Review – June 2026



Why in News?

- In its June 2026 meeting, the **Reserve Bank of India Monetary Policy Committee (MPC)** unanimously decided to keep the **policy repo rate unchanged at 5.25%**.

- The RBI revised its **FY 2026–27 real GDP growth forecast downward to 6.6%** and increased its **Consumer Price Index (CPI) inflation projection to 5.1%**.

- Alongside the monetary policy decision, several fiscal and regulatory measures were announced to attract foreign capital, support the rupee, and strengthen financial stability.

Key Highlights of the RBI Monetary Policy Committee (June 2026)

Status Quo on Policy Rates

Policy Repo Rate

- The **policy repo rate** was retained at **5.25%** under the **Liquidity Adjustment Facility (LAF)** framework.

Standing Deposit Facility (SDF) Rate

- The **Standing Deposit Facility (SDF)** rate remained unchanged at **5.00%**.
- It serves as the lower bound (floor) of the LAF corridor.

Marginal Standing Facility (MSF) Rate

- The **Marginal Standing Facility (MSF)** rate was maintained at **5.50%**.
- It serves as the upper bound (ceiling) of the LAF corridor.

Bank Rate

- The **Bank Rate** was also kept unchanged at **5.50%**.

Growth Outlook

Downward Revision in GDP Growth

- The RBI revised India's projected **real GDP growth** for FY 2026–27 to **6.6%**, compared to the earlier estimate of **6.9%**.
- The revision reflects concerns arising from:
 - Global uncertainties.
 - Elevated commodity prices.
 - Adverse climatic conditions.
 - Moderation in economic momentum.

Inflation Outlook

Increase in CPI Inflation Forecast

- The RBI raised its **headline CPI inflation projection** by **50 basis points** to **5.1%** for FY 2026–27.

Core Inflation

- Core inflation, which excludes food and fuel prices, was projected at **4.7%**.

Reasons for Higher Inflation

- Rising crude oil prices.
- Food supply uncertainties.

- Geopolitical tensions.
- Potential second-round inflationary effects.

Policy Stance

Continuation of Neutral Stance

- The MPC decided to continue with its **Neutral Policy Stance**.

Meaning of Neutral Stance

- The RBI remains data-dependent.
- It retains flexibility to:
 - Increase rates if inflation rises.
 - Reduce rates if growth weakens.
- The stance avoids commitment to either a tightening or easing cycle.

Major Macroeconomic Risks Identified by RBI

Geopolitical and Commodity Price Shocks

Crude Oil Prices

- Ongoing international conflicts have pushed the Indian crude oil basket to around **USD 110 per barrel** during April–May 2026.

Impact

- Increased production costs in sectors such as:
 - Plastics.
 - Chemicals.
 - Base metals.
 - Manufacturing industries.

Climate and Food Security Risks

Sub-Normal Monsoon

- Forecasts of a below-normal **Southwest Monsoon** pose risks to agricultural production.

El Niño Conditions

- Emerging **El Niño** conditions could adversely affect:
 - Crop yields.
 - Rural incomes.
 - Food prices.

Second-Round Inflation Effects

Concern

- Temporary increases in food and energy prices may gradually influence:
 - Wage demands.
 - Production costs.
 - Inflation expectations.

RBI's Assessment

- Core inflation remains manageable, but continuous monitoring is necessary to prevent inflation from becoming entrenched.

Measures to Attract Foreign Capital and Stabilize the Rupee

Tax Incentives for Foreign Investors

LTCG Tax Waiver

- The Government waived:
 - **12.5% Long-Term Capital Gains (LTCG) Tax**.
 - Income tax on interest earned by Foreign Portfolio Investors (FPIs) on Government Securities (G-Secs).
- The waiver is effective retrospectively from **1 April 2026**.

Objective

- To strengthen foreign participation in India's debt market.
- To counter capital outflows from equity markets.

Expansion of the Fully Accessible Route (FAR)

New Securities Included

The RBI expanded the **Fully Accessible Route (FAR)** by including:

- 15-year Government Securities.
- 30-year Government Securities.
- 40-year Government Securities.
- Sovereign Green Bonds.

Significance

- Non-resident investors can invest in these securities without quantitative restrictions.

Relaxation of FPI Investment Restrictions

Removal of General Route Restrictions

The RBI removed:

- Short-term investment caps.
- Concentration limits.
- Security-wise exposure limits.

Retained Limits

Only overall ceilings remain:

- 6% of outstanding Central Government Securities.
- 2% of outstanding State Government Securities.

Liberalization for NRIs and Overseas Investors

Higher Equity Investment Limits

- Investment limits for:
 - Non-Resident Indians (NRIs).
 - Overseas Citizens of India (OCIs).
 - Persons Resident Outside India (PROIs) have been increased.

Objective

- To deepen retail participation in Indian capital markets.

Concessional Forex Swap Facility

Support for External Commercial Borrowings (ECBs)

- The RBI will provide concessional forex swap windows until **30 September 2026**.

Purpose

- To reduce borrowing costs for Public Sector Undertakings (PSUs) raising funds through External Commercial Borrowings.

FCNR(B) Deposit Support

Hedging Subsidy

- Authorized Dealer (AD) banks will receive full hedging cost coverage for raising fresh: Foreign Currency Non-Resident (Bank) [FCNR(B)] Deposits

Validity

- Available until **30 September 2026**.

Objective

- To attract foreign currency deposits and strengthen foreign exchange reserves.

Tightening Export Realization Timelines

New Rule

- Export proceeds must now be realized within **9 months**.

Previous Provision

- A temporary pandemic-era relaxation had extended the period to **15 months**.

Objective

- To accelerate inflow of foreign exchange into the banking system.
- To improve dollar liquidity.

Forex Intervention Policy

RBI's Position

- The RBI reiterated that it does not target any fixed exchange rate.

Use of Forex Reserves

- India's substantial foreign exchange reserves will be deployed whenever necessary to:
 - Reduce excessive volatility.
 - Counter speculative pressures.
 - Maintain orderly market conditions.

Important Monetary Policy Terms

Repo Rate

- The interest rate at which the RBI lends short-term funds to commercial banks against government securities.

Liquidity Adjustment Facility (LAF)

- A mechanism used by the RBI to regulate liquidity in the banking system through repo and reverse repo operations.

Standing Deposit Facility (SDF)

- A tool through which banks can park excess liquidity with the RBI without collateral.

Marginal Standing Facility (MSF)

- A facility allowing scheduled commercial banks to borrow overnight funds from the RBI during liquidity shortages.

Foreign Portfolio Investors (FPIs)

- Overseas investors investing in Indian financial assets such as equities and debt securities.

External Commercial Borrowings (ECBs)

- Loans raised by Indian entities from foreign lenders for financing business activities.

FCNR(B) Deposits

- Foreign currency-denominated bank deposits maintained by Non-Resident Indians.

Conclusion

- The June 2026 Monetary Policy Review reflects the RBI's attempt to balance inflation control with growth support amid global uncertainty, elevated crude oil prices and climatic risks.
- By maintaining a **neutral stance**, preserving policy flexibility and introducing measures to attract foreign capital, strengthen debt markets and stabilize the rupee, the RBI aims to safeguard macroeconomic stability while supporting India's medium-term growth prospects.

Credit Guarantee Scheme for Micro Finance Institutions (CGSMFI-2.0)



Why in News?

- The Government of India has approved the extension of the **Credit Guarantee Scheme for Micro Finance Institutions (CGSMFI-2.0)** until **31 August 2026** or until guarantees worth **₹20,000 crore** are issued, whichever is earlier.
- The maximum loan limit for large MFIs and NBFC-MFIs under the scheme has been increased from **₹300 crore to ₹1,000 crore**, subject to the overall ceiling of **20% of Assets Under Management (AUM)**.
- Loans worth approximately **₹770 crore** have already been sanctioned under the scheme.

What is CGSMFI-2.0?

About

- **CGSMFI-2.0** is a government-backed credit guarantee scheme launched in **March 2026**.
- The scheme provides guarantee coverage to **Member Lending Institutions (MLIs)** for loans extended to:
 - NBFC-MFIs.
 - Microfinance Institutions (MFIs).
- These institutions subsequently provide loans to eligible borrowers under the **RBI's microfinance framework**.

Objective

- Improve credit flow to the microfinance sector.
- Strengthen financial inclusion.
- Support low-income households and vulnerable borrowers.
- Enhance liquidity available to MFIs for on-lending activities.

Key Features of CGSMFI-2.0

Differential Credit Guarantee Coverage

Small MFIs

- Receive guarantee coverage of **80%** of the default amount.

Medium MFIs

- Receive guarantee coverage of **75%** of the default amount.

Large MFIs

- Receive guarantee coverage of **70%** of the default amount.

Significance

- Replaces the earlier uniform guarantee coverage of 75%.
- Provides greater support to smaller institutions that face higher operational and credit risks.

Classification of MFIs Based on AUM

Category	Assets Under Management (AUM)
Small MFI	Less than ₹500 crore
Medium MFI	₹500 crore to less than ₹2,000 crore
Large MFI	₹2,000 crore or more

Mandatory Credit Distribution Requirements

Obligations for Member Lending Institutions (MLIs)

Small MFIs

- At least **5%** of total loans must be provided to small MFIs.

Medium MFIs

- At least **10%** of total loans must be provided to medium MFIs.

Purpose

- Ensure equitable distribution of credit.
- Prevent concentration of funds among larger institutions.

Loan Limits Under the Scheme

Small MFIs

- Maximum loan limit: **₹100 crore**.

Medium MFIs

- Maximum loan limit: **₹200 crore**.

Large MFIs

- Initially capped at **₹300 crore**.
- Recently enhanced to **₹1,000 crore**, subject to the overall AUM ceiling.

Loan Conditions

Disbursement Timeline

- Loans must be disbursed within **three months**.

Loan Tenure

- Maximum tenure of **three years**.

Moratorium Period

- Includes a moratorium of **one year**.

Implementation Mechanism

Automatic Approval System

- The scheme operates through an automated approval mechanism managed by the **National Credit Guarantee Trustee Company Limited**.

Fund Utilization

- Funds can only be used for:
 - Incremental lending.
 - Eligible microfinance borrowers.

Outcome

- Ensures that the guaranteed credit directly reaches underserved and financially excluded segments.

Microfinance Institutions (MFIs)

About

- Microfinance Institutions (MFIs) are financial intermediaries that provide:
 - Small loans (microcredit).
 - Savings services.
 - Insurance services.
 - Financial assistance to low-income households.

Objective

- Promote:
 - Financial inclusion.
 - Livelihood generation.
 - Women's empowerment.
 - Poverty reduction.

Operational Areas

- Primarily operate in:
 - Rural areas.
 - Semi-urban areas.
 - Underserved regions.

Types of MFIs

NBFC-MFIs

- Non-Banking Financial Companies specializing in microfinance activities.

Cooperative MFIs

- Operate under cooperative structures and serve local communities.

NGO-led MFIs

- Managed by non-governmental organizations providing microcredit services.

Key Features of Microfinance

Target Borrowers

- Low-income households.
- Small entrepreneurs.
- Women borrowers.
- Informal sector workers.

Loan Size

- Generally ranges between: ₹5,000 and ₹1,00,000.

Collateral-Free Lending

- Most loans are provided without collateral.
- Relies on:
 - Group responsibility.
 - Social accountability mechanisms.

Delivery Models

Joint Liability Group (JLG)

Concept

- Small groups of borrowers jointly guarantee loan repayment.

Benefits

- Reduces credit risk.
- Improves repayment discipline.

Self-Help Group (SHG) Model

Concept

- Community-based groups linked with banks.

Benefits

- Encourages savings.
- Facilitates access to institutional credit.
- Promotes women's empowerment.

Regulatory Framework for Microfinance

Reserve Bank of India (RBI)

Role

The **Reserve Bank of India:**

- Regulates NBFC-MFIs.
- Prescribes eligibility criteria.
- Defines microfinance norms.
- Establishes prudential regulations.
- Monitors lending practices.

National Bank for Agriculture and Rural Development (NABARD)

Role

The **National Bank for Agriculture and Rural Development:**

- Provides refinance support.
- Promotes SHG-Bank Linkage Programmes.
- Strengthens rural financial inclusion.

Significance of CGSMFI-2.0

Enhancing Financial Inclusion

- Expands credit access for economically weaker sections.

Strengthening Microfinance Sector

- Improves liquidity and lending capacity of MFIs.

Supporting Rural Economy

- Facilitates income-generating activities and small enterprises.

Reducing Credit Risk

- Government guarantee encourages lenders to extend more credit.

Promoting Inclusive Growth

- Ensures credit reaches underserved populations and marginalized communities.

Challenges in the Microfinance Sector

High Credit Risk

- Borrowers often have unstable incomes and limited repayment capacity.

Over-Indebtedness

- Multiple borrowing from different institutions can increase financial stress.

Regional Concentration

- Microfinance penetration remains uneven across states.

Operational Costs

- Small-ticket lending involves higher transaction and monitoring costs.

Financial Literacy Gaps

- Many borrowers lack awareness regarding responsible borrowing and financial management.

Conclusion

- The extension of **CGSMFI-2.0** reflects the Government's commitment to strengthening the microfinance ecosystem and deepening financial inclusion.
- By providing enhanced credit guarantees, improving liquidity for MFIs and ensuring greater support for small and medium institutions, the scheme can significantly improve access to affordable credit for vulnerable households, promote rural entrepreneurship and contribute to inclusive economic growth.

RBI's Record Surplus Transfer to the Government



Why in News?

- The **Reserve Bank of India** approved a record **₹2.87 lakh crore** surplus transfer to the Union Government for FY26.
- This surpasses the previous record transfer of **₹2.11 lakh crore**.

- While the transfer is in line with the **Economic Capital Framework (ECF)**, it has triggered debate regarding:

- Central bank independence.
- Fiscal dominance.
- Fiscal federalism.
- RBI's evolving role in India's fiscal architecture.

Overview

Significance

- The record transfer provides substantial non-tax revenue to the Union Government.
- It supports:
 - Fiscal consolidation.
 - Reduced borrowing requirements.
 - Infrastructure spending.
 - Macroeconomic stability.

Concerns

- Growing dependence on RBI transfers may:
 - Affect central bank autonomy.
 - Reduce financial buffers.
 - Create fiscal imbalances between Centre and States.

What is the Structural Shift in RBI's Fiscal Role?

From Occasional Dividend to Major Revenue Source

Earlier Trend

- Historically, RBI surplus transfers ranged between:
 - ₹30,000 crore.
 - ₹65,000 crore annually.

Post-2019 Trend

After implementation of the revised ECF:

Year	Surplus Transfer
FY24	₹2.11 lakh crore
FY26	₹2.87 lakh crore

Implication

- RBI surplus has become a major source of non-tax revenue for the Union Government.

Expansion of RBI Balance Sheet Growth

- RBI's balance sheet expanded by **20.6%** in one year.

Size

- Reached **₹91.97 lakh crore** by March 2026.

Income Growth

- Gross income increased by more than **26%**.

Reasons

- Active management of foreign exchange reserves.
- Higher returns from domestic securities.
- Improved earnings from foreign assets.

Frictionless Fiscal Resource Generation

Traditional Fiscal Tools

Taxation

- Faces political resistance.
- May affect economic activity.

Market Borrowing

- Increases public debt.
- Can crowd out private investment.

RBI Transfers

- Generate fiscal resources without:
 - Raising taxes.
 - Increasing government debt.

Benefit

- Creates immediate fiscal space for government spending.

Reserve Management and Earnings

Reserve Portfolio Rebalancing

The RBI regularly:

- Purchases foreign assets.
- Sells or purchases gold.
- Manages foreign exchange reserves.

Objectives

- Maintain currency stability.
- Manage capital flows.
- Address geopolitical risks.
- Ensure market liquidity.

Additional Benefit

- Generates profits through:
 - Foreign exchange transactions.
 - Bond yields.
 - Returns on reserve assets.

Economic Capital Framework (ECF)

About

Origin

- Recommended by the **Bimal Jalan** Committee.

Adoption

- Adopted by RBI in 2019.

Purpose

- Determine:
 - Required risk buffers.

- Surplus available for transfer to the Government.

Objective

- Balance:
 - Financial stability.
 - Government fiscal requirements.

Key Components of ECF

Contingent Risk Buffer (CRB)

Definition

- Buffer against monetary and financial stability risks.

Requirement

- Must remain between:
 - **4.5% and 7.5%** of RBI's balance sheet.

Purpose

- Protect against unexpected macroeconomic shocks.

Contingency Fund (CF)

Definition

- Realized equity reserve maintained against unforeseen losses.

Requirement

- Must remain between:
 - **5.5% and 6.5%** of the balance sheet.

Significance

- Any amount beyond the prescribed range can be transferred to the Government.

Capital and General Risk Account (CGRA)

Definition

- Measures total economic capital.

Components

- Capital reserves.
- Risk provisions.
- Revaluation balances.
- Gold valuation gains.
- Foreign exchange valuation gains.

Requirement

- Should remain between:
 - **20.8% and 25.4%** of the balance sheet.

Periodic Review

Recommendation

- ECF should be reviewed every five years.

Recent Review

- First mandatory internal review completed in **2025**.

Implications of RBI's Growing Surplus Transfer

Aiding Fiscal Consolidation

Benefit

- Supports reduction of fiscal deficit.

Importance

- Helps government achieve targets under: Fiscal Responsibility and Budget Management (FRBM) framework.

Result

- Reduces pressure for expenditure cuts.

Reducing Sovereign Debt Pressure

Impact

- Lowers government's borrowing requirement.

Benefits

- Reduced Government Security (G-Sec) yields.
- Lower borrowing costs.

Economic Outcome

- Improves overall financial conditions in the economy.

Protecting Capital Expenditure (CapEx)

Advantage

- Provides resources for:
 - Roads.
 - Railways.
 - Ports.
 - Digital infrastructure.

Importance

- Maintains infrastructure spending during economic slowdowns.

India's Unique Fiscal Model

Western Practice

Many advanced economies adopted:

Quantitative Easing (QE)

- Central banks purchased government bonds and financial assets directly.

Indian Approach

- RBI maintains asset quality.
- Generates profits through reserve management.
- Transfers earnings to the sovereign.

Significance

- Provides fiscal support without direct monetization of government debt.

Concerns Regarding Rising RBI Transfers

Federal Blind Spot

Issue

- RBI surplus is classified as non-tax revenue.

Constitutional Position

- Under **Article 270**, RBI transfers do not form part of the divisible tax pool.

Impact

- States receive no automatic share of these transfers.

Concern

- Creates asymmetry in fiscal federalism.

Threat to Central Bank Independence

Importance of Independence

- RBI credibility depends on operational autonomy.

Concern

- Large transfers may create expectations of recurring payouts.

Risk

- Pressure on RBI to maximize profits rather than prioritize monetary stability.

Risk of Fiscal Dominance

Definition

- Situation where monetary policy becomes subordinate to government financing needs.

Concern

- RBI's primary objective is:
 - Price stability.
 - Inflation management.

Risk

- Government reliance on dividends may influence monetary policy decisions.

Flexible Inflation Targeting (FIT)

Objective

- Maintain inflation within prescribed limits.

Importance

- Acts as a safeguard against excessive fiscal influence on monetary policy.

Reduction in Risk Buffers

Issue

- Large transfers reduce retained earnings.

Risk

- Lower capacity to absorb:
 - Financial crises.
 - Capital flight.
 - Geopolitical shocks.
 - Currency instability.

Concern

- Future crises may require government recapitalization.

What Measures are Needed?

Use Transfers for Asset Creation

Recommendation

- Utilize RBI dividends primarily for:
 - Capital expenditure.
 - Debt reduction.

Avoid

- Financing recurring subsidies or revenue expenditure.

Review Fiscal Devolution Mechanism

Role of Finance Commission

- Examine rising share of:
 - Cesses.
 - Surcharges.
 - RBI dividends.

Objective

- Preserve fiscal federal balance.

Protect RBI's Core Mandate

Requirement

- Portfolio decisions must remain guided by:
 - Financial stability.
 - Liquidity management.
 - Inflation control.

Avoid

- Profit-maximization pressures.

Enhance Transparency

Need

- Greater disclosure regarding:
 - Sustainability of surplus transfers.
 - Health of risk buffers.
 - Long-term financial resilience.

Benefit

- Strengthens accountability and public confidence.

Significance for India

Fiscal Stability

- Provides substantial support to government finances.

Macroeconomic Management

- Helps maintain growth and infrastructure investment.

Financial Market Stability

- Reduces borrowing pressures.

Development Financing

- Supports public investment without increasing debt.

Challenges Ahead

Maintaining RBI Independence

- Preventing institutional pressure from fiscal authorities.

Protecting Financial Buffers

- Ensuring adequate reserves against future shocks.

Balancing Federal Interests

- Addressing concerns of States regarding resource sharing.

Ensuring Sustainability

- Avoiding long-term dependence on RBI dividends.

Conclusion

- The RBI's record **₹2.87 lakh crore** surplus transfer reflects the growing importance of the central bank in India's fiscal framework and provides significant support for fiscal consolidation, infrastructure development and economic stability.
- However, sustained reliance on such transfers raises concerns regarding **central bank independence, fiscal dominance, fiscal federalism**, and the adequacy of financial risk buffers.
- Going forward, maintaining a balance between fiscal support and monetary autonomy through strict adherence to the **Economic Capital Framework (ECF)** will be crucial for preserving India's macroeconomic stability and institutional credibility.

World Gold Council (WGC) Central Bank Gold Reserves Survey 2026



Why in News?

- The **World Gold Council** released its **2026 Central Bank Gold Reserves Survey**, highlighting that

central banks across the world are increasingly strengthening their gold holdings amid rising economic uncertainty, inflationary pressures, and geopolitical tensions.

- The survey indicates a growing preference for gold as a strategic reserve asset and a gradual diversification away from excessive dependence on the US dollar.

What is the World Gold Council (WGC) Survey?

About

- Since **2018**, the World Gold Council, in collaboration with **YouGov**, has conducted an annual survey of central banks worldwide.

Purpose

- Assess the attitudes of central banks toward gold.
- Understand trends in reserve management.
- Examine the future role of gold in official reserves.

Participation

- Participation is voluntary.
- Responses are anonymized.
- Findings are analyzed collectively and by country groups.

Classification Used

- Countries are categorized into:
 - Advanced Economies.
 - Emerging Market and Developing Economies (EMDEs), based on **International Monetary Fund** classifications.

Key Findings of the 2026 Survey

Rising Gold Accumulation

Trend

- Central banks have significantly increased gold purchases in recent years.

Magnitude

- Gold acquisitions have doubled to nearly **1,000 tonnes annually** over the past four years.

Significance

- Indicates a structural shift in reserve management strategies.

Gold as a Strategic Reserve Asset

Crisis Protection

- Central banks increasingly view gold as a safe-haven asset during financial crises.

Inflation Hedge

- Gold is considered an effective store of value during periods of high inflation.

Geopolitical Risk Mitigation

- Gold provides protection against geopolitical instability and sanctions-related risks.

Changing Composition of Global Reserves

Declining Dominance of the US Dollar

- Many central banks expect the share of the **US Dollar** in global reserves to gradually decline.

Reserve Diversification

- Countries are seeking a more diversified reserve portfolio by increasing gold holdings.

Reason

- Reduce dependence on a single reserve currency.

Growing Focus on Gold Storage Security

Emerging Trend

- Central banks are placing greater emphasis on:
 - Security of gold reserves.
 - Geographic diversification of storage locations.
 - Accessibility during crises.

Objective

- Strengthen financial resilience during geopolitical disruptions.

Why are Central Banks Increasing Gold Holdings?

Safe-Haven Asset

Feature

- Gold retains value during periods of economic uncertainty.

Benefit

- Protects reserves during financial market volatility.

Inflation Protection

Importance

- Gold generally preserves purchasing power over the long term.

Benefit

- Shields reserve assets from inflationary erosion.

Currency Diversification

Purpose

- Reduce concentration risk associated with reserve currencies.

Outcome

- More balanced reserve portfolios.

Geopolitical Stability

Advantage

- Gold is a neutral asset not directly controlled by any single country.

Significance

- Reduces exposure to geopolitical and sanctions risks.

Liquidity and Universal Acceptance

Feature

- Easily tradable in global markets.

Benefit

- Provides financial flexibility during emergencies.

What are Foreign Exchange Reserves?

Definition

- Foreign exchange reserves are external assets held by a country's central bank.

Components

- Foreign currencies.
- Gold reserves.
- Special Drawing Rights (SDRs).
- Reserve position in the IMF.

Purpose

- Maintain currency stability.
- Meet external payment obligations.
- Enhance investor confidence.

What is the World Gold Council (WGC)?

About

- The World Gold Council is the market development organization for the global gold industry.

Established

- Founded in 1987.

Headquarters

- London.

Nature

- Non-profit association.

Membership

- Comprises leading global gold mining companies.

Objectives of WGC

Promote Gold Demand

- Encourage sustainable demand for gold.

Develop Gold Markets

- Improve market efficiency and transparency.

Support Research

- Generate data and analysis on gold markets.

Strengthen Market Infrastructure

- Facilitate development of modern gold trading systems.

Major Contributions of WGC

Shanghai Gold Exchange

Role

- Supported the development of the Shanghai Gold Exchange.

Significance

- Today the world's largest physical gold exchange.

India International Bullion Exchange

Support

- Promoted modernization of India's bullion ecosystem.

India Gold Spot Exchange

Launch

- Introduced in 2022.

Objective

- Improve:
 - Transparency.
 - Liquidity.
 - Price discovery in India's gold market.

Importance of Gold in the Global Economy

Financial Stability

Role

- Acts as a reserve asset during economic crises.

Portfolio Diversification

Benefit

- Reduces overall reserve risk.

Store of Value

Feature

- Maintains value over long periods.

Confidence Building

Impact

- Enhances trust in a country's reserve position.

Challenges Associated with Gold Reserves

No Regular Yield

- Gold does not generate interest or dividends.

Storage Costs

- Requires secure storage and insurance.

Price Volatility

- Gold prices can fluctuate significantly in the short term.

Liquidity Management

- Physical gold may be less flexible than highly liquid currency assets.

Significance for India

Reserve Diversification

- Supports diversification of India's foreign exchange reserves.

Financial Security

- Enhances resilience against global financial shocks.

Reduced Currency Risk

- Limits dependence on major reserve currencies.

Strategic Asset

- Strengthens long-term reserve management strategy.

Way Forward

Balanced Reserve Strategy

- Maintain an optimal mix of currencies, gold, and other reserve assets.

Strengthen Gold Markets

- Improve transparency and efficiency in gold trading.

Enhance Storage Security

- Ensure safe and diversified storage arrangements.

Promote International Cooperation

- Strengthen global financial stability mechanisms.

Conclusion

- The **World Gold Council's 2026 Central Bank Gold Reserves Survey** highlights a significant shift in global reserve management, with central banks increasingly turning to gold as a safe, reliable, and politically neutral asset.
- Rising gold accumulation reflects concerns over inflation, geopolitical uncertainty, and the long-term dominance of reserve currencies such as the US dollar.
- As economic and strategic risks continue to evolve, gold is expected to remain a critical pillar of global financial stability and reserve diversification strategies.

Ashtalakshmi and the Vision of Viksit Bharat



Why in News?

- The remarkable transformation of the **North-Eastern Region (NER)** during **2014–2026** has drawn attention due to major achievements in connectivity, infrastructure, energy, healthcare, education, and economic development.
- The region has emerged as a key pillar of India's **Act East Policy** and the vision of **Viksit Bharat**.

Why is the North-East Called "Ashtalakshmi"?

Meaning

- In Indian tradition, **Goddess Lakshmi** has eight manifestations representing prosperity and abundance.

Eight States of the North-East

- Arunachal Pradesh
- Assam
- Manipur
- Meghalaya
- Mizoram
- Nagaland
- Sikkim
- Tripura

Significance

- The term **Ashtalakshmi** reflects the collective cultural, economic, strategic, and natural strengths of the eight states.
- The region is increasingly viewed as India's gateway to Southeast Asia rather than a distant frontier.

Major Drivers of Transformation

Connectivity Revolution

Road Infrastructure

- National Highway network expanded significantly through:
 - Bharatmala Pariyojana
 - Pradhan Mantri Gram Sadak Yojana
- Improved rural and last-mile connectivity.

Railway Development

- Expansion of broad-gauge rail networks across hill states.
- Railway electrification achieved in several northeastern states.
- Reduced dependence on diesel locomotives.

Engineering Marvels

Bogibeel Bridge

- India's longest rail-cum-road bridge.

Noney Bridge

- Features one of the world's tallest railway bridge piers.

Sela Tunnel

- Provides all-weather strategic connectivity.

Air Connectivity

- Expansion under **UDAN Scheme**.
- Significant increase in operational airports across the region.

Inland Waterways

- Development of waterways on the Brahmaputra and Barak rivers.
- Boosted cargo transportation and river tourism.

Digital Connectivity

- Thousands of Gram Panchayats connected with high-speed internet.
- Enhanced digital inclusion in remote areas.

Act East Policy and Strategic Integration

Gateway to ASEAN

- The North-East serves as India's land bridge to Southeast Asia.

India–Myanmar–Thailand Trilateral Highway

- Connects India with Southeast Asian markets through Myanmar and Thailand.

Kaladan Multi-Modal Transit Transport Project

- Connects eastern India with Myanmar through sea, river, and road transport.

Border Trade Infrastructure

- Development of Integrated Check Posts (ICPs).
- Promotion of Border Haats to strengthen local trade and people-to-people ties.

Policy Support and Financial Architecture

PM-DevINE

Full Form

- Prime Minister's Development Initiative for North East Region.

Objective

- Fund high-impact infrastructure and social sector projects.

NESIDS

Full Form

- North East Special Infrastructure Development Scheme.

Focus Areas

- Roads and connectivity.

- Healthcare.
- Education.
- Water supply.
- Power infrastructure.

North Eastern Council (NEC)

- Promotes region-specific development initiatives.
- Supports tourism, livelihoods, and infrastructure development.

Mandatory Budget Allocation

- Non-exempted Central Ministries allocate at least **10% of their annual budget** for the North-East.

Energy Security and Green Growth

Hydropower Development

Dibang Multipurpose Project

- India's tallest dam project.
- Capacity: **2,880 MW**.

Subansiri Lower Hydroelectric Project

- Capacity: **2,000 MW**.
- One of India's largest hydropower projects.

North East Gas Grid

- Connects all eight states through an integrated gas pipeline network.
- Enhances regional energy security and industrial development.

Socio-Economic Development

Water and Sanitation

Jal Jeevan Mission

- States such as **Arunachal Pradesh** and **Mizoram** achieved 100% tap water coverage.

ODF Status

- All eight states have achieved Open Defecation Free (ODF) status.

Housing

Pradhan Mantri Awas Yojana (PMAY)

- More than 31 lakh houses constructed.
- Integrated with sanitation, LPG, and electricity facilities.

Healthcare

AIIMS Guwahati

- Strengthened tertiary healthcare services in the region.

Medical Education

- Establishment of new medical colleges and healthcare institutions.

Education

Expansion of National Institutions

- Growth of:

- IITs.
- NITs.
- Eklavya Model Residential Schools.

Agricultural Diversification and Value Addition

Fisheries

Growth in Inland Fish Production

- Significant increase in fish production, particularly in **Assam**.

Government Support

- **Pradhan Mantri Matsya Sampada Yojana**
- Fish Farmer Producer Organisations (FFPOs).

Dairy and Livestock

Livestock Improvement

- Establishment of the region's first cattle IVF laboratory in **Guwahati**.

Agarwood Economy

Importance

- North-East hosts around 90% of India's agarwood resources.
- Emerging as a major export-oriented sector.

National Mission on Edible Oils (NMEO)

- Promotes local oilseed cultivation and reduces import dependence.

Organic Farming and GI Tags

Organic Agriculture

- Supported through **MOVCDNER (Mission Organic Value Chain Development for North Eastern Region)**.

Geographical Indication (GI) Products

Examples

- **Lakadong Turmeric**
- **Naga King Chilli**

Significance

- Enhances market value and export potential of regional products.

Brand North East Initiative

Objective

- Transform the region into a high-value, export-oriented economy.

State-Specific Missions

- Mizoram Ginger Mission.
- Nagaland Coffee Mission.
- Arunachal Kiwi Mission.
- Tripura Queen Pineapple Mission.
- Assam Muga Silk Mission.
- Sikkim Organic Food Mission.

- Meghalaya Lakadong Turmeric Mission.

Significance of North-East Transformation

National Integration

- Bridges geographical and developmental gaps.

Strategic Importance

- Strengthens India's engagement with ASEAN and Indo-Pacific regions.

Economic Growth

- Expands trade, tourism, agriculture, and industry.

Employment Generation

- Creates opportunities in infrastructure, services, agriculture, and manufacturing.

Sustainable Development

- Promotes green energy, organic farming, and climate-resilient growth.

Challenges

Difficult Terrain

- Mountainous geography continues to pose infrastructure challenges.

Border Security Concerns

- Sensitive international borders require continuous attention.

Climate Vulnerability

- Frequent floods, landslides, and extreme weather events.

Market Connectivity

- Need for stronger integration with national and international markets.

Way Forward

Strengthen Act East Policy

- Accelerate cross-border connectivity and trade projects.

Promote Sustainable Tourism

- Leverage natural and cultural assets responsibly.

Expand Green Energy

- Harness hydropower and renewable energy potential.

Support Value-Added Agriculture

- Enhance processing and exports of regional products.

Deepen Digital and Physical Connectivity

- Ensure inclusive development and integration with the national economy.



Crux of The Hindu & Indian Express

Economics

Economic Advisory Council to the Prime Minister (EAC-PM) Meeting 2026



Why in News?

On **6 June 2026**, Prime Minister **Narendra Modi** chaired a meeting of the **Economic Advisory Council to the Prime Minister (EAC-PM)** to discuss measures for sustaining India's economic growth amid global uncertainties.

The meeting focused on:

- Sustaining high economic growth.
- Attracting foreign capital.
- Strengthening structural reforms.
- Assessing risks from the **West Asia conflict**.
- Addressing challenges posed by **El Niño**.
- Improving **Ease of Doing Business (EoDB)** and **Ease of Living**.

What is EAC-PM?



ECONOMIC ADVISORY
COUNCIL TO THE PRIME
MINISTER
(EAC-PM)

- The **Economic Advisory Council to the Prime Minister (EAC-PM)** is an independent advisory body that provides economic advice to the Prime Minister on key policy issues.

Nature of EAC-PM

- **Non-Constitutional Body**
- **Non-Statutory Body**

- **Non-Permanent Body**
- Constituted through an **Executive Order**

Present Chairman

- **S. Mahendra Dev**

Functions of EAC-PM

The Council performs the following functions:

Economic Policy Advice

- Advises the Prime Minister on economic matters.
- Suggests policy interventions.

Macroeconomic Assessment

- Reviews growth trends.
- Assesses inflation, investment and employment conditions.

Risk Evaluation

- Studies domestic and global economic risks.
- Suggests mitigation measures.

Reform Recommendations

- Recommends reforms for sustainable and inclusive growth.

Development Planning

- Provides inputs regarding long-term development priorities.

Major Issues Discussed During the Meeting

1. Sustaining India's Growth Momentum

The Council emphasized maintaining India's growth trajectory despite global challenges.

Areas of Focus

- **Economic Transformation**
- **Structural Reforms**
- **Investment-led Growth**
- **Macroeconomic Stability**
- **Ease of Doing Business**
- **Ease of Living**

Objective

- To ensure that India remains one of the fastest-growing major economies despite global uncertainty.

2. Measures to Boost Foreign Capital Inflows

- The government announced several measures to attract foreign investment into India.

Tax Relief for Foreign Institutional Investors (FIIs)

Removal of Short-Term Capital Gains Tax (STCG)

- No STCG tax on investments in Government Securities.

Removal of Long-Term Capital Gains Tax (LTCG)

- LTCG tax also removed on such investments.

Removal of Withholding Tax

- Interest income from Government Securities exempted from withholding tax.

Expected Benefits

- Greater investor confidence.
- Higher foreign investment.
- Improved market liquidity.
- Lower borrowing costs.

3. RBI Measures to Support Capital Inflows

- The Reserve Bank of India (RBI) introduced complementary measures.

Easier Foreign Currency Deposits

- Relaxation of norms for mobilising foreign currency deposits.

Revival of FCNR(B) Scheme

- **FCNR(B) = Foreign Currency Non-Resident (Bank) Deposit Scheme**

Under this scheme:

- NRIs can maintain foreign currency deposits.
- RBI bears exchange-rate hedging costs.

Forex Swap Facility for PSUs

Provided temporary concessional forex swap facility for:

- Public Sector Undertakings (PSUs)
- Raising External Commercial Borrowings (ECBs)

Potential Foreign Capital Inflows

Estimated Inflows

- The combined impact of government and RBI measures may attract **Nearly \$70 Billion** of foreign capital inflows.

Role of Global Bond Indices

Why Bond Index Inclusion Matters?

When a country is included in major bond indices:

- Global funds automatically invest.
- Demand for government bonds increases.
- Bond yields fall.
- Borrowing costs decline.

India's Recent Inclusion in Global Bond Indices

Bond Index	Inclusion Date
JPMorgan Emerging Market Bond Index	June 2024
Bloomberg Emerging Market Local Currency Index	January 2025
FTSE Russell Emerging Market Bond Index	September 2025

Bloomberg Global Aggregate Bond Index

Significance

India's inclusion could bring:

- **\$20–25 Billion** additional inflows.
- Greater demand for Government Securities.
- Lower borrowing costs.
- Deeper integration with global financial markets.

Assessment of Global Risks

1. West Asia Conflict

The Council reviewed the implications of the ongoing conflict in West Asia.

Key Concerns

- Energy security.
- Crude oil prices.
- Global trade routes.
- Financial market stability.

Assessment

- No major immediate threat was identified, but developments continue to be monitored.

2. El Niño and Monsoon Risks

Why Important?

- El Niño can weaken India's monsoon.

Possible Impact

- Lower agricultural output.
- Reduced rural incomes.
- Food inflation.
- Slower economic growth.

Suggested Measures

Climate-Resilient Agriculture

- Promote drought-resistant crops.
- Improve farm resilience.

Irrigation Expansion

- Reduce dependence on rainfall.

Water Management Reforms

- Efficient use of water resources.

Diversification of Growth Drivers

- Greater contribution from manufacturing and services sectors.

Strong Economic Performance Highlighted

- The Council noted encouraging economic data despite global uncertainty.

GDP Performance

Indicator	Value
GDP Growth (Jan–Mar 2026 Quarter)	7.8%
FY 2025–26 GDP Growth Estimate	7.7%
Earlier Estimate	7.6%

Significance

The strong growth performance demonstrates:

- Economic resilience.
- Strong domestic demand.
- Investor confidence.
- Effective macroeconomic management.

Significance of the Meeting

The EAC-PM meeting highlights India's strategy of:

Strengthening Growth

- Maintaining high GDP growth.

Attracting Global Capital

- Improving investment climate.

Deepening Reforms

- Continuing structural reforms.

Managing Risks

- Addressing geopolitical and climate-related challenges.

Improving Competitiveness

- Enhancing Ease of Doing Business.

Challenges Ahead

Global Geopolitical Uncertainty

- West Asia conflict.
- Trade disruptions.

Climate Vulnerability

- El Niño-related risks.

Volatile Capital Flows

- Dependence on global financial conditions.

Sustaining High Growth

- Need for continuous reforms and productivity gains.

Way Forward

- Accelerate structural reforms.
- Strengthen investment climate.
- Expand infrastructure development.
- Improve climate resilience.
- Deepen integration with global financial markets.
- Maintain macroeconomic stability.

Conclusion

The **EAC-PM meeting of June 2026** reflected the government's focus on sustaining India's economic momentum despite global challenges. Discussions centred on reforms, foreign capital inflows, climate resilience and macroeconomic stability. With strong GDP growth, favourable investment policies and increasing integration with global financial markets, India remains well-positioned to pursue its long-term goal of becoming a leading global economic power.

Cabinet Approves Additional ₹30,000 Crore Investment in NIIF



Why in News?

- The **Union Cabinet**, chaired by Prime Minister **Narendra Modi**, approved an additional **₹30,000 crore investment commitment** in the **National Investment and Infrastructure Fund**.
- With this approval, the Government of India's total commitment to NIIF has increased from **₹30,000 crore to ₹60,000 crore**.

National Investment and Infrastructure Fund (NIIF)

About

- NIIF is India's **sovereign-anchored investment platform** focused on infrastructure and strategic sectors.
- It was established in **2015** to catalyse long-term institutional investments into India.

Management

- Managed by **National Investment and Infrastructure Fund Limited**.
- Operates on professional and commercial investment principles.

Government Shareholding

- Government of India holds **49% ownership** in NIIF.

Capital Base

- NIIF currently manages capital commitments of approximately **₹40,000 crore** across various investment funds and strategies.

Why the Additional Investment?

Strengthening Infrastructure Financing

- Increase investment in critical infrastructure sectors.
- Mobilise domestic and international institutional capital.

Catalysing Private Investment

- Encourage participation of pension funds, sovereign wealth funds, and global investors.

Supporting National Priorities

- Accelerate investments in sectors crucial for economic growth and development.

Major Global Investors in NIIF

Sovereign Wealth Funds and Pension Funds

Key investors include:

- Abu Dhabi Investment Authority
- AustralianSuper
- CPP Investments
- Ontario Teachers' Pension Plan
- PSP Investments
- Temasek Holdings
- Multilateral Institutions
- Asian Infrastructure Investment Bank
- New Development Bank
- Asian Development Bank
- Japan Bank for International Cooperation
- U.S. International Development Finance Corporation

Indian Financial Institutions

- Axis Bank
- ICICI Bank
- State Bank of India
- HDFC Group
- Kotak Mahindra Life Insurance

Major Investment Strategies of NIIF

Infrastructure Fund

- India's largest domestic infrastructure fund.
- Corpus of approximately **₹16,000 crore**.

Key Sectors

- Roads.
- Ports and logistics.
- Airports.
- Renewable energy.

- Smart meters.
- Power transmission.
- Digital infrastructure.

Private Markets Fund

- Invests in Alternative Investment Funds (AIFs) managed by Indian fund managers.

Focus Areas

- Climate solutions.
- Affordable housing.
- Affordable healthcare.
- Venture capital and technology.

Strategic Opportunities Fund

Focuses on:

- Financial services.
- Healthcare.
- Manufacturing.

India-Japan Fund

- First bilateral fund of NIIF.

Focus Areas

- Climate investments.
- Circular economy.
- Energy transition.
- India–Japan business corridor.

Sectors Benefiting from NIIF Investments

Transportation

- Roads, ports, logistics, and airports.

Energy Transition

- Renewable energy and clean energy infrastructure.

Digital Infrastructure

- Telecommunications and digital connectivity projects.

Healthcare

- Expansion of healthcare services and infrastructure.

Electric Mobility

- EV ecosystem and charging infrastructure.

Affordable Housing

- Housing projects for lower-income groups.

Technology and Manufacturing

- Support for innovation and industrial growth.

Alignment with National Initiatives

NIIF investments support:

- PM Gati Shakti
- Digital India
- Make in India

- India's COP Climate Commitments
- FAME Scheme
- PM E-DRIVE Scheme

Advisory Role of NIIF

Public-Private Partnership (PPP) Support

- Assists governments in designing and structuring PPP projects.

Policy and Investment Advisory

- Supports investment frameworks in strategic sectors.

Key Initiatives Supported

- Maritime Development Fund.
- Research Development and Innovation Fund.
- Asset monetisation programmes.
- Sector-specific investment structures.

NIIF Infrastructure Fund II

Purpose

- The additional ₹30,000 crore commitment will support the creation of NIIF Infrastructure Fund II.

Target Corpus

- Approximately ₹30,000 crore.

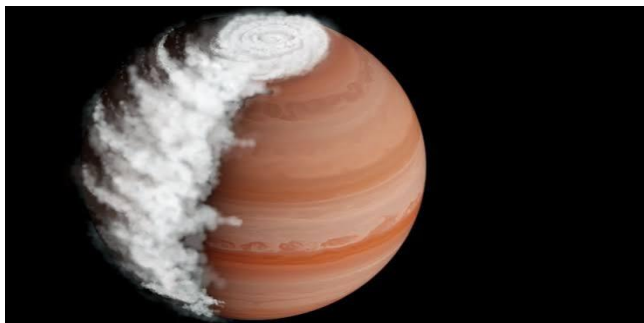
Investment Areas

- Transportation.
- Energy.
- Digital infrastructure.
- Urban infrastructure.
- E-mobility.



Science & Technology

JWST Captures Weather of an Exoplanet 700 Light-Years Away



Why in News?

The NASA James Webb Space Telescope (JWST) achieved another scientific milestone by successfully capturing and analyzing the atmospheric weather patterns of an exoplanet located nearly 700 light-years away from Earth.

About James Webb Space Telescope (JWST)

Launch: Deployed into space in December 2021.

Collaboration: It is the largest and most powerful space observatory ever constructed, built through an international partnership between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).

Orbital Location: Positioned at the **L2 (Second Lagrange Point)**, located approximately 1.5 million kilometers beyond Earth's orbit. This unique orbit offers a highly stable environment for deep-space observation while keeping Earth, the Moon, and the Sun positioned behind its shield.

Spectrum Range: Operates primarily in the **infrared spectrum**, allowing it to peer through dense cosmic dust clouds and observe highly redshifted light from the early universe.

Core Structural Components

Optical Telescope Element (OTE): The main optical structure that acts as the eye of the observatory, gathering faint light from incredibly distant cosmic objects via its iconic 18 gold-coated hexagonal mirror segments.

Integrated Science Instrument Module (ISIM): The structural core housing all the crucial onboard cameras, spectrographs, and fine-guidance sensors required to process light gathered by the OTE.

Sunshield: A massive, 5-layer kite-shaped thermal barrier that actively protects the telescope's hyper-sensitive infrared instruments from the blinding heat and radiation of the Sun, Earth, and Moon.

Spacecraft Bus: The foundational operational chassis that manages crucial engineering subsystems, including power distribution, attitude control, propulsion, data processing, and communications.

Primary Objectives of JWST

The Early Universe: To search for the very first stars and galaxies that formed immediately after the Big Bang.

Galactic Evolution: To study and determine how galaxies have structurally evolved from their initial creation to the present day.

Star and Planetary Birth: To thoroughly examine the early stages of star creation up to the formation of active planetary systems.

Exoplanetary Characterization: To investigate the potential for life in distant planetary systems by mapping and measuring their distinct physical and chemical features.

NASA Declares End of Historic MAVEN Mars Mission



Why in News?

NASA has officially concluded the **MAVEN (Mars Atmosphere and Volatile Evolution)** mission after more than 11 years in orbit. An official anomaly review board determined the spacecraft to be completely unrecoverable following a permanent loss of power and signal that began in December 2025.

The Terminal Anomaly: What Happened?

Loss of Contact: On 6 December 2025, MAVEN underwent a routine orbital maneuver, passing predictably behind the Red Planet.

The Glitch: When the spacecraft reemerged, NASA's Deep Space Network (DSN) failed to detect its carrier signal.

Power Exhaustion: Fragmentary telemetry later revealed that MAVEN entered safe mode and began rotating at an unexpectedly high speed. This uncontrolled spinning permanently misaligned its solar panels, draining its batteries completely and disabling the communications suite.

Core Overview of the MAVEN Mission

Launch and Longevity: Launched in November 2013, the probe entered Martian orbit in September 2014. It systematically shattered its initial 1-year primary timeline, operating successfully for over a decade.

Primary Objective: MAVEN was the first dedicated explorer built exclusively to study the Martian upper atmosphere and ionosphere, seeking to answer how Mars transformed from a warm, water-rich,

potentially habitable planet into a freezing, barren desert.

Landmark Scientific Discoveries

Solar Stripping: The mission proved that Mars lost its atmosphere primarily due to solar wind erosion. Crucially, it showed that atmospheric loss spikes exponentially during violent solar storms. MAVEN was the only spacecraft capable of simultaneously tracking solar energy inputs and the immediate atmospheric reactions of Mars.

Atmospheric Sputtering & Argon Loss: By analyzing the noble gas Argon, the mission provided the first direct measurements of "sputtering"—a process where energetic solar ions crash into the atmosphere like a cannonball, physically knocking gas molecules out into space.

Proton Auroras: MAVEN discovered entirely new forms of Martian light shows, identifying unique auroras triggered when energetic solar protons bombard atmospheric gases.

Dust Storm Water Escape: During the 2018 global Martian dust storm, the probe tracked how intense localized heating pushed water molecules high into the upper atmosphere, explaining sudden surges in planetary water loss to deep space.

Deep Space Observations: Beyond Mars, MAVEN utilized its specialized Imaging Ultraviolet Spectrograph (IUVS) to capture multi-wavelength and high-resolution UV data of the interstellar comet **3I/ATLAS**, providing key insights into cometary physics.

Strategic Infrastructure Legacy

Communications Backbone: Beyond its atmospheric science, MAVEN served as a foundational pillar of NASA's **Mars Relay Network**, acting as an orbital data bridge that transmitted vast volumes of scientific data from surface rovers (Curiosity and Perseverance) back to Earth.

Future Human Exploration: The radiation, atmospheric composition, and solar interaction datasets compiled by MAVEN provide critical safety parameters for designing radiation shielding and operational baselines for future crewed missions to Mars.

Conclusion

Though the MAVEN spacecraft has fallen silent, its 11-year operational run represents a massive victory for planetary science. Resulting in over 800 scientific publications, MAVEN's comprehensive data archive

will continue to serve as the definitive baseline for atmospheric research and guide human exploration strategies toward the Red Planet for decades to come.

E85 Fuel Rollout and India's Flex-Fuel Transition



Why in News?

On **World Environment Day 2026**, the nationwide rollout of **E85 fuel** was inaugurated in **New Delhi** by the Union Minister for **Petroleum and Natural Gas**.

The initiative marks a significant step in India's transition towards a **flex-fuel ecosystem** and cleaner transportation.

Flex-Fuel Technology: The Brazil Model

India's flex-fuel strategy has been inspired by the experience of **Brazil**, where flex-fuel technology has been successfully adopted on a large scale.

Nearly **80% of light vehicles** in Brazil operate on high ethanol-blended fuels.

The Brazilian model has demonstrated the long-term commercial and environmental viability of ethanol-based mobility.

What is E85 Fuel?

E85 is a high-ethanol blended fuel containing:

80–85% Ethanol

14–19% Petrol

The fuel has been developed specifically for **Flex-Fuel Vehicles (FFVs)**.

FFVs are capable of operating on ethanol-petrol blends ranging from **E20 to E100**.

Flex-Fuel Vehicles (FFVs)

FFVs are designed with engines and fuel systems capable of handling varying concentrations of ethanol.

These vehicles can automatically adjust engine performance according to the ethanol blend being used.

E85 fuel can only be used in vehicles certified as **E85-compliant**.

At present, only **three E85-compatible vehicle models** are available in India.

Initial Rollout of E85 Fuel

E85 fuel has initially been introduced at **48 retail outlets** operated by **Public Sector Oil Marketing Companies (OMCs)**.

A phased expansion strategy has been planned:

500 outlets by December 2026

5,000 outlets by December 2027

The expansion is intended to create a nationwide flex-fuel distribution network.

Pricing Advantage

E85 has been priced at approximately **₹20 per litre lower** than conventional petrol.

The pricing strategy has been adopted to ensure that the benefits of domestically produced ethanol are transferred directly to consumers.

Lower fuel costs are expected to encourage greater adoption of flex-fuel vehicles.

Environmental Benefits of E85

Reduction in Greenhouse Gas Emissions

Lifecycle **Greenhouse Gas (GHG) emissions** can be reduced by nearly **61%** through the use of E85 in FFVs. The fuel contributes to India's climate mitigation efforts and clean energy transition.

Reduction in Air Pollution

Emissions of **Particulate Matter (PM)** are reduced to near-zero levels.

Improved urban air quality can be achieved through wider adoption of ethanol-based fuels.

Engine Performance Advantages

High Octane Rating

E85 possesses a **Research Octane Number (RON)** of approximately **108**.

A higher octane rating improves fuel combustion efficiency and engine performance.

Improved Engine Efficiency

Higher compression ratios can be utilized in FFV engines.

Ignition timing can be optimized for better power output and fuel efficiency.

Enhanced engine performance can be achieved without compromising environmental objectives.

Government Support and Policy Measures

Supportive taxation policies for **E85 fuel** and **Flex-Fuel Vehicles (FFVs)** are being encouraged at the state level.

The development of a comprehensive flex-fuel ecosystem is being promoted through coordinated policy interventions.

E85 has been identified as a key component of India's ethanol roadmap.

Contribution to Ethanol Blending Targets

Wider deployment of E85 is expected to support India's target of achieving nearly **26% overall ethanol blending by 2030–31**.

The initiative complements existing efforts under the **Ethanol Blended Petrol (EBP) Programme**.

Strategic Significance of E85 Fuel

Reducing Crude Oil Import Dependence

Greater utilization of domestically produced ethanol can reduce reliance on imported crude oil.

Foreign exchange savings can be achieved through lower import requirements.

Enhancing Energy Security

Diversification of fuel sources can strengthen India's long-term energy security.

Dependence on volatile international oil markets can be reduced.

Supporting Farmers' Income

Increased demand for ethanol feedstocks such as **Sugarcane, Maize** and other agricultural products can generate additional income opportunities for farmers.

Rural economic development can be supported through ethanol production value chains.

Promoting Sustainable Mobility

E85 contributes to the development of cleaner and more sustainable transportation systems.

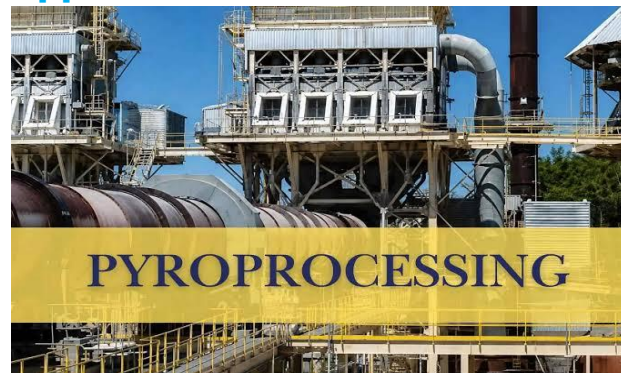
The fuel aligns with India's commitments towards environmental protection and decarbonization.

Conclusion

The rollout of **E85 fuel** represents an important milestone in India's transition towards **flex-fuel mobility** and a **low-carbon transport sector**.

Through reduced emissions, lower fuel costs, improved energy security and enhanced support for the agricultural sector, E85 is expected to play a crucial role in achieving India's long-term energy and climate goals.

Pyroprocessing and Its Applications



Why in News?

- Recently, **pyroprocessing** has attracted attention due to its extensive applications in **cement manufacturing, metallurgy** and the **nuclear power sector**.
- Among its various uses, **cement production** remains the largest industrial application of pyroprocessing.

What is Pyroprocessing?

About

- **Pyroprocessing** refers to the treatment or transformation of solid materials through the application of high temperatures.
- Physical and chemical changes are induced in materials by exposing them to elevated temperatures.
- It is primarily a **dry processing technique** and is considered highly **energy-intensive**.
- The process is widely employed in industries requiring thermal treatment of raw materials.

Pyroprocessing in Cement Manufacturing

Role in Cement Production

- Pyroprocessing forms the core stage of cement manufacturing.
- Finely ground raw materials such as:
 - Limestone
 - Clay
 - Iron oreare fed into a **rotary kiln**.

Calcination Stage

As temperatures approach **900°C**, limestone undergoes decomposition.

Carbon dioxide (CO₂) is released from limestone in a process known as **calcination**.

This results in the formation of calcium oxide.

Clinker Formation

At temperatures of approximately **1,450°C**, the raw mixture partially melts.

Marble-sized nodules known as **clinker** are formed.

The clinker is subsequently cooled and finely ground to produce cement.

Significance

Pyroprocessing determines the quality and strength characteristics of cement.

It is also one of the most energy-intensive stages of cement production.

Pyroprocessing in Metallurgy

Purpose

In metallurgy, pyroprocessing is used to extract and refine metals from their ores.

High-temperature treatment enables the separation of valuable metals from impurities.

Roasting

Sulphide ores are heated in the presence of air.

The sulphides are converted into metal oxides through oxidation.

This process facilitates subsequent metal extraction.

Smelting

Ores are heated to very high temperatures until melting occurs.

The desired metal is separated from unwanted impurities.

The impurities combine to form a waste product known as **slag**.

Calcining

Certain ores and minerals are heated in the absence or limited presence of air.

For example, limestone is heated to produce **lime (CaO)**.

The process removes volatile substances and moisture.

Significance

Pyroprocessing remains one of the most important techniques for large-scale metal extraction and refining.

Pyroprocessing in the Nuclear Industry

About

In the nuclear sector, pyroprocessing refers to the reprocessing of **spent nuclear fuel** through high-temperature electrochemical methods.

The technology was extensively developed during the **1980s and 1990s** as part of advanced nuclear fuel cycle research.

Working Process

Used nuclear fuel is first fragmented into smaller pieces.

These fragments are placed in a high-temperature molten salt bath.

Molten Salt Medium

The salt bath generally consists of:

Lithium Chloride (LiCl)

Potassium Chloride (KCl)

Operating temperatures are typically maintained at **500°C or higher**.

Electrochemical Separation

An electric current is passed through the molten salt. Different elements are separated based on their **electrochemical properties**.

Valuable materials are recovered through separate collection streams.

Countries Studying the Technology

Advanced pyroprocessing technologies have been studied in:

Japan

South Korea

United States

The technology is being explored as part of **advanced fast reactor programmes** and future nuclear fuel cycles.

Advantages of Pyroprocessing

Efficient Material Transformation

Rapid physical and chemical transformations can be achieved through controlled heating.

Industrial Versatility

The process finds applications across:

Cement manufacturing.

Metallurgy.

Nuclear fuel reprocessing.

Chemical industries.

Resource Recovery

Valuable metals and nuclear materials can be recovered and reused.

Challenges Associated with Pyroprocessing

High Energy Consumption

Large amounts of thermal energy are required.

Energy costs constitute a significant portion of production expenses.

Environmental Concerns

Industrial pyroprocessing may generate:

Carbon dioxide emissions.

Air pollutants.
Industrial waste products.

Technological Complexity

Advanced applications, particularly in the nuclear sector, require sophisticated infrastructure and safety measures.

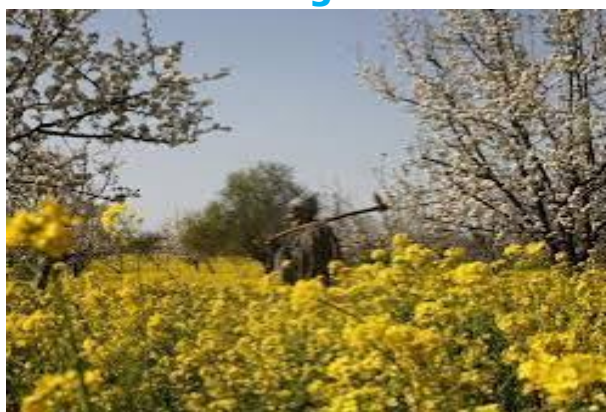
Conclusion

Pyroprocessing is a high-temperature industrial process used extensively in **cement production, metallurgy** and **nuclear fuel reprocessing**.

Its ability to transform materials and recover valuable resources makes it a critical industrial technology.

However, high energy requirements and environmental concerns highlight the need for cleaner and more efficient pyroprocessing technologies in the future.

IMI-Resistant Mustard and Mutation Breeding



Why in News?

India is set to begin large-scale cultivation of **Imidazolinone-resistant (IMI-resistant) mustard hybrids** during the **2026–27 rabi season**.

The initiative aims to tackle the destructive parasitic weed **Orobanche**, enhance mustard productivity, increase domestic edible oil production and reduce India's dependence on edible oil imports.

Mustard Cultivation in India

Importance of Mustard

Mustard is India's most important **rabi oilseed crop**. It is extensively cultivated in:

Rajasthan.
Haryana.
Punjab.
Uttar Pradesh.
Madhya Pradesh.

Mustard contributes significantly to India's edible oil production and farmer incomes in arid and semi-arid regions.

Economic Significance

India remains heavily dependent on imported edible oils.

During **2024–25**, India imported nearly **16 million tonnes of edible oils**.

The import bill was approximately **₹1.6 lakh crore**.

Enhancing domestic oilseed productivity is therefore critical for:

Reducing import dependence.

Improving self-reliance.

Strengthening food and nutritional security.

Orobanche: A Major Threat to Mustard Cultivation

About Orobanche

Orobanche, also known as **Phelipanche**, is a root-parasitic weed.

It lacks chlorophyll and cannot produce its own food through photosynthesis.

The parasite attaches itself to the roots of host plants and derives nutrients directly from them.

Impact on Mustard Crops

Orobanche extracts:

Water.

Nutrients.

Essential resources from mustard plants.

This leads to:

Reduced growth.

Lower yields.

Significant economic losses for farmers.

Challenges in Control

The parasite grows underground for much of its life cycle.

Traditional weed-control measures are often ineffective because the weed remains attached to crop roots.

IMI-Resistant Mustard

What is IMI-Resistant Mustard?

IMI-resistant mustard is a specially developed mustard hybrid capable of tolerating **Imidazolinone (IMI) herbicides**.

These herbicides can effectively eliminate Orobanche without damaging the mustard crop.

Development Method

The crop was developed using **mutation breeding**, a conventional plant breeding technique.

It is **not a genetically modified (GM) crop**.

Scientific Basis: ALS Enzyme Mechanism

Role of ALS Enzyme

Acetolactate Synthase (ALS) is a crucial enzyme involved in plant growth and development.

It helps in the synthesis of essential amino acids required for plant survival.

Effect of IMI Herbicides on Normal Mustard

In conventional mustard plants:

IMI herbicides inhibit the ALS enzyme.

Plant growth stops.

The crop eventually dies.

Mechanism in IMI-Resistant Mustard

Scientists identified a natural mutation in the ALS gene.

The mutation alters the structure of the ALS enzyme.

Result

IMI herbicides can no longer inhibit the enzyme.

Mustard plants survive herbicide application.

Orobanche parasites are destroyed.

Advantages

Effective control of parasitic weeds.

Improved crop productivity.

Reduced yield losses.

Higher edible oil production.

Mutation Breeding (Mutagenesis)

About

Mutation breeding is a conventional crop improvement technique.

It accelerates the natural process of genetic mutation.

Methodology

Physical Mutagens

Seeds or plant tissues may be exposed to:

X-rays.

Gamma rays.

Chemical Mutagens

Common chemical mutagens include:

Ethyl Methanesulfonate (EMS).

Other mutation-inducing chemicals.

Selection Process

Mutations occur randomly throughout the genome.

Scientists screen large populations and select plants exhibiting desirable traits such as:

Higher yield.

Disease resistance.

Herbicide tolerance.

Climate resilience.

Characteristics

No foreign DNA is introduced.

Changes occur within the plant's own genetic material.

Considered a conventional breeding approach.

Genetically Modified Organisms (GMOs)

About

GMOs are produced through direct genetic engineering techniques.

Specific genes responsible for desired traits are inserted into the genome of a target organism.

Process

Gene Identification

Scientists identify a useful gene from another organism.

Gene Transfer

The gene is introduced into the target plant using:

Agrobacterium-mediated transformation.

Gene gun technology.

Other biotechnology tools.

Characteristics

Involves introduction of foreign DNA (transgenes).

Enables highly targeted genetic modifications.

Can create combinations that may not occur naturally.

Mutation Breeding vs Genetic Modification

Feature	Mutation Breeding	Genetic Modification (GM)
Source of Genetic Material	Uses existing DNA of the plant	Introduces foreign DNA from another organism
Nature of Change	Accelerates natural mutations	Introduces specific engineered traits
Precision	Random mutations requiring screening	Highly targeted and precise
Foreign DNA	Not introduced	Introduced through biotechnology
Regulatory Status in India	Considered conventional breeding	Subject to stringent biosafety regulation
Approval Requirement	No approval from GEAC required	Requires approval from GEAC
Examples	Mutation-derived crop varieties	Bt Cotton, GM Mustard, Golden Rice

Regulatory Framework in India

Mutation-Bred Crops

Mutation-bred varieties are treated as conventionally bred crops.

They do not require approval from the **Genetic Engineering Appraisal Committee**.

Genetically Modified Crops

GM crops are regulated under biosafety guidelines. Approval is granted by the **GEAC** under the **Ministry of Environment Forest and Climate Change** after detailed environmental and safety assessments.

Significance of IMI-Resistant Mustard Boosting Domestic Oilseed Production

Higher yields can reduce dependence on edible oil imports.

Improving Farmer Income

Better weed management reduces crop losses and increases profitability.

Strengthening Food Security

Increased domestic edible oil production enhances national self-reliance.

Sustainable Crop Protection

Provides an effective solution against a major parasitic weed that is otherwise difficult to control.

Challenges and Concerns

Herbicide Resistance

Excessive herbicide use may lead to the emergence of herbicide-resistant weeds over time.

Need for Scientific Monitoring

Continuous monitoring is necessary to assess long-term ecological impacts.

Farmer Awareness

Proper training is required regarding:

Herbicide dosage.

Timing of application.

Integrated weed management practices.

Conclusion

The introduction of **IMI-resistant mustard hybrids** marks a significant technological advancement in India's oilseed sector.

By effectively controlling the parasitic weed **Orobanche** through mutation breeding, the technology has the potential to enhance mustard productivity, strengthen edible oil self-sufficiency and reduce the country's import dependence, while avoiding the regulatory complexities associated with genetically modified crops.

Floating Solar Power in India



Why in News?

The **National Institute of Solar Energy**, under the **Ministry of New and Renewable Energy**, released the first comprehensive national assessment of floating solar potential in India.

The study estimates that India's reservoirs can support approximately **102 GW of floating solar capacity**, highlighting floating solar as a viable solution to land constraints in renewable energy deployment.

What is Floating Solar?

About

Floating Solar Photovoltaic (FPV) systems are solar power installations deployed on water bodies such as:

- Reservoirs.
- Lakes.
- Ponds.
- Dams.

Instead of occupying land, solar panels are mounted on floating structures anchored to the water surface.

Working Mechanism

Solar panels generate electricity similar to conventional solar plants.

Floating platforms support the panels while anchoring systems prevent movement due to wind and water currents.

Electricity generated is transmitted to the grid through underwater or floating cables.

Need for Floating Solar in India

Land Constraints in Solar Expansion

Ground-mounted solar currently dominates India's renewable energy capacity of nearly **100 GW**.

However, such projects require large tracts of land, often:

- 3–4 times the actual panel area.
- Creating conflicts with agriculture.
- Competing with habitation and industrial uses.

Challenges in Land Acquisition

Land acquisition is often:

- Costly.
- Time-consuming.
- Socially contentious.

Land-Neutral Solution

Floating solar utilizes existing water bodies without requiring additional land.

It therefore provides a "land-neutral" pathway for renewable energy expansion.

Floating Solar Potential in India

National Assessment

The NISE assessment identified approximately **1,946 km²** of suitable water surface area across India.

Estimated Capacity

This translates into a potential floating solar capacity of approximately **102.18 GW**.

Importance

The assessment demonstrates that reservoirs can become significant contributors to India's clean energy transition.

Leading States in Floating Solar Potential

State	Estimated Potential
Maharashtra	16.28 GW
Madhya Pradesh	14.89 GW
Karnataka	13.69 GW
Odisha	12.81 GW
Telangana	10.72 GW

Flagship Floating Solar Project in India

Omkareshwar Floating Solar Park

Location

Situated on the **Narmada River** in **Madhya Pradesh**.

Capacity

Currently India's largest floating solar project with a capacity of **278 MW**.

Future Expansion

Planned to be expanded to **600 MW**.

Significance

Serves as a model for large-scale floating solar deployment in India.

Cost Considerations

Higher Initial Costs

Floating solar projects are estimated to cost approximately **25% more** than conventional ground-mounted solar plants.

Reasons

Additional costs arise from:

Floating structures.

Anchoring systems.

Waterproof electrical infrastructure.

Specialized maintenance requirements.

Long-Term Benefits

Avoids land acquisition expenses.

Reduces evaporation losses from reservoirs.

Improves panel efficiency due to the cooling effect of water.

Agri-Photovoltaics (Agri-PV)

About

Alongside floating solar, MNRE is promoting **Agri-Photovoltaics (Agri-PV)**.

Concept

Solar panels are mounted on elevated structures above agricultural fields.

Benefits

Simultaneous crop cultivation and electricity generation.

Improved land-use efficiency.

Additional income source for farmers.

Global Scenario of Floating Solar

Worldwide Growth

Global floating solar capacity reached approximately **9.6 GW** by 2024.

Asian Dominance

Nearly **90%** of floating solar installations are located in Asia.

Leading Country

China leads global deployment.

Major Project

China's **120 MW floating solar plant on Poyang Lake** is among the world's largest floating solar installations.

Advantages of Floating Solar

Efficient Land Utilization

Conserves valuable agricultural and urban land.

Reduced Water Evaporation

Solar panels shade water surfaces, reducing evaporation losses.

Improved Solar Efficiency

Water bodies provide natural cooling, increasing panel performance.

Lower Environmental Footprint

Limits land-use change and habitat disruption.

Multipurpose Water Resource Management

Enables simultaneous use of reservoirs for:

- Energy generation.
- Water storage.
- Irrigation.
- Fisheries.

Challenges

High Capital Cost

Initial investment remains higher than traditional solar projects.

Maintenance Challenges

Exposure to moisture and water conditions may increase maintenance requirements.

Environmental Concerns

Large-scale installations may affect:

Aquatic ecosystems.

Water quality.

Biodiversity.

Technical Complexity

Requires specialized engineering for:

Anchoring.

Grid connectivity.

Structural stability.

Significance for India

Achieving Renewable Energy Targets

Floating solar can significantly contribute towards India's target of **500 GW of non-fossil fuel-based electricity capacity by 2030**.

Enhancing Energy Security

Expands renewable generation capacity without competing for scarce land resources.

Supporting Climate Goals

Contributes to India's commitments under the **Paris Agreement**.

Strengthening Sustainable Development

Promotes integrated management of energy, water and land resources.

Conclusion

Floating solar represents a transformative and land-efficient renewable energy solution for India.

With an estimated potential of over **102 GW**, the technology can play a crucial role in expanding clean energy capacity, reducing land-use conflicts, improving reservoir management and helping India achieve its long-term energy transition and climate commitments.

Artemis III Mission



Why in News?

The **National Aeronautics and Space Administration** has officially announced the four-member crew and updated mission profile for **Artemis III**.

The mission, now scheduled for **2027**, has been redesigned as a complex **Low Earth Orbit (LEO)** test flight rather than a direct lunar landing mission.

The mission aims to validate critical technologies and spacecraft systems required for future crewed lunar landings and eventual human missions to Mars.

What is Artemis III?

About

Artemis III is part of NASA's **Artemis Program**, which seeks to return humans to the Moon and establish a sustainable human presence for deep-space exploration.

It represents a crucial preparatory mission before future lunar surface operations.

Current Mission Objective

Conduct extensive testing of spacecraft docking, life-support systems, mission software and commercial lunar landing systems in Earth orbit.

Reduce risks associated with future lunar missions.

Crew of Artemis III

Commander

Randy Bresnik

NASA astronaut.

Assigned as Mission Commander.

Pilot

Luca Parmitano

Astronaut of the **European Space Agency**.

First ESA astronaut selected for an Artemis mission.

Assigned as Pilot.

Mission Specialists

Frank Rubio

NASA astronaut.

Assigned as Mission Specialist.

Andre Douglas

NASA astronaut.

Assigned as Mission Specialist.

Major Change in Mission Profile

Original Plan

Artemis III was initially envisioned as the mission that would return astronauts to the lunar surface for the first time since the Apollo era.

Revised Plan

The mission will now operate entirely in **Low Earth Orbit (LEO)**.

No lunar landing will be attempted during Artemis III.

Reason for the Change

Additional testing is required for:

Human landing systems.

Docking technologies.

Mission software.

Crew safety systems.

What is Low Earth Orbit (LEO)?

Definition

Low Earth Orbit refers to the region of space closest to Earth.

Altitude Range

Typically located between **500 km and 2,000 km** above Earth's surface.

Importance

Used for:

Space stations.

Earth observation satellites.

Scientific missions.

Technology demonstrations.

Future Lunar Landing Timeline

Artemis IV

Target

Artemis IV is now expected to undertake the first crewed Artemis lunar landing mission.

Timeline

Planned for **2028**.

Landing Site

The **Lunar South Pole** region.

Significance of Lunar South Pole

Water Ice Deposits

Believed to contain significant quantities of water ice.

Future Exploration

Supports long-term human habitation.

Provides resources for fuel and life-support systems.

Testing Commercial Human Landing Systems

Objective

Artemis III will validate docking and rendezvous operations involving multiple spacecraft.

Orion Spacecraft

About

NASA's primary deep-space crew vehicle.

Launch Vehicle

Launched using the **Space Launch System (SLS)**.

Commercial Mooncraft to be Tested

Blue Moon Lander

Developer

Developed by **Blue Origin**.

Founder

Founded by **Jeff Bezos**.

Purpose

Human lunar landing system for future Artemis missions.

Starship Lunar Lander

Developer

Developed by **SpaceX**.

Founder

Founded by **Elon Musk**.

Purpose

Human landing system for transporting astronauts to the lunar surface.

Key Technologies to be Tested

Rendezvous Operations

Spacecraft approaching one another in orbit.

Docking Operations

Physical connection between spacecraft.

Life Support Systems

Air, water and environmental control systems required for human survival.

Mission Software

Autonomous navigation and spacecraft control systems.

Communication Systems

Deep-space communication capabilities.

Crew Safety Systems

Emergency response and operational safety mechanisms.

Strategic Significance

Reducing Mission Risks

Testing hardware in Earth orbit allows engineers to identify and resolve technical issues before deep-space deployment.

Preparing for Lunar Exploration

Builds operational experience for future Artemis missions.

Foundation for Mars Missions

Provides critical technologies needed for long-duration human spaceflight to Mars.

Geopolitical Significance

Space Competition

China's Lunar Ambitions

China aims to conduct a crewed lunar landing before 2030.

Importance for the United States

Artemis III helps maintain American leadership in: Space exploration.

Advanced aerospace technologies.

Lunar infrastructure development.

International Cooperation

Artemis represents collaboration among: NASA.

ESA.

Commercial space companies.

International partners.

Artemis Programme

About

Artemis is NASA's flagship human space exploration programme.

Major Objectives

Return humans to the Moon.

Establish sustainable lunar exploration.

Develop technologies for Mars missions.

Promote international cooperation in space exploration.

Key Missions

Artemis I (2022)

Uncrewed test flight around the Moon.

Artemis II

First crewed mission around the Moon.

Artemis III (2027)

Earth-orbit technology demonstration mission.

Artemis IV (2028)

Planned crewed lunar landing mission.

Challenges

Technical Complexity

Multiple spacecraft docking operations require high precision.

Cost Overruns

Artemis missions involve substantial financial commitments.

Schedule Delays

Development of commercial landing systems has faced delays.

Safety Requirements

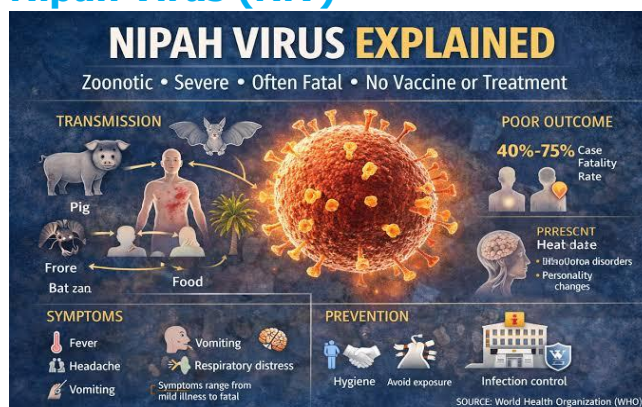
Human deep-space missions require extensive testing and validation.

Conclusion

The restructuring of **Artemis III** from a lunar landing mission to a Low Earth Orbit technology demonstration reflects NASA's emphasis on safety, reliability and mission readiness.

By validating critical docking systems, human landing technologies and commercial lunar spacecraft, Artemis III will serve as a crucial stepping stone toward the planned lunar South Pole landing under Artemis IV and the long-term goal of sending humans to Mars.

Nipah Virus (NiV)



Why in News?

Recently, a new case of **Nipah Virus Infection** was reported in **Kozhikode**, prompting authorities to initiate:

Contact tracing.

Quarantine measures.

Enhanced surveillance.

Infection control protocols.

The case has renewed concerns about recurrent Nipah outbreaks in Kerala and the need for rapid containment measures.

What is Nipah Virus (NiV)?

About

Nipah Virus (NiV) is a highly infectious **zoonotic virus**, meaning it can spread from animals to humans.

It was first identified during an outbreak in **Kampung Sungai Nipah, Malaysia**, in 1998–99.

Classification

Family

Belongs to the **Paramyxoviridae** family.

Genus

Classified under the **Henipavirus** genus.

Public Health Importance

Nipah Virus is considered one of the world's most dangerous emerging infectious diseases due to:

High fatality rates.

Human-to-human transmission capability.

Lack of approved vaccines.

Absence of specific antiviral treatment.

Transmission of Nipah Virus

Natural Reservoir

Fruit Bats

Fruit bats of the **Pteropodidae** family are the natural reservoir hosts of the virus.

Commonly known as flying foxes.

Intermediate Hosts

Pigs

During the Malaysian outbreak, pigs acted as intermediate hosts, facilitating transmission to humans.

Modes of Transmission

Animal-to-Human Transmission

Occurs through:

Contact with infected animals.

Exposure to contaminated fruits.

Consumption of food contaminated by infected bat saliva or excreta.

Human-to-Human Transmission

Occurs through:

Close contact with infected individuals.

Exposure to bodily fluids.

Hospital-acquired infections.

Significance

Human-to-human transmission makes Nipah a major public health threat requiring immediate containment.

Symptoms and Clinical Features

Initial Symptoms

Influenza-like Illness

Common symptoms include:

Fever.

Headache.

Muscle pain (myalgia).

Sore throat.

Fatigue.

Respiratory Symptoms

Patients may develop:

Cough.

Difficulty breathing.

Acute respiratory distress.

Neurological Symptoms

Acute Encephalitis

Severe infection may cause:

Brain inflammation.

Convulsions.

Disorientation.

Altered consciousness.

Advanced Stage

Coma.

Multi-organ complications.

Death.

Asymptomatic Cases

Challenge

Some infected individuals show no symptoms.

These cases complicate surveillance and containment efforts.

Diagnosis of Nipah Virus

Biosafety Level-4 Pathogen

Classification

Nipah Virus is categorized as a **BSL-4 pathogen**, the highest biosafety classification.

Reason

High fatality rate.

Lack of approved treatment.

Potential for outbreaks.

Diagnostic Methods

RT-PCR

Real-Time Polymerase Chain Reaction is the primary method for confirming infection.

ELISA

Detects antibodies against Nipah Virus.

Serum Neutralisation Test

Measures virus-specific immune response.

Histopathology

Examination of infected tissue samples.

Virus Isolation

Conducted in specialized high-containment laboratories.

Why is Kerala Vulnerable to Nipah Virus?

Presence of Natural Reservoirs

Fruit bats carrying Nipah Virus are widely present in Kerala.

Ecological Factors

Human settlements frequently overlap with bat habitats.

Climate and Environment

Tropical conditions favour bat activity and viral circulation.

Seasonal Risk in Kerala

High-Risk Period

Peak spillover risk occurs between **April and September**.

Reasons

Fruiting Season

Increased interaction between bats and fruit-bearing trees.

Bat Breeding Season

Higher bat movement and congregation.

Increased Viral Shedding

Greater possibility of environmental contamination.

Importance

Seasonal surveillance helps identify outbreaks at an early stage.

Challenges in Controlling Nipah Virus

Recurring Spillover Events

Since fruit bats are natural reservoirs, eliminating the source is not feasible.

Human-to-Human Transmission

Requires rapid identification and isolation of cases.

Asymptomatic Infections

Silent transmission may occur before detection.

Absence of Vaccines

No approved vaccine exists for humans or animals.

High Mortality

Nipah outbreaks often have high case fatality rates.

Treatment and Management

No Specific Cure

There is currently no approved antiviral treatment specifically for Nipah Virus.

Supportive Care

Treatment focuses on:

Oxygen support.

Fluid management.

Intensive care.

Management of complications.

Isolation Measures

Strict infection-control practices are essential to prevent transmission.

India's Response and Progress

Improved Surveillance

Kerala has developed a strong outbreak surveillance system.

Rapid Contact Tracing

Immediate identification and monitoring of contacts.

Advanced Diagnostic Capacity

Faster laboratory confirmation and reporting.

Use of Experimental Therapies

Monoclonal Antibodies

Used in selected high-risk cases.

Antiviral Drugs

Drugs such as **Remdesivir** have been used as part of supportive management.

Improved Outcomes

Mortality rates have significantly declined from approximately **91% during the 2018 outbreak** to around **33% during 2023–25 outbreaks** due to improved preparedness and clinical management.

Public Health Measures for Prevention

Strengthen Surveillance

Continuous monitoring of suspected cases and bat populations.

Early Diagnosis

Rapid laboratory testing and reporting.

Infection Control

Strict hospital infection prevention protocols.

Public Awareness

Educating communities regarding:

Safe food practices.

Avoiding partially eaten fruits.

Reporting symptoms early.

Research and Vaccine Development

Accelerate development of vaccines and targeted therapies.

Significance of Nipah Surveillance

Protecting Public Health

Early detection prevents widespread outbreaks.

Reducing Mortality

Timely treatment improves survival rates.

Preventing Epidemics

Effective containment limits human-to-human transmission.

Strengthening Health Security

Enhances preparedness against emerging zoonotic diseases.

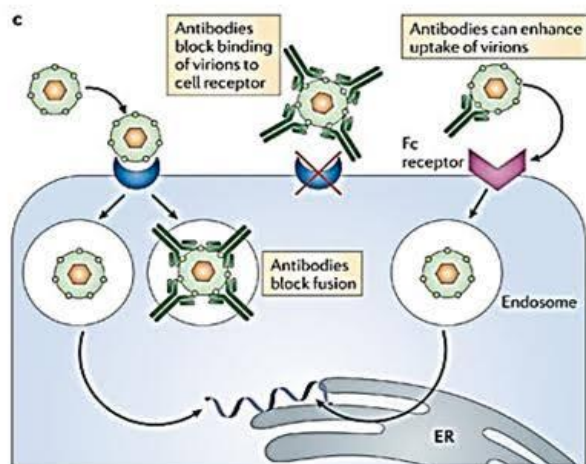
Conclusion

Nipah Virus remains one of the most serious emerging zoonotic diseases due to its high fatality rate, human-to-human transmission potential and absence of approved vaccines.

Kerala's recurring outbreaks highlight the importance of continuous surveillance, rapid diagnosis, effective infection control and public awareness.

Strengthening research, healthcare preparedness and early-warning systems will be essential for minimizing the impact of future Nipah outbreaks and safeguarding public health.

DengiAll Dengue Vaccine and Antibody-Dependent Enhancement (ADE)



Why in News?

Concerns have emerged regarding India's upcoming dengue vaccine **DengiAll** following reports of severe adverse events associated with **Butantan-DV**, a dengue vaccine being deployed in **Brazil**.

The debate has highlighted critical issues related to: **Antibody-Dependent Enhancement (ADE)**.

Tetavalent vaccine effectiveness.

Long-term safety monitoring.

Balanced immunity against all dengue virus serotypes.

What is DengiAll?

About

DengiAll is India's indigenous dengue vaccine currently under development.

It is designed to provide protection against all major dengue virus serotypes.

Vaccine Type

DengiAll is a **live-attenuated tetavalent dengue vaccine**.

Objective

Prevent dengue infection and severe dengue disease.

Reduce hospitalization and mortality associated with dengue outbreaks.

What is Butantan-DV?

About

Butantan-DV is a live-attenuated tetavalent dengue vaccine developed in Brazil.

Current Concern

Reports of severe adverse events during vaccination campaigns have renewed discussions about vaccine-induced immune responses and ADE risks.

Understanding Dengue Virus

About Dengue

Dengue is a mosquito-borne viral disease caused by the **Dengue Virus (DENV)**.

Vector

Transmitted primarily by the **Aedes aegypti** mosquito.

Global Burden

It is one of the fastest-growing vector-borne diseases globally.

Dengue Virus Serotypes

Four Serotypes

The dengue virus exists in four distinct serotypes:

DENV-1

First dengue serotype.

DENV-2

Associated with several severe outbreaks globally.

DENV-3

Common in tropical regions.

DENV-4

Less frequently reported but capable of causing severe disease.

Importance

Infection with one serotype provides lifelong immunity only against that specific serotype.

Protection against other serotypes remains limited.

Why is a Tetavalent Vaccine Needed?

Presence of Multiple Serotypes

All four dengue serotypes circulate in:

India

Brazil

Challenge

The envelope proteins of each serotype differ significantly.

Immunity against one serotype does not automatically confer immunity against others.

Objective of Tetavalent Vaccines

Generate effective protection against:

- DENV-1.

- DENV-2.
- DENV-3.
- DENV-4.

What is a Tetravalent Vaccine?

Definition

A tetravalent vaccine is designed to protect against four different strains or serotypes of a pathogen.

In Dengue Vaccines

Combines weakened versions of:

- DENV-1.
- DENV-2.
- DENV-3.
- DENV-4.

Challenge

Merely combining four weakened viruses does not guarantee balanced immune protection against all four serotypes.

Immune Response after Dengue Vaccination

Type-Specific Antibodies

Definition

Antibodies that strongly neutralize a particular dengue serotype.

Function

Provide effective protection against that specific serotype.

Cross-Reactive Antibodies

Definition

Antibodies capable of recognizing multiple dengue serotypes.

Benefit

Can provide broader protection when present in sufficiently high concentrations.

Limitation

Protection may decline as antibody levels decrease over time.

Antibody-Dependent Enhancement (ADE)

What is ADE?

Definition

Antibody-Dependent Enhancement occurs when existing antibodies facilitate viral entry into immune cells instead of neutralizing the virus.

Mechanism

Initial Exposure

Antibodies develop after infection or vaccination.

Declining Antibody Levels

Over time, cross-reactive antibody levels may decrease.

Enhanced Infection

Instead of blocking the virus, these antibodies may help the virus infect immune cells more efficiently.

Consequences

Increased viral replication.

Severe dengue infection.

Higher risk of complications.

Increased mortality risk.

Why is ADE a Major Concern?

Severe Disease Risk

ADE can convert a mild dengue infection into severe dengue.

Public Health Challenge

Makes dengue vaccine development significantly more complex.

Vaccine Monitoring Requirement

Continuous surveillance is necessary to identify rare adverse outcomes.

Live-Attenuated Vaccines

What are Live-Attenuated Vaccines?

Definition

Vaccines containing weakened forms of disease-causing pathogens.

Characteristics

Capable of limited replication.

Do not cause disease in healthy individuals.

Immune Response

Closely mimic natural infection.

Generate strong and long-lasting immunity.

Examples of Live-Attenuated Vaccines

MMR Vaccine

Protects against:

Measles.

Mumps.

Rubella.

Varicella Vaccine

Protects against chickenpox.

Yellow Fever Vaccine

Provides protection against yellow fever infection.

Advantages of Live-Attenuated Vaccines

Strong Immune Response

Produces robust humoral and cellular immunity.

Long-Term Protection

Often provides durable immunity.

Fewer Booster Doses

Protection generally lasts longer than inactivated vaccines.

Limitations of Live-Attenuated Vaccines

Not Suitable for Immunocompromised Individuals

May pose risks to people with weakened immune systems.

Cold Chain Requirement

Requires strict storage and transportation conditions.

Rare Risk of Reversion

In extremely rare cases, weakened pathogens may revert to a virulent form.

Challenges in Developing Dengue Vaccines

Multiple Serotypes

Effective protection must be achieved against all four serotypes.

Balanced Immunity

Uneven immune responses can increase ADE risks.

Long-Term Monitoring

Vaccine safety must be evaluated over many years.

Changing Epidemiology

Serotype dominance varies across regions and time periods.

Importance for India

High Dengue Burden

India reports a large number of dengue cases annually.

Need for Effective Vaccine

A safe and effective vaccine can significantly reduce: Disease burden.

Hospitalization rates.

Mortality.

Public Health Preparedness

Robust post-vaccination surveillance systems are essential.

Way Forward

Robust Clinical Monitoring

Continue long-term safety evaluation of DengiAll.

Post-Marketing Surveillance

Monitor adverse events after vaccine rollout.

Balanced Immune Response Assessment

Ensure effective protection against all four serotypes.

Strengthening Public Health Systems

Improve disease surveillance and vector control programmes.

Scientific Transparency

Publish long-term efficacy and safety data for public confidence.

Conclusion

The development of **DengiAll** represents an important step in India's fight against dengue, but concerns regarding **Antibody-Dependent Enhancement (ADE)** highlight the complexities of dengue vaccine development.

Ensuring balanced immunity against all four dengue serotypes, maintaining rigorous safety monitoring and conducting long-term surveillance will be crucial for the successful deployment of dengue vaccines.

A safe and effective tetravalent vaccine, combined with vector control and public health interventions, can significantly reduce the burden of dengue in India.

Amoebic Meningoencephalitis in Kerala



Why in News?

Kerala is witnessing a sharp rise in **Amoebic Meningoencephalitis**, a rare but often fatal brain infection caused by free-living amoebae found in contaminated water.

Multiple deaths have been reported in early 2026, raising public health concerns.

Since the first reported case of **Primary Amoebic Meningoencephalitis (PAM)** in India in 1971, only around two dozen cases had been recorded until 2023, making the recent increase highly unusual.

What is Amoebic Meningoencephalitis?

Definition

Amoebic Meningoencephalitis is a severe infection of the brain and its surrounding tissues caused by free-living amoebae present in contaminated environmental sources.

Characteristics

Rare but highly fatal.

Rapid progression in many cases.

Primarily affects the central nervous system.

Types of Amoebic Meningoencephalitis

Primary Amoebic Meningoencephalitis (PAM)

Causative Organism

Caused by *Naegleria fowleri*.

Common Name

Known as the "**Brain-Eating Amoeba**."

Nature

Acute and rapidly progressive infection.

Outcome

Frequently fatal if not diagnosed and treated promptly.

Granulomatous Amoebic Encephalitis (GAE)

Causative Organism

Caused by *Acanthamoeba* species.

Nature

Generally develops more slowly than PAM.

Affected Population

Commonly affects immunocompromised and elderly individuals.

Recent Epidemiological Shift

Earlier Trend

Most reported Indian cases involved **Primary Amoebic Meningoencephalitis (PAM)**.

Current Trend

Granulomatous Amoebic Encephalitis (GAE) has emerged as the dominant form in recent cases.

Significance

Indicates changing environmental and epidemiological patterns.

About Acanthamoeba

Habitat

Acanthamoeba is commonly found in:

Freshwater bodies.

Lakes and ponds.

Soil.

Dust.

Contaminated water systems.

Characteristics

Free-living amoeba.

Widely distributed in natural environments.

Causes Behind Rising Cases

Warm Tropical Climate

Impact

High temperatures support amoebic survival and multiplication.

Kerala's Vulnerability

Tropical climatic conditions create favourable environments for amoebae.

Poor Water Quality

Issue

Contaminated water sources facilitate amoebic growth.

Consequence

Increased human exposure during recreational and domestic activities.

High Coliform Bacterial Contamination

Importance

Amoebae feed on bacteria.

Effect

Higher bacterial concentrations increase amoebic proliferation.

Vegetated Water Bodies

Risk

Stagnant water with dense vegetation provides ideal ecological conditions for amoebae.

Population Density and Sanitation Challenges

Kerala Context

High population density increases contamination risks.

Specific Concern

Many households have:

Open wells.

Toilet pits located nearby.

Impact

Groundwater contamination may occur, affecting water quality.

Ecological Link Between Amoebae and Bacteria

Role of Coliform Bacteria

Food Source

Acanthamoeba feeds on bacteria such as *Escherichia coli*.

Result

Water bodies with high bacterial loads become ideal habitats for amoebic growth.

Public Health Significance

Coliform contamination may indirectly increase infection risk.

Who is Most at Risk?

Elderly Individuals

Reduced immune response increases susceptibility.

Immunocompromised Persons

Examples include:

Organ transplant recipients.

Cancer patients.

Individuals on immunosuppressive therapy.

Significance

Higher risk of severe disease and complications.

Transmission of Amoebic Meningoencephalitis

Mode of Infection

Contaminated Water Entry Through Nose

Infection occurs when contaminated water enters the nasal passages.

Common Activities

Swimming.

Diving.

Bathing in contaminated water bodies.

Water sports.

Important Facts

Not Spread Through Drinking Water

Infection does not occur by consuming contaminated water.

No Person-to-Person Transmission

The disease is not contagious.

Symptoms

Early Symptoms

Fever.

Severe headache.

Nausea.

Vomiting.

Progressive Symptoms

Neck stiffness.

Confusion.

Hallucinations.

Seizures.

Advanced Stage

Coma.

Neurological failure.

Outcome

Death may occur within days if treatment is delayed.

Diagnosis Challenges

Rare Disease

Low awareness among healthcare providers.

Similarity with Other Conditions

Symptoms resemble:

Meningitis.

Viral encephalitis.

Brain infections.

Result

Delayed diagnosis and treatment.

Kerala's Response

Special Treatment Protocol (2024)

Initiative

Kerala Health Department developed a dedicated treatment protocol for Amoebic Meningoencephalitis.

Significance

First Indian state to establish a structured management framework for the disease.

Standard Operating Procedure (SOP)

Purpose

Guide healthcare professionals in:

Early diagnosis.

Clinical management.

Treatment protocols.

Benefits

Improved patient outcomes.

Increased survival chances.

Faster identification of suspected cases.

Public Health Measures

Water Quality Monitoring

Regular testing of water sources.

Awareness Campaigns

Educating the public regarding safe water practices.

Surveillance

Early reporting and tracking of suspected infections.

Prevention Measures

Avoid Exposure

Avoid swimming in contaminated or poorly maintained water bodies.

Use Nose Protection

Use nose clips during water activities in freshwater environments.

Maintain Water Hygiene

Ensure proper treatment and monitoring of water sources.

Improve Sanitation

Prevent contamination of wells and groundwater sources.

Public Awareness

Promote awareness regarding symptoms and early medical consultation.

Significance for Public Health

Emerging Infectious Disease Threat

Highlights the growing importance of environmental and water-borne diseases.

Climate Change Link

Rising temperatures may increase the survival of free-living amoebae.

Water Security Concerns

Emphasizes the need for improved water quality management.

Health System Preparedness

Requires stronger disease surveillance and rapid response mechanisms.

Challenges

High Fatality Rate

Mortality remains extremely high despite treatment.

Delayed Diagnosis

Rare occurrence often leads to late detection.

Environmental Persistence

Amoebae are naturally present in many environments.

Limited Awareness

Public and clinical awareness remains inadequate.

Conclusion

The recent surge in **Amoebic Meningoencephalitis** cases in Kerala represents an important emerging public health concern linked to environmental conditions, water quality and changing disease patterns.

The shift from **Primary Amoebic Meningoencephalitis (PAM)** to **Granulomatous Amoebic Encephalitis (GAE)** highlights the need for enhanced surveillance, early diagnosis and improved water sanitation measures.

Kerala's pioneering treatment protocol and SOP provide a model for other states in strengthening preparedness against rare but highly fatal infectious diseases.

SOLAR-1 (Formerly SWFO-L1) Satellite



Why in News?

The **United States** has activated **SOLAR-1** (formerly **SWFO-L1**), a satellite developed by the **National Oceanic and Atmospheric Administration** for continuous space weather monitoring.

The satellite provides real-time solar storm warnings and enhances protection of critical infrastructure, satellites, navigation systems, and future space missions.

What is SOLAR-1?

About

SOLAR-1 is a dedicated space weather monitoring satellite designed to observe solar activity and provide early warnings of potentially disruptive solar storms.

Previous Name

Earlier known as **Space Weather Follow-On L1 (SWFO-L1)**.

Primary Purpose

Continuous monitoring of:

Solar wind.

Coronal Mass Ejections (CMEs).

Space weather disturbances.

Location of SOLAR-1

Sun–Earth Lagrange Point 1 (L1)

Position

Located at the **Sun–Earth L1 Lagrange Point**, approximately **1 million miles (1.5 million km)** from **Earth** toward the Sun.

Advantage

Provides an uninterrupted view of the Sun.

Importance

Enables continuous observation of solar activity before it reaches Earth.

Launch and Operational Timeline

Launch

Launched in **September 2025** aboard the **Falcon 9** rocket.

Launch Agency

[SpaceX](#)

Commissioning

Reached the L1 point after transit and became fully operational in **2026**.

Core Functions of SOLAR-1

Solar Wind Monitoring

Purpose

Continuously measures solar wind conditions.

Importance

Helps predict geomagnetic disturbances affecting Earth.

Monitoring Coronal Mass Ejections (CMEs)

Definition

CMEs are massive eruptions of plasma and magnetic fields from the Sun.

Role of SOLAR-1

Detects, tracks, and analyzes incoming CMEs.

Benefit

Provides advance warning before solar storms reach Earth.

Real-Time Space Weather Monitoring

Function

Tracks changing conditions in the space environment.

Importance

Supports accurate space weather forecasting.

Early Warning Capability

Improved Forecasting Speed

Significantly enhances warning and response times.

CME Imaging

Delivers CME imagery within **30 minutes**.

Solar Wind Data

Provides in-situ solar wind measurements within **5 minutes**.

Advantage

Faster than previous generation observatories.

Scientific Instruments on SOLAR-1

Coronagraph

Function

Blocks direct sunlight to observe the Sun's outer atmosphere (corona).

Importance

Detects solar eruptions and CMEs.

In-Situ Sensors

Purpose

Measure space weather conditions directly.

Parameters Monitored

Solar wind speed.

Density.

Magnetic field characteristics.

What is Space Weather?

Definition

Space weather refers to environmental conditions in space influenced by the Sun's activity.

Major Components

Solar flares.

Coronal Mass Ejections (CMEs).

Solar wind.

Geomagnetic storms.

Source

Primarily generated by solar activity.

What are Coronal Mass Ejections (CMEs)?

Definition

Massive bursts of plasma and magnetic fields released from the Sun's corona.

Characteristics

Travel through interplanetary space at extremely high speeds.

Impact on Earth

Can trigger geomagnetic storms upon interaction with Earth's magnetic field.

Impacts of Solar Storms

Power Grids

Risk

Geomagnetic disturbances can disrupt electricity transmission systems.

Satellites

Impact

Damage onboard electronics.

Interrupt satellite operations.

Navigation Systems

Affected Systems

GPS and satellite navigation networks.

Consequence

Reduced positioning accuracy.

Communication Networks

Impact

Disruption of radio and satellite communications.

Aviation

Risk

Communication and navigation interruptions on polar routes.

Human Spaceflight

Concern

Increased radiation exposure to astronauts.

Role in Protecting Critical Infrastructure

Power Infrastructure

Provides advance warning for grid operators.

Satellite Operations

Allows precautionary measures to safeguard spacecraft.

Communication Systems

Reduces risks of communication disruptions.

Navigation Services

Supports uninterrupted GPS operations.

Aviation Sector

Enhances flight safety during solar storms.

Human Space Missions

Protects astronauts from hazardous radiation events.

Importance for Artemis Programme

Artemis Program

Significance

Supports safety of astronauts involved in deep-space missions.

Benefit

Provides timely alerts regarding hazardous solar activity.

What are Lagrange Points?

Definition

Lagrange Points are locations in space where the gravitational forces of two large celestial bodies balance the orbital motion of a smaller object.

Characteristics

Allow spacecraft to remain in relatively stable positions.

The Five Sun–Earth Lagrange Points

L1

Between the Sun and Earth.

Ideal for solar observation.

L2

Beyond Earth on the opposite side of the Sun.

Used by space telescopes.

L3

Opposite side of the Sun.

L4 and L5

Stable gravitational points forming an equilateral triangle with the Sun and Earth.

Significance of SOLAR-1

Enhanced Early Warning System

Benefit

Improves preparedness against solar storms.

Protection of Critical Infrastructure

Importance

Safeguards power, communication, and navigation networks.

National Security

Role

Reduces vulnerabilities in strategic and defence systems.

Economic Resilience

Benefit

Minimizes losses from space weather-related disruptions.

Support for Space Exploration

Importance

Facilitates safer deep-space and lunar missions.

Challenges in Space Weather Forecasting

Complex Solar Activity

Solar eruptions remain difficult to predict precisely.

Growing Dependence on Space Assets

Increased reliance on satellites heightens vulnerability.

Need for Global Coordination

Space weather impacts multiple countries simultaneously.

Way Forward

Strengthen Space Weather Monitoring

Expand observational infrastructure.

International Collaboration

Promote data sharing among space agencies.

Protect Critical Systems

Develop resilient power and communication networks.

Support Future Missions

Integrate advanced space weather forecasting into human spaceflight planning.

Conclusion

SOLAR-1 marks a major advancement in global space weather monitoring by providing rapid and accurate warnings of solar storms and coronal mass ejections. Positioned at the strategic **Sun–Earth L1 Lagrange Point**, it enhances the protection of critical infrastructure, strengthens national security, and supports future missions such as **NASA's Artemis Programme**.

As humanity becomes increasingly dependent on space-based technologies, advanced systems like **SOLAR-1** will play a vital role in ensuring technological resilience and the safe exploration of deep space.

Sickle Cell Disease (SCD) and National Sickle Cell Anaemia Elimination Mission



Why in News?

On **International Sickle Cell Day 2026**, the President of India reaffirmed the country's commitment to eliminate **Sickle Cell Anaemia** by **2047** under the **National Sickle Cell Anaemia Elimination Mission (NSCEM)**.

International Sickle Cell Day

About

Observed annually on **19 June** to raise awareness about **Sickle Cell Disease (SCD)**.

Promotes early diagnosis, treatment, and prevention of the disease.

History

Recognized by the **United Nations General Assembly** through a resolution adopted on **22 December 2008**.

The UN identified SCD as a major global public health challenge and an important genetic disorder.

Theme 2026

"Closing the Survival Gap: Equity in Sickle Cell Disease"

Focuses on reducing disparities in healthcare access and outcomes for SCD patients.

Emphasizes equitable healthcare and community support.

Sickle Cell Disease (SCD)

About

Sickle Cell Disease is an **inherited genetic blood disorder** affecting haemoglobin in red blood cells.

Cause

Caused by a mutation in the haemoglobin gene.

Leads to the production of abnormal haemoglobin known as **Haemoglobin-S (HbS)**.

Affected Cells

Normal red blood cells are round and flexible.

In SCD, red blood cells become **sickle-shaped** or **crescent-shaped**.

Pathophysiology

Abnormal Blood Flow

Sickle-shaped cells become rigid and sticky.

They block small blood vessels and impair blood circulation.

Reduced Oxygen Supply

Blocked blood vessels reduce oxygen delivery to tissues and organs.

Destruction of RBCs

Abnormal cells break down faster than normal red blood cells, causing anaemia.

Health Impacts

Anaemia

Persistent shortage of healthy red blood cells.

Pain Crises

Recurrent episodes of severe pain due to blocked blood vessels.

Organ Damage

Can affect the spleen, kidneys, lungs, heart, and brain.

Reduced Life Expectancy

Severe complications may shorten lifespan if untreated.

National Sickle Cell Anaemia Elimination Mission (NSCEM)

Launch

Launched in **2023** by the Government of India.

Goal

Eliminate Sickle Cell Disease as a public health problem by **2047**.

Target Population

Focuses primarily on tribal and vulnerable populations where SCD prevalence is high.

Implementation

Nodal Ministries

Ministry of Health and Family Welfare

Ministry of Tribal Affairs

Coverage

Implemented under the **National Health Mission (NHM)**.

Covers **17 high-focus states**.

Key Components of the Mission

Mass Screening

Large-scale screening for early identification of cases.

Target

Screening of approximately **7 crore people** aged **0–40 years** during **2023–26**.

Early Diagnosis

Identification of affected individuals and carriers.

Treatment and Management

Timely medical intervention and follow-up care.

Awareness Generation

Community outreach and health education campaigns.

Genetic Counselling

Helps families understand disease transmission and prevention.

Significance of the Mission

Tribal Health Improvement

Addresses a major health burden among tribal communities.

Reduction in Mortality

Early detection can significantly reduce complications and deaths.

Improved Quality of Life

Better disease management reduces pain episodes and disability.

Health Equity

Enhances access to healthcare services in underserved regions.

Challenges

Limited Awareness

Low awareness about the disease in remote areas.

Healthcare Access

Inadequate diagnostic and treatment facilities in tribal regions.

Genetic Nature of Disease

Requires sustained screening and counselling efforts.

Social Stigma

Patients often face discrimination and misinformation.

Way Forward

Strengthen Screening Programmes

Expand community-level screening and testing.

Enhance Healthcare Infrastructure

Improve diagnostic and treatment facilities in high-burden areas.

Promote Genetic Counselling

Increase awareness regarding inheritance patterns and prevention.

Community Participation

Involve local communities, schools, and tribal institutions in awareness campaigns.

Improve Access to Treatment

Ensure uninterrupted availability of medicines and specialized care.

Compressed Biogas (CBG) Blending in India



Why in News?

India is steadily progressing towards its target of blending **3% Compressed Biogas (CBG)** with **Compressed Natural Gas (CNG)** and domestic **Piped Natural Gas (PNG)**.

The current blending level has reached nearly **2%**, indicating significant progress under the **National Biofuel Policy** framework.

Key Highlights

NBCC Blending Roadmap

The **National Biofuel Coordination Committee** has laid down a phased CBG blending roadmap:

1% blending in 2025–26.

3% blending in 2026–27.

4–5% blending in subsequent years.

Objective

Promote renewable energy adoption.

Reduce dependence on imported fossil fuels.

Support India's clean energy transition.

CBG Infrastructure Expansion

Current Status

According to the Petroleum Ministry's **GOBARDhan Portal**, around **210 CBG/Bio-CNG plants** have been commissioned.

States with Highest Number of Plants Under Construction

Uttar Pradesh – 80 plants.

Maharashtra – 46 plants.

Gujarat – 35 plants.

Karnataka – 25 plants.

Compressed Biogas (CBG)

About

CBG is a renewable gaseous fuel produced from:
Agricultural residue.

Cattle dung.

Sugarcane press mud.

Municipal organic waste.

Sewage and wastewater.

Production Process

Produced through **Anaerobic Digestion**, where microorganisms decompose organic matter in the absence of oxygen.

Properties

Has a calorific value similar to **CNG**.

Can be used as a substitute for CNG in:

Transport sector.

Industrial applications.

Commercial establishments.

CBG vs CNG

Feature	CBG	CNG
Source	Biomass and organic waste	Natural gas reserves
Nature	Renewable fuel	Fossil fuel
Environmental Impact	Reduces waste and emissions	Cleaner than petrol/diesel but fossil-fuel based
Import Dependence	Produced domestically	Significant import dependence
Rural Benefits	Creates rural employment and income	Limited rural livelihood benefits
Circular Economy	Supports waste-to-wealth model	Does not contribute significantly

Significance of CBG Blending

Energy Security

Reduces dependence on imported natural gas and fossil fuels.

Waste-to-Wealth

Converts agricultural and organic waste into valuable energy resources.

Reduction in Crop Residue Burning

Provides an alternative use for agricultural residue, helping curb stubble burning.

Methane Emission Reduction

Captures methane from organic waste and utilizes it as fuel.

Rural Employment

Generates income opportunities for farmers and rural communities.

Supports Circular Economy

Promotes efficient utilization of waste resources.

Climate Change Mitigation

Contributes to India's commitments towards reducing greenhouse gas emissions.

Government Initiatives Supporting CBG

National Biofuel Policy

Encourages production and utilization of biofuels, including CBG.

GOBARdhan Scheme

Promotes management of cattle dung and organic waste for biogas production.

SATAT Initiative

(Sustainable Alternative Towards Affordable Transportation)

Launched by Public Sector Oil Marketing Companies. Supports establishment of CBG plants and assured offtake of CBG.

Challenges

Feedstock Availability

Ensuring a regular and adequate supply of biomass remains a challenge.

High Initial Investment

Establishing CBG plants requires significant capital investment.

Collection and Transportation

Biomass collection and logistics can increase operational costs.

Market Viability

Need for stable pricing mechanisms and long-term purchase agreements.

Way Forward

Assured Feedstock Supply

Develop organized biomass collection and supply chains.

Production-Linked Incentives

Provide financial support to encourage investment in CBG projects.

Strengthen Infrastructure

Expand CBG production, storage, and distribution networks.

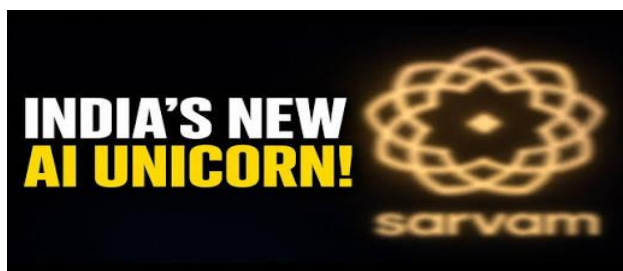
Farmer Participation

Encourage farmers to supply agricultural residue through incentive-based mechanisms.

Technology Adoption

Improve efficiency and scalability of biogas production technologies.

Sarvam AI Becomes India's First Full-Stack AI Unicorn



Why in News?

Sarvam AI has achieved **unicorn status**, becoming India's first dedicated full-stack Artificial Intelligence (AI) startup valued at over **USD 1 billion**.

The achievement marks a major milestone for India's **deep-tech, sovereign AI**, and innovation ecosystem.

What is a Unicorn?

Definition

A **Unicorn** is a privately held startup valued at more than **USD 1 billion**.

India's Unicorn Ecosystem

As of June 2026, India has **131 unicorns**.

India is the **third-largest unicorn ecosystem** globally after:

United States

China

Emerging Trend

Recent unicorns indicate growing investment in:

Artificial Intelligence.

Space technology.

Deep-tech innovation.

About Sarvam AI

Headquarters

Based in **Bengaluru**.

Focus Area

Development of a **sovereign AI ecosystem** for India. Reducing dependence on foreign AI platforms and technologies.

Objective

Build indigenous AI models and infrastructure suited to India's linguistic, social, and governance requirements.

Role in IndiaAI Mission

India's Indigenous Large Language Model (LLM)

Selection

Sarvam AI has been selected under the **IndiaAI Mission** to develop India's first indigenous **Large Language Model (LLM)**.

Models Under Development

Sarvam-Large

Designed for advanced reasoning and complex AI tasks.

Sarvam-Small

Optimized for real-time applications.

Sarvam-Edge

Designed for on-device and edge computing applications.

Scale

Models are being developed with up to **70 billion parameters**.

Frontier AI Models Unveiled

IndiaAI Impact Summit 2026

Sarvam-30B

30-billion parameter model.

Optimized for real-time conversations.

Supports a context window of **32,000 tokens**.

Sarvam-105B

105-billion parameter model.

Designed for advanced multi-step reasoning.

Supports a context window of **128,000 tokens**.

Enterprise AI Platforms

Sarvam Samvaad

Purpose

Conversational AI platform for enterprises.

Features

Integrates with enterprise software.

Generates insights from proprietary data.

Supports automated decision-making and workflows.

Sarvam Dub

Purpose

AI-powered multilingual dubbing platform.

Features

Zero-shot voice cloning.

Cross-lingual speech generation.

Multilingual content creation.

AI for Public Service Delivery

Vikram Chatbot

About

Multilingual AI chatbot named after **Vikram Sarabhai**.

Objective

Improve citizen engagement and public service delivery.

Agriculture Sector Application

Sarvam AI's voice agents assisted the **Ministry of Agriculture and Farmers Welfare** in collecting data from approximately **17 million farmers**.

Demonstrates AI's potential for population-scale governance.

Significance

Boost to India's Sovereign AI Ecosystem

Strengthens India's technological self-reliance in Artificial Intelligence.

Deep-Tech Growth

Encourages investment in advanced technologies beyond traditional digital services.

Digital Public Infrastructure

Supports development of AI solutions tailored to Indian conditions and languages.

Global Competitiveness

Positions India as an emerging player in frontier AI technologies.

Multilingual AI Development

Enhances AI accessibility for India's diverse linguistic population.

Challenges

High Computing Costs

Developing frontier AI models requires substantial computational infrastructure.

Data Availability

Need for high-quality and diverse Indian-language datasets.

Global Competition

Competition from established global AI companies and models.

Talent Requirements

Demand for skilled AI researchers and engineers.

Way Forward

Strengthen AI Infrastructure

Expand indigenous computing and cloud capabilities.

Promote AI Research

Increase investment in AI innovation and R&D.

Develop Indian Language Models

Focus on inclusive and multilingual AI solutions.

Support Deep-Tech Startups

Enhance funding and policy support for emerging technology firms.

Advance Sovereign AI

Build secure, transparent, and India-specific AI systems aligned with national priorities.

LineShine Supercomputer Tops TOP500 Rankings



Why in News?

LineShine, a Chinese supercomputer, has topped the latest **TOP500** rankings, becoming the world's fastest publicly ranked supercomputer.

It replaced **El Capitan** of the United States at the top position.

The achievement marks a significant milestone in global high-performance computing and China's technological advancement despite export restrictions on advanced semiconductor technologies.

TOP500 List

About

The **TOP500** is the globally recognized ranking of the world's most powerful supercomputers.

Published twice every year since **1993**.

Purpose

Evaluates and ranks supercomputers based on their computational performance.

Benchmark Used

High Performance LINPACK (HPL) Benchmark

Measures how efficiently a supercomputer solves large-scale mathematical calculations.

Serves as the international standard for supercomputer performance assessment.

Latest TOP500 Rankings

Rank	Supercomputer	China
1	LineShine	China
2	El Capitan	United States
3	Frontier	United States
4	Aurora	United States
5	JUPITER Booster	Germany

About LineShine

Location

Installed at the **National Supercomputing Center** in **Shenzhen**.

Performance

Achieved approximately **2.19 Exaflops**.

Meaning of Exaflop

One exaflop equals **one quintillion (10^{18}) calculations per second**.

LineShine can perform more than **two quintillion calculations every second**.

Expansion of the Exascale Club

What is Exascale Computing?

Refers to computing systems capable of performing at least **one exaflop**.

Significance

LineShine's entry expands the global **Exascale Computing Club** from four to five systems.

Global Milestone

For the first time:

Asia.

North America.

Europe.

all host **HPL exaflop-class supercomputers simultaneously**.

Technical Uniqueness of LineShine

CPU-Only Architecture

Operates entirely using **Central Processing Units (CPUs)**.

Historic Achievement

First TOP500-ranked supercomputer to exceed **two exaflops** using only CPUs.

Difference from AI-Oriented Systems

Many modern supercomputers rely heavily on:

Graphics Processing Units (GPUs).

Specialized AI accelerators.

LineShine demonstrates that extreme computational performance can still be achieved through advanced CPU-based architecture.

Understanding CPU and GPU

Central Processing Unit (CPU)

General-purpose processor responsible for executing a wide range of computing tasks.

Optimized for sequential and complex calculations.

Graphics Processing Unit (GPU)

Designed for highly parallel processing.

Widely used in:

Artificial Intelligence.

Deep learning.

Scientific simulations.

HPC-AI Convergence

What is HPC?

High-Performance Computing (HPC)

Use of advanced computing systems to solve complex scientific and engineering problems.

Emerging Trend

Increasing integration of:

Traditional HPC.

Artificial Intelligence (AI).

Importance

Future scientific research requires systems capable of handling:

Numerical simulations.

Big-data analytics.

Machine learning workloads.

LineShine's Role

Represents the growing convergence between HPC and AI capabilities.

Applications of LineShine

Weather Forecasting

AI-assisted weather prediction models.

Rainfall Prediction

Advanced forecasting across East Asia.

Scientific Research

Atomic-level simulations of materials and molecules.

Magnetic Materials Research

Study of material properties at microscopic scales.

Artificial Intelligence

Large-scale AI model training and scientific AI applications.

Significance

Technological Self-Reliance

Developed primarily using indigenous Chinese technologies.

Strategic Achievement

Demonstrates China's capability in advanced computing despite restrictions on:

AI chips.

Semiconductor manufacturing tools.

Advanced computing technologies.

Scientific Advancement

Strengthens research capabilities in climate science, materials science, and AI.

Global Competition

Intensifies technological competition among major powers in advanced computing.

Innovation in Computing Architecture

Proves the viability of high-performance CPU-only exascale systems.

Challenges

Energy Consumption

Exascale computing requires enormous power resources.

Semiconductor Constraints

Access to cutting-edge chips remains a challenge due to export controls.

Cooling and Infrastructure

Managing heat generation in large-scale computing facilities.

Cybersecurity Risks

Critical computing infrastructure requires robust protection.

Global Supercomputing Race

Major Competitors

China

United States

Germany

Other technologically advanced nations.

Strategic Importance

Supercomputing has become a key component of:

National security.

Scientific research.

Artificial Intelligence development.

Economic competitiveness.

Way Forward

Promote Indigenous Technologies

Invest in domestic semiconductor and computing ecosystems.

Strengthen Research Collaboration

Encourage international scientific cooperation.

Focus on Energy Efficiency

Develop sustainable supercomputing infrastructure.

Advance AI-HPC Integration

Build systems capable of supporting both scientific computing and AI applications.

Enhance Semiconductor Innovation

Strengthen chip design and manufacturing capabilities.

Conclusion

The rise of **LineShine** to the top of the **TOP500** rankings marks a major milestone in the evolution of global supercomputing. With its **2.19-exaflop CPU-only architecture**, it showcases China's growing technological capabilities and highlights the increasing convergence of **High-Performance Computing (HPC)** and **Artificial Intelligence (AI)**, which are expected to drive the next generation of scientific and technological breakthroughs.



EDITORIALS

Crux of The Hindu & Indian Express

Science & Technology

GAGAN-Based Aircraft Landing in India



Why in News?

On **27 June 2026**, an **IndiGo** Airbus A320 became the first passenger jet in India to successfully land using **GAGAN (GPS Aided GEO Augmented Navigation)** at **Udaipur**.

The landing was conducted under the supervision of the **Directorate General of Civil Aviation**.

It marks a major milestone in India's aviation and space-navigation capabilities.

What is GAGAN?

About

GAGAN (GPS Aided GEO Augmented Navigation) is India's **Satellite-Based Augmentation System (SBAS)**. It enhances the accuracy and reliability of GPS signals for aviation navigation.

Developed By

Indian Space Research Organisation

Airports Authority of India

Objective

Improve navigation accuracy for civil aviation.

Enhance flight safety and efficiency.

Support precision approaches and landings.

How Does GAGAN Work?

Basic Principle

GAGAN does not independently determine location.

It improves the accuracy of existing GPS signals.

Ground Monitoring Stations

A network of precisely surveyed reference stations is located across India.

These stations continuously monitor GPS signal accuracy.

Error Detection

Ground stations compare:

Actual known location.

GPS-reported location.

Any difference is identified as a GPS error.

Correction Process

Corrections are calculated at control centres.

The information is transmitted to geostationary satellites.

Satellites broadcast corrected signals back to aircraft.

Satellites Used

GSAT-8

GSAT-10

Why is GPS Alone Not Sufficient for Aircraft Landing?

Accuracy Limitations

Standard GPS may have errors of several metres.

Such inaccuracies are acceptable for navigation devices but not for aircraft landings.

Ionospheric Disturbances

GPS signals pass through the ionosphere.

Signal delays and distortions reduce accuracy.

Indian Challenge

India lies beneath the **Equatorial Ionisation Anomaly** region.

This region experiences significant ionospheric disturbances.

GPS errors can vary rapidly and unpredictably.

Key Features of GAGAN

High Accuracy

Provides precise navigation suitable for aviation operations.

Integrity Monitoring

Continuously checks signal reliability.

Warns pilots immediately if navigation data becomes unreliable.

Wide Coverage

Covers the entire Indian Flight Information Region (FIR) and surrounding areas.

All-Weather Operations

Supports safer aircraft operations during poor visibility conditions.

GAGAN vs NavIC

Feature	GAGAN	NavIC
Full Form	GPS Aided GEO Augmented Navigation	Navigation with Indian Constellation
Type	Satellite-Based Augmentation System (SBAS)	Regional Navigation Satellite System
Function	Enhances GPS accuracy	Provides independent positioning and navigation
Developed By	ISRO & AAI	ISRO
Primary Users	Aviation sector	Civilian and strategic users

What is an LPV Approach?

Full Form

Localiser Performance with Vertical Guidance (LPV).

Features

Provides:

Horizontal guidance (left-right).

Vertical guidance (up-down).

Importance

Allows precision approaches similar to Instrument Landing Systems (ILS).

Does not require expensive ground-based radio equipment at airports.

Why is the Udaipur Landing Significant?

First Passenger Jet Landing

First successful GAGAN-based landing by a commercial Airbus A320 in India.

Validation of Indigenous Technology

Demonstrates the operational capability of India's indigenous satellite navigation infrastructure.

Reduced Dependence on Foreign Systems

Strengthens technological self-reliance in aviation navigation.

Support for Regional Airports

Enables precision approaches at airports lacking expensive Instrument Landing Systems.

Benefits of GAGAN

Enhanced Aviation Safety

Improves navigation precision during take-off and landing.

Lower Infrastructure Costs

Reduces dependence on costly ground-based navigation equipment.

Improved Air Traffic Management

Enables more direct flight routes and efficient airspace management.

Reduced Fuel Consumption

Shorter and optimized routes reduce fuel use and emissions.

Fewer Flight Diversions

Improves operational reliability during adverse weather.

Applications of GAGAN

Civil Aviation

Precision navigation and landing operations.

Air Traffic Management

Efficient route planning and airspace utilization.

Search and Rescue Operations

Improved positioning and tracking capabilities.

Disaster Management

Enhanced navigation support during emergencies.

Significance for India

Atmanirbhar Bharat

Strengthens indigenous technological capabilities.

Aviation Infrastructure Expansion

Supports India's rapidly growing regional aviation network under **UDAN Scheme**.

Global Recognition

India is among a limited number of countries possessing an operational SBAS system.

Unique Achievement

GAGAN is the only SBAS successfully validated under the challenging equatorial ionospheric conditions.

Challenges

Aircraft Compatibility

Wider adoption requires aircraft equipped with compatible avionics.

Pilot Training

Pilots and air traffic personnel require specialized operational training.

Infrastructure Integration

Integration with existing air navigation systems needs continuous upgrades.

Way Forward

Expand GAGAN-Based Approaches

Increase implementation across airports, particularly regional airports.

Strengthen Navigation Infrastructure

Upgrade monitoring stations and satellite support systems.

Promote Airline Adoption

Encourage airlines to equip fleets with GAGAN-compatible technology.

Enhance International Integration

Improve interoperability with other global Satellite-Based Augmentation Systems.

Support Future Air Mobility

Facilitate advanced aviation technologies, including unmanned aerial systems and next-generation air traffic management.

Blue Moon 2026: Rare Micromoon Lights Up the Sky



Why in News?

On **31 May 2026**, skywatchers witnessed a rare astronomical event where a **Blue Moon** coincided with a **Micromoon**.

It was the **second Full Moon of May 2026** and also the **smallest Full Moon of the year**.

The last time two Full Moons occurred in the same calendar month was in **August 2023**.

What is a Blue Moon?

A **Blue Moon** does not actually appear blue. The term refers to a special occurrence of Full Moons and is classified into two types:

Monthly Blue Moon

Occurs when **two Full Moons fall within the same calendar month**.

In May 2026:

First Full Moon: **1 May (Flower Moon)**

Second Full Moon: **31 May**

Therefore, the second Full Moon is called a **Blue Moon**.

Seasonal Blue Moon

Occurs when an astronomical season contains **four Full Moons instead of the usual three**.

In such cases, the **third Full Moon** is designated as the Blue Moon.

Frequency

Both Monthly and Seasonal Blue Moons occur roughly once every **2.5 years**.

Upcoming Blue Moons

Event	Date
Seasonal Blue Moon	20 May 2027
Monthly Blue Moon	31 December 2028

What is a Micromoon?

A **Micromoon** occurs when a Full Moon coincides with the Moon being near its farthest point from Earth in its orbit.

Why Does it Occur?

The Moon revolves around Earth in an **elliptical orbit**, not a perfect circle.

As a result, the Moon's distance from Earth constantly changes.

Important Points in Moon's Orbit

Perigee → Closest point to Earth.

Apogee → Farthest point from Earth.

Micromoon and Apogee

A Micromoon occurs when the Full Moon takes place near **Apogee**.

During the May 2026 event:

Full Moon occurred on **31 May 2026**.

Apogee occurred on **1 June 2026**.

Distance from Earth

The Moon was approximately **406,369 km (252,506 miles)** away from Earth.

It became the **most distant Full Moon of 2026**.

Appearance

Compared to an average Full Moon, a Micromoon appears:

About **7% smaller**.

Slightly less bright.

The difference is subtle and usually difficult to notice with the naked eye.

Micromoons in 2026

Three Full Moons in 2026 are classified as Micromoons:

Micromoon	Date
Flower Moon	1 May 2026
Blue Moon	31 May 2026
Strawberry Moon	29 June 2026

Supermoon: The Opposite of a Micromoon

A **Supermoon** occurs when a Full Moon takes place near **Perigee**, the closest point of the Moon's orbit to Earth.

Characteristics

Compared to a normal Full Moon, a Supermoon appears:

Larger.

Brighter.

More visually prominent.

Supermoons in 2026

Supermoon	Date
First Supermoon	24 November 2026
Second Supermoon	23 December 2026

Why Doesn't a Blue Moon Look Blue?

The name "Blue Moon" is often misleading.

Actual Appearance

The Moon usually appears:

White

Yellow

Orange

rather than blue.

Role of Rayleigh Scattering

During moonrise, the Moon appeared orange because of **Rayleigh Scattering**.

What is Rayleigh Scattering?

It is the scattering of shorter wavelengths of light by particles in Earth's atmosphere.

This phenomenon is also responsible for:

Blue colour of the sky.

Red and orange sunsets.

Orange appearance of the Moon near the horizon.

Antares: The Bright Star Near the Blue Moon

Observers also noticed a bright reddish star below the Moon.

About Antares

Antares

Brightest star in the constellation **Scorpius**.

A Red Supergiant Star.

Located approximately **550 light-years** from Earth.

Significance

Antares is among the largest stars visible in the night sky and is popularly known as the "**Heart of the Scorpion**."

Significance of the Event

The Blue Moon–Micromoon event is important because it helps improve understanding of:

Lunar cycles.

Moon's orbital dynamics.

Concepts such as Apogee and Perigee.

Difference between Micromoons and Supermoons. Atmospheric phenomena like Rayleigh Scattering. It also encourages public participation in astronomy and space science.

Key Terms at a Glance

Term	Meaning
Blue Moon	Second Full Moon in a calendar month or third Full Moon in a season with four Full Moons
Micromoon	Full Moon occurring near Apogee
Supermoon	Full Moon occurring near Perigee
Apogee	Farthest point of Moon's orbit from Earth
Perigee	Closest point of Moon's orbit to Earth
Rayleigh Scattering	Atmospheric scattering causing blue skies and reddish celestial appearances

Conclusion

The **Blue Moon–Micromoon of May 2026** was a rare astronomical event where the **second Full Moon of the month** occurred near the Moon's **Apogee**, making it the smallest Full Moon of the year. While it had no major physical impact on Earth, it provided an excellent opportunity to understand important astronomical concepts and generated widespread public interest in observational astronomy.



Ecology & Environment

Discovery of *Indopottia himalayensis* : New Moss Species from the Western Himalayas



Why in News?

Scientists from the Botanical Survey of India (BSI) discovered a new species of moss from the high-altitude forests of the Western Himalayas in Uttarakhand. The research team named the new species ***Indopottia himalayensis*** as a tribute to the Himalayan mountain range.

About *Indopottia himalayensis*

- **Global Rarity:** This discovery marks only the third species of the *Indopottia* genus ever identified globally.
- **Geographic Relatives:** The only other two known species of this genus reside far away—one in the Western Ghats of southern India and the other in the mountain ranges of Thailand.
- **Habitat Preference:** It is an entirely terrestrial species that thrives directly on soil-covered rocks within high-altitude forest ecosystems.

Distinct Morphological Features

- **Size & Structure:** It grows slightly taller than its counterparts, reaching up to 13 millimetres in length, and features a perfectly rounded stem structure.
- **Spore-Capsule:** The plant produces a single, upright, cylindrical spore-capsule. This capsule has a distinctive lid that characteristically bends sideways when dry.
- **Leaf Cellular Structure:** Its leaves lack the specific patch of transparent, bulging cells that typically define its closest taxonomic relatives.

Core Botanical Facts About Mosses

Classification and Nature

- **Taxonomic Group:** Mosses are small, nonvascular, spore-bearing land plants belonging to the taxonomic division **Bryophyta**.
- **Evolutionary Significance:** They are among the earliest land plants to evolve on Earth.
- **Resilience:** Known for extreme environmental resilience, mosses have successfully colonised some of the harshest landscapes on the planet, including Antarctica, active volcanic fields, and arid deserts.

Types, Distribution, and Habitat

- **Primary Divisions:** The three main structural types of mosses are **peat moss**, **granite moss**, and **true moss**.
- **Global Distribution:** Mosses are globally distributed across every continent, with the sole

exception of saltwater environments where they cannot survive.

- **Micro-Habitat:** They are most commonly found forming dense green carpets in damp, deeply shaded spots.

Rare Sighting of the Giant Malabar Squirrel in Chhattisgarh



Why in News?

A rare Giant Malabar Squirrel was recently spotted in the Devpur forest area, located within Chhattisgarh's Barnawapara forest range.

About the Giant Malabar Squirrel

- **Taxonomy:** Globally recognized by its scientific name *Ratufa indica*, it is also commonly referred to as the Indian Giant Squirrel.
- **Endemism & Scale:** It is a large, multi-coloured tree squirrel species endemic to India and stands out as one of the largest squirrel species in the world.
- **State Symbol:** It is the official state animal of Maharashtra, where it is locally known as *Shekru*.

Habitat and Distribution

- **Geographic Range:** It is found primarily across three major hill systems in India: the Western Ghats, the Eastern Ghats, and the Satpura Range.
- **Forest Ecosystems:** It inhabits areas with elevations ranging from 180 to 2300 metres, thriving within tropical deciduous, semi-deciduous, and wet evergreen forests or open woodlands.
- **Arboreal Behavior:** Highly arboreal in nature, it spends the vast majority of its life in the upper canopy. It moves with incredible agility, leaping distances up to 6 metres between tree branches, and builds its shelter inside tree hollows.

Key Physical & Behavioral Features

- **Dimensions:** The total body length varies between 254 to 457 mm, with a powerful, long tail that typically exceeds the length of its actual body.
- **Coloration:** It exhibits complex 2-3 tone coat patterns featuring shades of deep red, brown, and black. The underparts and forelimbs display a dirty white or cream color, contrasting with white patches on the belly. It also possesses distinct pink lips and a pink nose, with bright dark or light brown eyes.
- **Anatomy for Gripping:** Features short, rounded ears, broadened hands with an expanded inner paw, and large, powerful claws engineered specifically for gripping tree bark and heavy branches.
- **Social Nature & Defense:** It is typically a solitary animal, rarely seen in pairs outside of the breeding season. When threatened, instead of fleeing, it frequently freezes or flattens its body entirely against the tree trunk to blend in.

Conservation Status

- **IUCN Red List:** Classified as **Least Concern (LC)**.

Discovery of Mesalina bishnoi: New Lizard Species from Rajasthan



Why in News?

Scientists from the Zoological Survey of India (ZSI) and independent researchers discovered a new species of lizard named **Mesalina bishnoi** near Gajner in the Bikaner district of Rajasthan. This discovery provides the first official, specimen-backed scientific confirmation of the genus *Mesalina* in India.

Historical Context and Nomenclature

- **Resolving a Historical Mystery:** In 1935, British zoologist Malcolm A. Smith noted the presence of

Mesalina watsonana in Jaisalmer. However, because no physical specimen was preserved or verified, the genus remained undocumented in Indian herpetological records for over 90 years until this discovery.

- **Honorific Etymology:** The species is named in honor of Rajasthan's **Bishnoi community**, recognizing their historic and socio-ecological commitment to wildlife preservation and nature conservation.

About *Mesalina bishnoi*

Habitat and Distribution

- **Geographic Scope:** Currently documented only at its type locality in the Bikaner district and is considered completely endemic to the Thar biogeographic province.
- **Ecological Niche:** It thrives in arid, open semi-desert landscapes marked by hard, compact, rocky soil and sparse desert vegetation.
- **Sympatric Species:** It shares its desert habitat with other native reptiles, including Sahgal's gecko (*Hemidactylus sahgalii*), the spotted desert racer (*Platyceps ventromaculatus*), and the venomous saw-scaled viper (*Echis carinatus*).

Key Features and Behavior

- **Taxonomic Identity:** Belongs to the family **Lacertidae** (Old World wall lizards) and is categorized within the *Mesalina watsonana* species complex following mitochondrial DNA analysis.
- **Physical Proportions:** It is a small-bodied reptile with a snout-to-vent length of 39.2 mm.
- **Coloration and Patterns:** Displays a greyish to olive-brown base color highlighted by a pair of prominent dorsolateral stripes running from the neck to the tail. It features distinct black markings right behind the eyes, paired with irregular dark blotches and white spots across its body that create a mottled appearance. Its underside is uniform pale grey to off-white.
- **Activity Patterns:** These lizards are entirely diurnal (active during daylight hours) and are exceptionally fast-moving, a key adaptation for hunting and avoiding predators in open desert terrains.

Summer Air Pollution in Indian Cities



Why in News?

The growing challenge of **summer air pollution** across urban India was highlighted by the **Commission for Air Quality Management (CAQM)**. This was done by bringing back **Stage-1 restrictions** under the **Graded Response Action Plan (GRAP)** in Delhi in **May 2026**. While summer is generally thought to be cleaner than winter, many Indian cities faced high pollution levels during **2026**.

Causes of Summer Air Pollution

- **Regional Dust Storms (The Loo):** Strong summer heating over India creates a **low-pressure zone** that reaches toward Iran and West Asia. The meeting of this system with nearby high-pressure zones creates strong, dry, hot winds called the **loo**. These winds pick up large amounts of dust from the **Thar Desert** and the **Arabian Peninsula**, carrying it thousands of kilometers across the **Indo-Gangetic plains** and causing huge spikes in **PM10 levels**.
- **Local Thunderstorms (Andhi):** Extreme heat causes sudden, short-lived local dust storms called **andhi**. When cold air from these storms hits the dry ground, it lifts loose topsoil and carries it through cities at high speeds. While North India faces regional dust from the loo, southern and coastal cities like **Mumbai** and **Hyderabad** see summer dust spikes due to these local storms.
- **Ground-Level Ozone (O3) Formation:** Ground-level ozone is a **secondary pollutant**. It is made when **Nitrogen Oxides (NOx)** from vehicles and **Volatile Organic Compounds (VOCs)** from factories, paints, and fuels react under strong sunlight. Strong summer sun and **heatwaves**

speed up this chemical reaction, causing ozone levels to spike dangerously during the hottest parts of the day.

- **Urban Heat Island (UHI) Effect:** The growth of concrete surfaces, loss of trees, and drying up of urban wetlands trap heat inside cities. This **local heating** makes cities hotter and speeds up the chemical reactions that form **smog** and **ground-level ozone**.
- **More Construction Work:** Tough emergency rules used in winter (like GRAP) are usually dropped in spring. Once these rules are lifted, **heavy construction** and demolition projects start up again quickly. Without strict controls like water spraying or dust sheets, these sites release lots of coarse dust into the dry air.
- **Human-Made Emissions:** While wind and heat make summer pollution worse, human activities provide the basic fuel. **Vehicle exhaust**, factory smoke, and the illegal burning of **municipal waste** or dry leaves near cities supply a steady stream of **particulate matter** and gases that create toxic summer smog.

Comparison: Summer vs. Winter Pollution

Feature	Summer Pollution	Winter Pollution
Main Pollutants	Coarse dust (PM10) and Ground-level Ozone	Fine dust (PM2.5) and dense smog
Weather Drivers	Heatwaves, strong sun, dust storms, and fast winds	Temperature inversion, stagnant cold air, and fog
Major Sources	Wind-blown dust, construction work, and vehicle exhaust	Stubble burning, wood/biomass burning, and trapped smoke
How it Forms	Dust blowing up and chemical reactions under the sun	Pollutants piling up because they cannot lift or spread
Peak Times	Mid-day and hot afternoons (when ozone forms)	Early mornings and late nights (when cold air traps smoke)
Seasonal Factor	Heat and sunlight driving chemical changes	Cold weather and trapped atmospheric conditions

How Cities Can Fight Summer Pollution

- **Summer Action Plans:** Instead of only focusing on winter, cities need to set up special **Summer Action Plans**. These plans focus on tracking factory smoke, starting **anti-open burning patrols**, and enforcing rules on commercial paints and solvents to stop **VOC leaks**.
- **Early Warning Systems:** Dust storms cannot be stopped, but they can be predicted. Tools like the **Air Quality Early Warning System (AQEWS)** in Delhi, Mumbai, and Jaipur give weather and pollution forecasts a few days early. Towns must use these alerts to warn the public.

- **Checking Construction Sites:** Strict dust control rules must be used all year. By using digital tools like Mumbai's **Air Quality Decision Support System (AQDSS)**, officials have tracked and punished more than **1000 non-compliant sites** since **October 2025**.
- **Cutting Ozone Precursors:** To lower ozone pollution, cities must reduce **NOx** and **VOC emissions** by promoting cleaner transport, tightening factory rules, and stopping vehicles from idling.

World Environment Day 2026 and India's Nature-Based Climate Solutions



Why in News?

On World Environment Day (5 June 2026), the Prime Minister lauded the people of Uttar Pradesh for achieving a historic milestone under the '**Ek Ped Maa Ke Naam**' initiative, highlighting an intensification of grassroots environmental action and community-led restoration across India.

World Environment Day (WED): Core Overview

- **Historical Origin:** Established by the United Nations General Assembly (UNGA) in 1972 during the landmark Stockholm Conference on the Human Environment.
- **Inaugural Observance:** First celebrated in 1973 with the foundational theme "Only One Earth."
- **Nodal Body:** Coordinated globally by the United Nations Environment Programme (UNEP), headquartered in Nairobi, Kenya.
- **WED 2026 Celebrations:**
 - **Host Country:** Hosted by Azerbaijan in its capital, Baku, maintaining its role in the global climate agenda following its hosting of UNFCCC COP29 in late 2024.
 - **Theme:** "Inspired by Nature. For Climate. For Our Future." This theme champions Nature-

based Solutions (NbS), carbon sequestration, and generational resource equity.

'Ek Ped Maa Ke Naam' Campaign

- **Concept:** Launched on World Environment Day 2024, this mass plantation drive utilizes a behavioral nudge by connecting tree planting with maternal respect, operationalizing India's **Mission LIFE** (Lifestyle for Environment) philosophy.
- **Uttar Pradesh Milestone:** The state surpassed its target by planting over 5 crore (50 million) saplings across all 75 districts.
- **Climate Targets:** This massive mobilization accelerates progress toward India's Nationally Determined Contributions (NDCs) target of creating an additional carbon sink of 3.5 to 4.0 billion tonnes of CO₂ equivalent by 2035. As of 2025, India had already achieved 2.29 billion tonnes of this target.
- **Constitutional Framework:** The campaign fulfills the state's mandate under **Article 48A** (DPSP to protect the environment) and individual civic obligations under **Article 51A(g)** (Fundamental Duty to protect the natural environment).

Understanding Nature-Based Solutions (NbS)

- **Definition:** Defined by the International Union for Conservation of Nature (IUCN), NbS covers actions that protect, sustainably manage, and restore ecosystems to tackle societal challenges (like climate change and food security) while boosting human well-being and biodiversity. Unlike engineered gray infrastructure, NbS relies on natural biological processes.
- **Strategic Significance:**
 - **The Public Trust Doctrine:** Established in *M.C. Mehta v. Kamal Nath (1997)*, the Supreme Court declared the State as the trustee of natural resources, a mandate supported by NbS deployment under Article 21 (Right to a Wholesome Environment).
 - **The Dasgupta Review on Economics of Biodiversity:** Highlights that traditional GDP metrics fail to capture the depletion of "Natural Capital." NbS internalizes the financial value of vital ecosystem services.
 - **Eco-Sensitive Zone Protection:** Aligns with the *Madhav Gadgil Committee (2010) Report*, which recommended preserving the natural

ecology of the Western Ghats over heavy engineering to counter climate extremes.

- **Mitigation Value:** Halts ecological degradation and addresses deforestation (which drives 12-15% of global emissions) by expanding carbon sinks and reducing urban temperatures by 2-4 degrees Celsius.

● **Key Government Schemes Supporting NbS:**

- National Mission for a Green India (GIM)
- National Mission on Sustainable Agriculture (NMSA)
- National Water Mission & Mission Amrit Sarovar
- National Afforestation Programme (NAP)
- MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes)
- AMRUT 2.0

Structural Bottlenecks in Scaling NbS

- **Lack of Empirical Baseline:** The absence of a formalized **National Environmental Survey (NES)** leaves India without granular ecological data to accurately track biodiversity loss and verify NbS impact.
- **High Cost of Capital:** Long gestation periods for ecosystem restoration projects face a high Weighted Average Cost of Capital (WACC), making public funds and corporate CSR insufficient for macroeconomic scaling.
- **The Valuation Gap:** Standard economic metrics undervalue natural capital, often prioritizing commercial real estate over ecological conservation in cost-benefit evaluations.
- **Monoculture vs. Ecological Diversity:** Rigid administrative targets often lead to monoculture plantations of exotic species, which deplete groundwater and degrade soil health.
- **Land-Use Friction:** Densely populated regions encounter frequent conflicts between expanding agricultural needs and strict forest conservation frameworks.

Strategic Roadmap to Strengthen NbS

- **Institutionalize the NES:** The MoEFCC should introduce an annual, legally backed National Environmental Survey ahead of the Union Budget to map localized climate vulnerabilities.
- **Blended Finance Instruments:** De-risk climate investments by utilizing Sovereign Green Bonds

and concessional public funds to attract private equity and international institutional capital.

- **Mainstream Natural Capital Accounting:** Ensure the Ministry of Finance and MoSPI integrate ecosystem valuations into the annual Economic Survey to clarify the fiscal dividends of avoided disasters.
- **Advanced Monitoring Technology:** Deploy ISRO's **Bhuvan Portal** alongside AI-driven tracking dashboards to monitor sapling survival rates and real-time carbon sequestration.
- **Develop Blue-Green Corridors:** Transition from isolated conservation patches to integrated regional projects, such as restoring the Aravalli Green Wall to mitigate desertification and northern urban pollution.
- **Empower Grassroots Stakeholders:** Implement the **Forest Rights Act (FRA, 2006)** effectively to combine ecological restoration with sustainable livelihoods, taking inspiration from community models like the **Living Root Bridges (Jingkieng Jri)** of Meghalaya.

Conclusion

True environmental sustainability requires transitioning from top-down engineering to community-led ecological governance. Combining massive public participation initiatives like *Ek Ped Maa Ke Naam* with scientifically backed Nature-Based Solutions enables India to secure natural capital, build long-term climate resilience, and safeguard ecosystem wealth for the future.

Surha Tal Declared India's 100th Ramsar Site



Why in News?

On World Environment Day (5 June 2026), the Prime Minister lauded the official designation of the Jai Prakash Narayan Bird Sanctuary (popularly known as Surha Tal) in the Ballia district of Uttar Pradesh as India's 100th Ramsar Site under the Ramsar

Convention, marking a historic achievement in the country's wetland conservation journey.

Global and Regional Standing

- **Asia's Leader:** With this milestone addition, India holds the highest number of Ramsar Sites in Asia.
- **Global Ranking:** India ranks 3rd globally for the most designated wetlands of international importance, trailing only the United Kingdom (176 sites) and Mexico (144 sites).
- **Uttar Pradesh's Leading Role:** Surha Tal marks the 13th Ramsar Site located in Uttar Pradesh. This follows the early 2026 inclusion of two other UP wetlands: the Shekha Jheel Bird Sanctuary (Aligarh district, 99th site) and the Patna Bird Sanctuary (Etah district, 97th site).

Legal Definitions: What Qualifies as a Wetland?

- **Ramsar Convention Criteria:** Defines wetlands expansively as areas of marsh, fen, peatland, or water—whether natural or artificial, permanent or temporary—with water that is static or flowing, fresh, brackish, or saline. This includes shallow marine areas not exceeding a depth of 6 meters at low tide.
- **Indian Legal Framework:** Under the **Wetlands (Conservation and Management) Rules, 2017**, India applies a more restrictive definition. The domestic rules explicitly exclude river channels, active paddy fields, municipal drinking water tanks, and structures created specifically for aquaculture, salt production, recreation, or irrigation.

Ecological Profile of Jai Prakash Narayan Bird Sanctuary (Surha Tal)

- **Genesis and Hydrology:** Located within the middle stretch of the Ganga River basin, the sanctuary centers around a massive, natural perennial oxbow lake. It was formed geologically when the meandering Ganga River naturally shifted its course. It is replenished by freshwater from three primary inflow channels and expands extensively over surrounding marshes and floodplains during the monsoon.
- **Protected History:** The area was initially set aside as a bird sanctuary by the Uttar Pradesh government in 1991 and was later renamed to honor the political leader and independence activist Jai Prakash Narayan.
- **Avifaunal Biodiversity:** Positioned directly along the **Central Asian Flyway**, the wetland serves as a

critical international refueling station and wintering refuge for thousands of long-distance migratory birds arriving from Siberia and Central Asia. Notable species recorded here include:

- Common Pochard (*Aythya ferina*) – Classified as Vulnerable
- Indian River Tern (*Sterna aurantia*) – Classified as Vulnerable
- Sarus Cranes
- Bar-headed Geese
- **Aquatic and Mammalian Life:** The sanctuary sustains a diverse ecosystem comprising 221 plant species and 66 fish species, including the vulnerable catfish species *Wallago attu* and *Bagarius bagarius*. This high concentration of fish makes the wetland a primary feeding and breeding sanctuary for the vulnerable **Fishing Cat** (*Prionailurus viverrinus*).
- **Socio-Cultural Fabric:** Beyond its ecological values, Surha Tal is deeply tied to the historical, religious, and traditional heritage of local communities, serving as a vital socio-ecological landscape in eastern Uttar Pradesh.

Conclusion

Reaching a century of Ramsar sites highlights India's ongoing transition toward decentralized, community-led ecological management. By blending strict international conservation rules with active local participation, scientific monitoring, and habitat revival, the preservation of Surha Tal ensures long-term climate resilience, secures local livelihoods, and protects critical biodiversity along the Central Asian Flyway for generations to come.

India Showcases Carbon Credit Trading Scheme and Renewable Energy Standards at WTO



Why in News?

- On **World Environment Day 2026**, India's progress in the areas of **carbon markets**, **renewable energy standardization**, and **clean energy transition** was showcased during the event titled "**Showcase of India's Carbon Credit Trading Scheme (CCTS) and Standardization in Renewable Energy**" at the **WTO Trade and Environment Week** in Geneva.
- India's efforts towards building a **low-carbon economy** and fulfilling its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement** were highlighted.

Guiding Climate Principles

- It was reiterated by India that its climate actions continue to be guided by the principles of **Equity** and **Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)** enshrined in the **UNFCCC**.
- The principle recognizes that while climate change is a shared challenge, responsibilities differ according to historical emissions and developmental capacities.

Achievement of NDC Targets

Non-Fossil Fuel Capacity

- The target of achieving **50% non-fossil fuel-based installed electricity capacity by 2030** has already been surpassed.
- As of **March 2026**, the share of non-fossil fuel sources in India's installed electricity generation capacity had reached **53.21%**.

Reduction in Emissions Intensity

- A reduction of **37.38%** in the emissions intensity of GDP was achieved between **2005 and 2022**.
- This exceeded the NDC commitment of reducing emissions intensity by **33–35% by 2030**.

Standardization in Clean Energy

National Green Hydrogen Mission

- Progress made under the **National Green Hydrogen Mission** was presented.
- Recently notified **emission thresholds** and **technical standards** for the classification of **Green Hydrogen** were highlighted.
- These standards have been introduced to ensure uniformity, transparency and credibility in green hydrogen production.

Indian Carbon Market (ICM)

Carbon Credit Trading Scheme (CCTS)

- The framework of the **Indian Carbon Market (ICM)** was showcased as a major step towards market-based climate action.
- The market is being developed to facilitate the trading of carbon credits through a national electronic platform.

Legal Basis

- The **Carbon Credit Trading Scheme (CCTS)** was notified by the **Ministry of Power** in **2023** under the provisions of the **Energy Conservation Act, 2001**.
- The scheme serves as the foundation of the **Indian Carbon Market**.

Working Mechanism of CCTS

Cap-and-Trade Approach

- The scheme operates through a **Cap-and-Trade** mechanism.
- Emission reduction targets are assigned to eligible entities.
- Carbon Credit Certificates (CCCs) are awarded to entities that achieve emission reductions beyond prescribed targets.
- These certificates can subsequently be traded within the market.

Carbon Credit Certificate

- Under the scheme, **one Carbon Credit Certificate (CCC)** represents the reduction of **one tonne of carbon dioxide (CO₂)** equivalent emissions.

Institutional Framework

Bureau of Energy Efficiency (BEE)

- The role of scheme administrator has been assigned to the **Bureau of Energy Efficiency (BEE)**.

Central Electricity Regulatory Commission (CERC)

- Regulation and oversight of carbon credit trading have been entrusted to the **Central Electricity Regulatory Commission (CERC)**.

Grid Controller of India Limited (GCIL)

- Registry functions under the scheme are being performed by the **Grid Controller of India Limited (GCIL)**.

Mechanisms under the Scheme

Compliance Mechanism

- Obligated entities are required to meet prescribed emission reduction targets.
- Carbon credits may be purchased by entities that fail to achieve the required targets.

Offset Mechanism

- Emission reduction projects undertaken voluntarily can generate carbon credits.
- Wider participation in greenhouse gas mitigation is encouraged through this mechanism.

Significance

- A market-based framework for reducing **greenhouse gas emissions** is being established through the **CCTS**.
- Adoption of cleaner technologies and energy-efficient practices is being incentivized.
- India's transition towards a **low-carbon and sustainable economy** is expected to be accelerated through the development of the **Indian Carbon Market**.

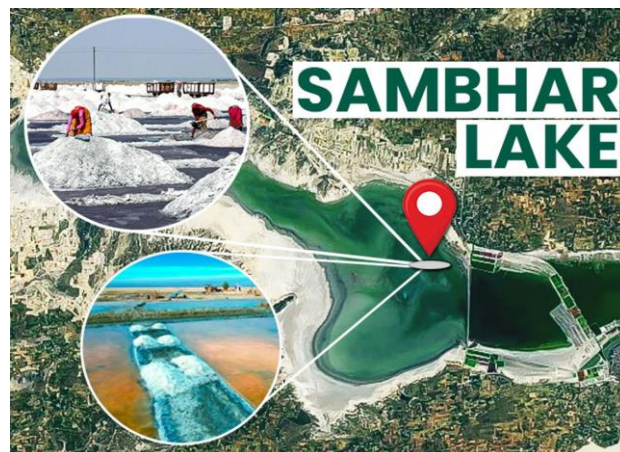


EDITORIALS

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Ecology & Environment

Sambhar Lake and Emerging Environmental Concerns



Why in News?

- Recent **satellite-based analyses (1984–2023)** have revealed that the hydrology of **Sambhar Lake** is highly dependent on seasonal rainfall patterns.
- The studies indicate that water levels typically peak during the late summer and monsoon months and decline significantly during the dry season.
- Satellite imagery has also highlighted the expansion of industrial salt pans and the shrinking

of the natural wetland area, raising concerns regarding the lake's ecological health.

About Sambhar Lake

- **Sambhar Lake** is the largest inland saline wetland in India and one of the country's most important saltwater ecosystems.
- It serves as a critical habitat for migratory birds and supports extensive salt production activities.
- The lake also provides livelihood opportunities to local communities engaged in salt harvesting and related activities.

Location

- The lake is situated in the **Rajasthan** districts of **Jaipur** and **Nagaur**.
- It lies close to the **Aravalli Range** within an arid and semi-arid landscape.
- The lake forms an important ecological feature of western India's dryland environment.

Hydrological Characteristics

- The hydrology of Sambhar Lake is primarily influenced by seasonal rainfall.
- Water is supplied to the lake through six rivers:
 - Samaod River
 - Khari River
 - Mantha River
 - Khandela River
 - Medtha River
 - Roopangarh River
- During the monsoon season, inflows increase significantly, while water levels decline during prolonged dry periods.

Ramsar Site Status

- Sambhar Lake was designated a **Ramsar Convention Wetland of International Importance** in 1990.
- The designation was granted due to its unique saline ecosystem and importance for biodiversity conservation.
- It remains one of India's most ecologically significant wetland habitats.

Importance as a Bird Habitat

Migratory Birds

- Thousands of migratory birds visit the lake annually between **November and February**.
- The lake is particularly known for attracting large populations of **Flamingos**.

Other Bird Species

- During the monsoon season, the wetland supports several bird species, including:
 - Coots
 - Black-winged Stilts
 - Sandpipers
 - Redshanks
- The lake functions as an important feeding, breeding and resting ground for numerous avian species.

Role in Salt Production

- Sambhar Lake is one of the major centres of salt production in Rajasthan.
- Large quantities of salt are extracted from the lake every year.
- The salt industry supports the livelihoods of thousands of local residents and contributes significantly to the regional economy.

Environmental Concerns

Shrinking Wetland Area

- Satellite observations indicate that the natural surface area of the lake declined between **2022 and 2023**.
- Reduced water spread has increased ecological stress on the wetland ecosystem.

Expansion of Industrial Salt Pans

- A simultaneous expansion of industrial salt pans has been recorded around the lake.
- The growing industrial footprint is exerting pressure on the natural saline wetland.

Threat to Biodiversity

- Habitat degradation may adversely affect migratory birds and other wetland-dependent species.
- Changes in hydrological conditions can disrupt the ecological balance of the lake.

Need for Conservation

Separation of Industrial and Natural Areas

- Scientists have emphasized the need to clearly separate industrial salt production zones from the natural wetland ecosystem.
- Such measures would help reduce ecological disturbances and conserve biodiversity.

Protection of Ecological Balance

- Sustainable management practices are required to maintain the lake's hydrological and ecological integrity.

- Conservation efforts should focus on preserving wetland habitats while balancing economic activities.

Long-Term Monitoring

- Continued use of satellite-based monitoring and scientific assessments has been recommended.
- Regular monitoring can help detect environmental changes and support evidence-based conservation strategies.

Conclusion

- **Sambhar Lake** remains one of India's most important saline wetlands, supporting biodiversity, migratory birds, salt production and local livelihoods.
- However, shrinking wetland areas and expanding industrial salt pans pose significant ecological challenges.
- Strengthened conservation measures and sustainable management practices are essential to protect the lake's ecological balance and ensure its long-term survival.

HAWK (Hostile Activity Watch Kernel) Wildlife Crime Management System



Why in News?

- Recently, the **Kerala Forest Department** launched the **e-court integration feature** for the **HAWK (Hostile Activity Watch Kernel)** system.
- With this initiative, **Kerala** became the first state in India to establish a **fully digitized and judiciary-integrated wildlife offence management system**.

What is HAWK?

About

- **HAWK (Hostile Activity Watch Kernel)** is a cloud-based wildlife crime information management system.
- It maintains interconnected databases relating to:
 - Wildlife crimes.

- Wildlife offenders.
- Wildlife mortality.
- Investigation records.
- Court proceedings.
- The platform provides ecological intelligence and comprehensive case-management support to forest officials.

Objective

- To strengthen wildlife crime monitoring and enforcement.
- To centralize information across the state.
- To identify and track repeat offenders.
- To eliminate information gaps among enforcement agencies.
- To improve coordination in wildlife protection efforts.

Development of HAWK

Collaborative Initiative

- HAWK was developed jointly by:
 - The **Kerala Forest Department**
 - The **Wildlife Trust of India**

Timeline

- Development commenced in **2017**.
- Officially launched in **Kerala in 2019**.
- Subsequently expanded to:
 - **Karnataka** (2022)
 - **Tamil Nadu** (2025)
 - **Odisha** (2025)

Key Features of HAWK

Integrated Wildlife Crime Database

- Maintains a centralized repository of:
 - Offence records.
 - Offender profiles.
 - Wildlife mortality data.
 - Investigation reports.

Tracking Repeat Offenders

- Enables forest officials to identify habitual offenders and criminal networks involved in wildlife crimes.

Ecological Intelligence

- Supports data-driven decision-making through analysis of:
 - Crime patterns.
 - Wildlife mortality trends.
 - Geographic hotspots of illegal activities.

Case Management Support

- Assists officials in:
 - Investigation.
 - Documentation.
 - Evidence management.
 - Monitoring case progress.

E-Court Integration

Digital Integration with Judiciary

- The latest upgrade integrates HAWK directly with the judicial system through an **Application Programming Interface (API)**.

Meaning of API

- An **Application Programming Interface (API)** is a software mechanism that enables different computer systems to communicate and exchange data automatically.

Benefits of E-Court Integration

Paperless Workflow

- Eliminates manual and paper-based submission of case documents.

Real-Time Monitoring

- Enables real-time tracking of cases from registration to final judgment.

End-to-End Case Tracking

The system can monitor:

- Preliminary Offence Reports (PORs).
- Investigation records.
- Charge sheets.
- Witness testimonies.
- Court proceedings.
- Final verdicts.

Improved Transparency

- Enhances accountability and reduces procedural delays.

Efficient Prosecution

- Facilitates quicker coordination between forest officials and judicial authorities.

Scalability and Customization

ERP-Based Architecture

- HAWK is based on an **Enterprise Resource Planning (ERP)** model.
- ERP systems integrate multiple functions into a unified digital platform.

Modular Design

- Different modules can be added or modified according to administrative requirements.

State-Level Customization

- States can adapt the platform according to:
 - Local procedures.
 - Regional languages.
 - Administrative requirements.
 - Emerging technological needs.

Unified Database

- Despite customization, a centralized database structure ensures consistency and interoperability.

Significance of HAWK

Strengthening Wildlife Protection

- Enhances surveillance and enforcement against wildlife crimes.

Improving Conviction Rates

- Better documentation and case tracking can improve prosecution efficiency and conviction rates.

Promoting Digital Governance

- Supports the broader objective of e-governance and digital transformation in environmental administration.

Inter-Agency Coordination

- Facilitates seamless coordination between:
 - Forest Departments.
 - Enforcement agencies.
 - Judicial institutions.

Data-Driven Conservation

- Generates valuable insights for wildlife conservation planning and policy formulation.

Wildlife Crime in India

Major Threats

Wildlife crimes in India include:

- Poaching.
- Illegal wildlife trade.
- Habitat destruction.
- Smuggling of animal parts.
- Illegal capture and transportation of wildlife.

Legal Framework

Wildlife (Protection) Act, 1972

- The principal legislation governing wildlife conservation and protection in India.

National Wildlife Crime Control Bureau (WCCB)

- **Wildlife Crime Control Bureau** is the nodal agency responsible for combating organized wildlife crime.

Challenges

Inter-State Criminal Networks

- Wildlife offenders often operate across multiple states.

Delayed Prosecution

- Traditional paper-based systems can slow investigations and court proceedings.

Data Fragmentation

- Lack of integrated databases hampers effective intelligence gathering.

Technological Capacity

- Successful implementation requires adequate digital infrastructure and trained personnel.

Conclusion

- The **HAWK system** represents a significant advancement in India's wildlife crime management framework by integrating technology, data analytics and judicial processes into a single platform.
- Kerala's initiative in introducing **e-court integration** demonstrates how digital governance can strengthen wildlife conservation, improve enforcement efficiency and support evidence-based environmental administration, providing a model that can be replicated across the country.

Gujarat Dolphin Survey 2026



Why in News?

- Gujarat has recorded **more than 680 dolphins** along its **4,087-km coastline**, highlighting the state's growing role in **marine biodiversity conservation**.
- The survey identified the **Gulf of Kutch** as one of India's most important dolphin habitats.

About the Dolphin Survey

Objective

- Assess the distribution and population of dolphins in Gujarat's coastal and marine ecosystems.
- Strengthen marine conservation planning and habitat protection.

Survey Coverage

The survey covered:

- **Marine National Park**
- **Marine Sanctuary**
- Southern Gulf of Kutch.
- Northern Gulf of Kutch.
- Coastal areas of **Bhavnagar**.
- Coastal areas of **Morbi**.

Key Finding

- Dolphins were found across a wide range of coastal habitats, indicating a healthy and widespread marine population.

Major Dolphin Species Recorded

Indian Ocean Humpback Dolphin

Scientific Name

- **Sousa plumbea**
Bottlenose Dolphin

Scientific Name

- **Tursiops truncatus**

Indian Ocean Humpback Dolphin (*Sousa plumbea*)

Features

- Mostly grey in colour.
- Possesses a small triangular dorsal fin.
- Dorsal fin is located on a low hump.
- Opportunistic feeder.

Food

Feeds mainly on:

- Mackerel.
- Mullet.
- Sardines.
- Other coastal fish species.

Distribution

- Found along the coastal waters of the **Indian Ocean**.
- Distribution extends from:
 - South Africa.
 - East African coast.
 - Middle East.
 - Western coast of India.

Habitat

- Shallow coastal waters.
- Estuaries.
- Nearshore marine ecosystems.

Conservation Status

IUCN Red List

- **Endangered**

Legal Protection in India

- Protected under **Schedule I** of the **Wildlife (Protection) Act, 1972.**

CITES Status

- Listed under **Appendix I** of **CITES.**

Major Threats

- Marine pollution.
- Habitat degradation.
- Vessel traffic.
- Underwater noise pollution.
- Accidental entanglement in fishing nets.

Bottlenose Dolphin (*Tursiops truncatus*) Features

- Robust body structure.
- Short and thick snout known as a rostrum.
- Grey colour with a lighter underside.
- Highly intelligent and social species.
- Uses sound waves for communication and hunting.

Food

Feeds on:

- Fish.
- Squid.
- Crabs.
- Shrimps.
- Other crustaceans.

Distribution

- Found in tropical, subtropical, and temperate waters worldwide.
- Occurs in:
 - Coastal waters.
 - Bays.
 - Estuaries.
 - Lagoons.
 - Gulfs.
 - Open oceans.

Habitat

- Coastal waters.
- Offshore marine zones.
- Harbours.

- Continental shelf waters.

- Estuaries and lagoons.

Conservation Status

Common Bottlenose Dolphin

- **Least Concern** (IUCN)

Indo-Pacific Bottlenose Dolphin

- **Near Threatened** (IUCN)

CITES Status

- Listed under **Appendix II** of **CITES.**

Major Threats

- Bycatch in fishing operations.
- Pollution.
- Habitat degradation.
- Vessel strikes.
- Underwater noise.
- Tourism-related disturbances.
- Decline in prey availability.

Significance of Gujarat for Dolphin Conservation

Marine Biodiversity Hotspot

- Gujarat possesses India's longest coastline.
- Supports diverse marine ecosystems and species.

Importance of the Gulf of Kutch

- One of India's most important habitats for marine mammals.
- Hosts coral reefs, mangroves, seagrass beds, and dolphins.

Indicator of Ecosystem Health

- Dolphins serve as flagship and indicator species.
- Their presence reflects the health of marine ecosystems.

Challenges

Marine Pollution

- Industrial discharge and plastic waste threaten marine life.

Fishing Activities

- Accidental entanglement in fishing gear remains a major concern.

Increasing Maritime Traffic

- Vessel movement increases collision risks and underwater noise.

Habitat Degradation

- Coastal development and industrial expansion affect dolphin habitats.

Way Forward

Strengthen Marine Protected Areas

- Enhance conservation efforts in the Gulf of Kutch and adjoining waters.

Promote Sustainable Fishing

- Encourage dolphin-safe fishing practices and gear modifications.

Reduce Marine Pollution

- Strengthen coastal waste management and pollution control measures.

Scientific Monitoring

- Conduct regular dolphin population assessments and habitat studies.

Community Participation

- Involve coastal communities and fishermen in marine conservation initiatives.



Mtkvari River and Recent Developments



Why in News?

The Ministry of Internal Affairs of Georgia recovered a body from the Mtkvari River in Tbilisi. The deceased is identified as Dhvanit Rajdeep, a 23-year-old Indian medical student from Ahmedabad who had been missing since mid-May 2026. Georgian authorities have opened a formal investigation under Article 115 of the Criminal Code to determine the exact circumstances surrounding the tragedy.

Core Geographic Profile of the Mtkvari River

Hydrographic Overview

Alternative Nomenclature: Widely known as the Kura River across regional maps.

Geographic Standing: It serves as the single longest river watercourse spanning the entire Caucasus mountain region.

Transboundary Flow: The river is an east-flowing system that runs through three sovereign nations: Turkey, Georgia, and Azerbaijan.

Course Trajectory: It originates in the highlands of eastern Turkey, cuts across the border into Georgia, flows directly through the structural valley dividing the Greater Caucasus and Lesser Caucasus ranges, and ultimately discharges into the Caspian Sea within Azerbaijan.

Statistical Length Breakdown

The total operational length of the river stands at 1515 kilometers, distributed across national territories as follows:

Azerbaijan: 906 kilometers (The longest territorial section)

Georgia: 270 kilometers

Turkey: 174 kilometers

Key Tributaries & Urban Centers

Primary Tributary: The Araxes (Aras) River stands as the largest official tributary feeding into the Mtkvari system.

Major Urban Settlements: Tbilisi, the capital city of Georgia, is situated directly along its banks and ranks as the largest metropolis built along the river course.

Historical and Cultural Context

Civilizational Cradle: The river banks have supported human development for millennia, hosting deep-rooted ancient settlements that archaeological records trace back directly to the Bronze Age.

Strategic Trade Corridor: Historically, the watercourse acted as a primary commercial trade route, linking the distinct socio-economic networks of the Caucasus with the expansive Eurasian trade systems.

Deferred Water Release from Mettur Dam Due to Low Storage



Why in News?

The customary June 12 opening of the Mettur Dam for the commencement of the Kuruvai paddy cultivation season in Tamil Nadu's Cauvery delta was officially deferred. This delay is a direct consequence of critically low water storage levels in the reservoir combined with an unfavorable early forecast for the southwest monsoon (June-September).

About Mettur Dam

Location: Situated at Mettur in the Salem District of Tamil Nadu.

Structural Scale: Standing 65 meters high and extending 1700 meters in length, it is one of the largest dams in India and ranks as the single largest dam in Tamil Nadu.

Topographic Placement: It is strategically constructed in a natural gorge where the Kaveri (Cauvery) River leaves the hills and enters the flat plains.

Historical Origins: Built over a span of 9 years and completed in 1934, the entire construction phase was supervised by Sir George Stanley, the then Governor of Madras.

Primary Utility: Designed primarily as a multi-purpose project to capture Kaveri waters for large-scale agricultural irrigation, domestic drinking water supply, and hydroelectric power generation.

Distinctive Features & Hydro-Dynamics

Dam Type: It is a heavy masonry gravity dam.

The Reservoir: The vast reservoir pool created by the dam structure is named the **Stanley Reservoir**. It has an installed capacity to generate 240 MW of hydroelectric power.

Surrounding Features: A public park featuring landscaped lawns and fountains is located directly opposite the dam site, with a prominent Muniappan/Aiyanar statue situated nearby.

Water Sources: The reservoir relies on inflows from its own local catchment area alongside upstream discharges from the Kabini Dam and Krishna Raja Sagara (KRS) Dam located in Karnataka.

Irrigation Reach: It provides vital canal irrigation coverage to 271000 acres of fertile farmland stretching across multiple districts, including Salem, Erode, Namakkal, Karur, Tiruchirappalli, and Thanjavur.

Crisis in Kshipra River System



Why in News?

A major crisis is being faced by the Kshipra riverine system in Madhya Pradesh, which is highlighted by the drying up of its tributaries that fail to maintain a perennial flow.

About Kshipra River

Overview: A major river flowing through Madhya Pradesh, also known as the Shipra. It operates as a vital tributary of the Chambal River.

Status: Though historically classified as a perennial river, it holds an exceptionally sacred status among Hindus, comparable to the Ganga River.

Course and Flow:

Origin: It originates from the Vindhya Range near Ujjain, Madhya Pradesh.

Path: The Malwa Plateau is traversed by the river before it joins the Chambal River.

Length: A total distance of 195 kilometers is covered by the river, with a significant portion passing through Ujjain.

Major Tributaries: Khan and Gambhir.

Religious Significance

Mythological Origins: The origin of the Shipra from the heart of Varaha (Lord Vishnu's boar incarnation) is put forward by the Puranas.

Sacred Associations: Sage Sandipani's ashram is located on its banks, where education was received by Krishna, Lord Vishnu's eighth incarnation.

Scriptural Mentions: Recognition is given to this river not only in ancient Hindu texts but also in Buddhist and Jain scriptures.

Ujjain and Kumbha Mela: The holy city of Ujjain is situated on its right bank. The famous Simhastha Kumbha Mela is hosted on these ghats once every 12 years.

Shrines: Hundreds of Hindu shrines are located along the banks of the river.

Climate and Vegetation Study of Majuli Island



Why in News?

Nearly 4,000 years of climate and vegetation history of Majuli Island in Assam has been reconstructed by a new study.

About Majuli Island

Overview: It is recognized as the world's largest river island and is located in Assam within the Brahmaputra river system.

Formation: The island is formed by the Brahmaputra River to the south, and by the Kherkutia Xuti (a branch of the Brahmaputra) joined by the Subansiri River to the north.

Crops Cultivated: Rice cultivation is relied upon as the primary livelihood for the residents of Majuli. Several unique local varieties of rice, such as Komal Saul and Bao Dhan, are grown across the region.

Tribes: A majority of the islanders belong to three prominent indigenous tribes—the Mishing, Deori, and Sonowal Kachari—with the remaining population comprised of non-tribal Assamese.

Cultural Heritage

Neo-Vaishnavite Hub: The island has long been served as the central hub of Assamese neo-Vaishnavite culture, which was initiated around the 16th century by the revered Assamese saint-reformer Srimanta Sankerdeva and his prominent disciple Madhavdeva.

The Satra Tradition: The unique tradition of Satras (monastic institutions) was initiated by them. These Satras have successfully preserved and passed down Sattriya dance, literature, bhaona (traditional theatre), diverse dance forms, mask-making, and boat-making.

Art and Craft: Apart from its famous Vaishnavite monasteries, the island is widely celebrated for its rich heritage of traditional mask-making and indigenous pottery production.

Launch of Khet Bachao Abhiyan



Why in News?

The nationwide **Khet Bachao Abhiyan** was officially launched by the Union Minister for Agriculture and Farmers Welfare and Rural Development, **Shivraj Singh Chouhan**, from Ramasiya village in the Raisen district of **Madhya Pradesh**.

About Khet Bachao Abhiyan

Core Focus: The protection of **soil health**, reduction of excessive chemical fertilizer and pesticide use, and promotion of scientific farming practices are heavily prioritized by the campaign.

Timeline: The initiative is designed to run across the country from **June 1 to June 30, 2026**.

Central Philosophy: The campaign operates around the central message of **“Save the Soil, Save Farming, Save Farmers.”** It highlights that productive agriculture, stronger farmers, and long-term national growth are directly dependent on healthy soil.

Key Framework and Structural Components

Component	Strategic Operations and Targeted Outcomes
Core Activities	Promotion is given to soil testing, balanced nutrient management, natural farming , water conservation, seed treatment, green manure, and modern water-efficient sowing methods.
Soil Health Cards	The use of Soil Health Cards is actively pushed so that fertilizer application can be guided by the actual nutrient needs of the soil, lowering input costs and protecting soil fertility.
Scheme Integration	Public awareness is built against counterfeit fertilizers , seeds, and pesticides, while smoother access is facilitated for farmers to central schemes like PM-Kisan , Crop Insurance, and Kisan Credit Cards.
Village Outreach	Direct educational visits to rural areas are made by agricultural scientists, ICAR institutions, Krishi Vigyan Kendra (KVK) experts, and agricultural department officials to deliver technical guidance.
Scientific Training	Field demonstrations are conducted for key crops like soybean, paddy, and pulses , while practical training is provided on laser levelers and selecting crop varieties based on local weather conditions.

Lake Chad Basin



Why in News?

Recently, the **Islamic State West Africa Province (ISWAP)** has emerged as the most influential jihadist organisation operating in the **Lake Chad Basin**, surpassing **Boko Haram** in both operational capability and regional influence.

The development has renewed attention on the strategic, environmental and socio-economic importance of the **Lake Chad Basin** region.

Lake Chad Basin

About

The **Lake Chad Basin** is one of Africa's major transboundary drainage basins.

It covers nearly **8% of Africa's total land area** and extends across parts of:

Nigeria

Niger

Chad

Cameroon

Benin

The basin serves as a vital ecological and economic region for millions of people.

Physical Features

Wetlands and Floodplains

The basin contains extensive wetlands, floodplains and seasonally inundated areas.

Major wetland systems are found along the:

Chari River

Logone River

Yobe River

Important Wetland Areas

Significant wetland ecosystems within the basin include:

Yaeres Wetlands

Sategui-Deressia Wetlands

Hadejia-Nguru Wetlands

These wetlands support biodiversity, agriculture, fisheries and groundwater recharge.

Environmental Challenges

Declining Water Availability

The basin has experienced recurring droughts over the past several decades.

Significant reductions in river discharge and lake water levels have been recorded.

Shrinking Lake Area

The surface area of Lake Chad has fluctuated considerably due to climatic variability and increasing water withdrawals.

Land Degradation

The region faces:

Soil erosion

Desertification

Loss of vegetation cover

Declining groundwater levels

Biodiversity Loss

Environmental degradation has contributed to:

Declining wildlife populations.

Loss of native plant species.

Spread of invasive weeds.

These changes have weakened the ecological resilience of the basin.

Lake Chad

About

Lake Chad is a major freshwater lake and one of the most important wetlands in the **Sahel Region** of Africa.

It serves as a critical source of water, food security and livelihoods for surrounding communities.

Location

The lake is shared by four countries:

Nigeria

Cameroon

Niger

Chad

The Nigerian portion of the lake is primarily located in **Borno State** and **Yobe State**.

Type of Lake

Lake Chad is a **shallow endorheic lake**, meaning it has no outlet to the sea.

Water entering the lake is primarily supplied by:

Logone River

Chari River

Komadougou River

Water loss occurs mainly through evaporation and infiltration.

Biodiversity

Wildlife

The lake supports a rich diversity of flora and fauna. Important species found in the region include:

Hippopotamus

Nile Crocodile

Nile Monitor

Otter

Tortoise

Giraffe

Ostrich

Birdlife

The lake serves as an important habitat for numerous migratory and resident bird species. It forms part of important migratory bird routes across Africa.

Climate

The region experiences a typical **Sahelian Climate**.

Key characteristics include:

Low and highly variable rainfall.

A short rainy season.

A prolonged dry season.

High temperatures and evaporation rates.

These conditions make the ecosystem highly vulnerable to climate change.

Cultural and Historical Significance

Ancient Sao Civilization

The Lake Chad region is associated with the ancient **Sao Civilization**, one of the earliest known civilizations in Central Africa.

Archaeological remains indicate a long history of human settlement around the lake.

Communities Dependent on the Lake

The lake continues to support several indigenous and local communities, including:

Kotoko

Kanembou

Barma

Boulalan

Hausa

Livelihood Importance

Communities depend on the lake for:

Fishing.

Agriculture.

Livestock rearing.

Regional trade.

The lake remains a crucial socio-economic resource for millions of people in the region.

Significance of the Lake Chad Basin

The basin is strategically important for:

Regional water security.

Food security.

Biodiversity conservation.

Livelihood support.

Regional stability.

Environmental degradation and growing extremist activity have increased the need for coordinated conservation and security measures among basin countries.

Conclusion

The **Lake Chad Basin** and **Lake Chad** constitute one of Africa's most important ecological and socio-economic regions.

However, environmental degradation, climate stress and the growing influence of **ISWAP** pose significant challenges to regional stability.

Sustainable resource management, ecological restoration and enhanced regional cooperation remain essential for safeguarding the basin's future.

El Niño, Monsoon Risks and Economic Implications for India



Why in News?

Concerns have emerged over the possibility of a **below-normal Southwest Monsoon in 2026** amid the development of **El Niño conditions** in the equatorial Pacific Ocean.

Meteorologists and historians have drawn comparisons with the **Great Famine of 1876–78**,

which was associated with successive monsoon failures triggered by a strong El Niño event.

The development has renewed focus on the economic, agricultural and social vulnerabilities associated with climate anomalies.

What is El Niño?

About

El Niño (Spanish for "*The Little Boy*") is a climatic phenomenon characterized by the abnormal warming of sea surface temperatures in the central and eastern equatorial Pacific Ocean.

It represents the warm phase of the **El Niño Southern Oscillation (ENSO)** cycle.

ENSO is one of the most influential drivers of global weather and climate variability.

Working of El Niño

Normal Conditions

Under normal conditions, strong **trade winds** blow from east to west across the equatorial Pacific Ocean.

These winds push warm surface waters towards **Australia** and Southeast Asia.

Cold, nutrient-rich water rises along the western coast of South America through a process known as **upwelling**.

El Niño Conditions

During an El Niño event, trade winds weaken or may even reverse.

Warm surface waters shift eastward towards the Americas.

Upwelling of cold water is suppressed, leading to significant changes in oceanic and atmospheric circulation patterns.

Meteorological Outlook for 2026

Probability of El Niño

According to the **National Oceanic and Atmospheric Administration (NOAA)** ENSO Diagnostic Discussion Report 2026:

There is an **82% probability** of El Niño developing during May–July 2026.

A **96% probability** exists for its continuation through the winter of 2026–27.

Monsoon Forecast

The **India Meteorological Department** has projected Southwest Monsoon rainfall at **92% of the Long Period Average (LPA)**.

This falls within the **below-normal monsoon** category.

A weaker monsoon could adversely affect agriculture, water resources and economic growth.

Economic Implications of El Niño for India

Monsoon Deficit

El Niño generally weakens the Indian Southwest Monsoon by disrupting global atmospheric circulation.

Nearly **70% of India's annual rainfall** is received during the monsoon season.

A rainfall deficit can affect:

Agricultural production.

Reservoir storage.

Groundwater recharge.

Drinking water availability.

Agricultural Impact

Crop Losses

Nearly half of India's net sown area remains dependent on rainfall.

Deficient monsoon conditions can adversely affect **Kharif crops** such as:

Rice

Cotton

Soybean

Pulses

Delayed sowing and lower yields may result in agricultural distress.

Rising Input Costs

Farmers often resort to intensive groundwater extraction during drought conditions.

This increases expenditure on:

Diesel-powered pumps.

Electricity for irrigation.

Agricultural production costs rise significantly.

Decline in Farm Incomes

Reduced yields coupled with higher input costs compress farm profitability.

Small and marginal farmers are particularly vulnerable to such shocks.

Rural distress and indebtedness may increase.

Inflationary Pressures

Food Inflation

Lower agricultural output creates supply shortages in essential food commodities.

Prices of:

Cereals

Pulses

Vegetables
may rise significantly.

Impact on Households

Food occupies a substantial share of India's **Consumer Price Index (CPI)** basket.

Higher food prices reduce household purchasing power.

Consumption of non-essential goods and services may decline, affecting economic demand.

Impact on Labour and Productivity

Heat Stress and Productivity Loss

El Niño is often associated with higher temperatures and prolonged heatwaves.

Outdoor workers in sectors such as:

Construction

Agriculture

Street vending

Logistics

face productivity losses due to extreme heat.

ILO Estimates

According to the **International Labour Organization**, a **1.5°C rise in global temperatures** could result in the loss of **2.2% of global working hours by 2030**, equivalent to nearly **80 million full-time jobs**.

Urban Heat Island (UHI) Effect

What is UHI?

Urban areas often record higher temperatures than surrounding rural regions due to:

Excessive concretization.

Reduced vegetation cover.

Heat retention by buildings and roads.

Social Inequality

Wealthier households can adapt through:

Air conditioning.

Reliable water access.

Poorer populations living in informal settlements face:

Severe heat exposure.

Water scarcity.

Increased health risks.

Climate stress can therefore widen socio-economic inequalities.

Macroeconomic Challenges

Risk of Stagflation

El Niño creates a dual challenge of:

Slower economic growth.

Higher inflation.

This combination is commonly referred to as **stagflation**.

Growth Concerns

India's economic growth in **FY27** could moderate due to:

Lower agricultural output.

Reduced rural demand.

Rising inflationary pressures.

Geopolitical uncertainties.

Policy Dilemma for RBI

Rising inflation may compel the **Reserve Bank of India (RBI)** to tighten monetary policy.

Higher interest rates increase borrowing costs for businesses and consumers.

Economic growth may slow further as investments and consumption decline.

Great Famine of 1876–78 and El Niño Connection

Role of El Niño

A powerful multi-year El Niño event contributed to repeated monsoon failures across the Indian subcontinent.

The resulting drought conditions culminated in the **Great Famine of 1876–78**.

Human Impact

The famine is estimated to have claimed between **55 lakh and 82 lakh lives**, making it one of the deadliest famines in Indian history.

Impact on Nizam's Dominions

Severe distress was reported across the territories of the **Nizam of Hyderabad**.

Historical records indicate that more than **60,000 lives** were lost in the princely state.

Impact on British Presidencies

The famine severely affected the **Madras Presidency** and **Bombay Presidency**.

Large-scale starvation, migration and social disruption were recorded.

Importance of Traditional Water Systems

Nizam's Tank System

Telangana possessed a vast network of traditional tanks and water bodies.

These structures helped:

Store rainfall.

Provide drinking water.

Support irrigation during droughts.

They also served as centres for famine relief activities.

Lessons for Modern India

The historical experience demonstrates the value of decentralized water management systems.

Traditional water harvesting structures can strengthen climate resilience.

Global Impacts of El Niño

India

Weak monsoon.

Agricultural drought.

Higher temperatures.

Americas

Increased rainfall.

Floods and landslides along western coastal regions.

Australia and Southeast Asia

Drought conditions.

Water shortages.

Forest fires.

Marine Ecosystems

Reduced upwelling lowers nutrient availability.

Fisheries and marine biodiversity are adversely affected.

Measures to Mitigate the Impact of El Niño

Contingency Crop Planning

District Agriculture Contingency Plans (DACPs) prepared by **ICAR** should be effectively implemented.

Water-intensive crops may be replaced with:

Pulses

Oilseeds

Millet (Shree Anna)

Drought-resistant crop varieties

Micro-Irrigation

Adoption of:

Drip irrigation.

Sprinkler irrigation.

Expansion under **Pradhan Mantri Krishi Sinchayee Yojana** can improve water-use efficiency.

Decentralized Water Governance

Restoration of traditional water bodies should be prioritized.

Initiatives such as:

Mission Amrit Sarovar

Mission Kakatiya can strengthen local water security.

Heat Action Plans

Legally enforceable **Heat Action Plans (HAPs)** should be developed.

Measures may include:

Modified working hours.

Shaded worksites.

Heat insurance mechanisms.

Worker protection protocols.

Urban Greening

Expansion of:

Tree cover.

Urban wetlands.

Green corridors.

Promotion of **Cool Roof** initiatives can help reduce urban heat stress.

Ecosystem-Based Adaptation (EbA)

Nature-based solutions should be integrated into urban and rural planning.

Green and blue infrastructure can enhance climate resilience and groundwater recharge.

Conclusion

El Niño is not merely a meteorological phenomenon but a significant economic and developmental challenge for India.

Its effects extend across agriculture, inflation, employment, public health and economic growth.

The lessons of the **Great Famine of 1876–78** highlight the importance of proactive adaptation, resilient agriculture, sustainable water management and climate-sensitive policymaking.

Strengthening climate resilience today will be essential for protecting livelihoods and ensuring long-term economic stability in an era of increasing climate uncertainty.

Pacific Ring of Fire



Why in News?

Recently, a **7.8 magnitude offshore earthquake** struck near **Mindanao** in the southern **Philippines**,

causing casualties, damaging infrastructure and triggering a **1-metre tsunami** along nearby coasts. Smaller tsunami waves were also reported in **Indonesia, Palau** and southern **Japan**.

The event has once again highlighted the vulnerability of countries located along the **Pacific Ring of Fire**, one of the world's most active seismic and volcanic zones.

About the Pacific Ring of Fire

Definition

The **Pacific Ring of Fire**, also known as the **Pacific Rim** or the **Circum-Pacific Belt**, is a vast zone surrounding the Pacific Ocean characterized by:

Frequent earthquakes.

Active volcanoes.

Intense tectonic activity.

It is the most seismically active region on Earth.

Global Significance

The Ring of Fire contains approximately **75% of the world's active and dormant volcanoes**.

More than **450 volcanoes** are located within this belt.

Nearly **90% of the world's earthquakes** occur along this region.

It is also responsible for most of the world's largest and most destructive earthquakes.

Geographical Extent

Length

The Ring of Fire extends for nearly **40,000 kilometres** around the margins of the Pacific Ocean.

Route

The belt:

Runs along the western coast of South America.

Continues through the western coast of North America.

Passes across the **Aleutian Islands**.

Extends along the eastern coast of Asia.

Passes through island regions of the western Pacific.

Continues towards **New Zealand**.

Reaches the northern margins of **Antarctica**.

Tectonic Setting

Plate Boundaries

The Ring of Fire follows the boundaries of several major tectonic plates, including:

Pacific Plate.

North American Plate.

Philippine Plate.

Indo-Australian Plate.

Nazca Plate.

Cocos Plate.

Juan de Fuca Plate.

Subduction Zones

The Ring of Fire is primarily formed by **subduction zones**.

A subduction zone is created when one tectonic plate is forced beneath another plate into the Earth's mantle.

This process generates:

Powerful earthquakes.

Volcanic eruptions.

Tsunamis.

Mountain-building activities.

Why It Is Highly Active

Continuous movement and interaction of tectonic plates create immense geological stress.

The release of this accumulated energy causes recurrent seismic and volcanic events.

Major Regions Located Along the Ring of Fire

Asia-Pacific Region

Philippines

Japan

Indonesia

Papua New Guinea

New Zealand

Russia

Solomon Islands

North America

United States

Canada

Mexico

Central and South America

Guatemala

Peru

Chile

Why is the Philippines Highly Disaster-Prone?

Location on the Ring of Fire

The Philippines lies directly along the Pacific Ring of Fire.

Multiple tectonic plate boundaries intersect near the archipelago.

Frequent Earthquakes

The country experiences numerous earthquakes every year due to active fault systems and subduction zones.

Volcanic Activity

Several active volcanoes are located within the country, making volcanic eruptions a recurring hazard.

Tsunami Risk

Undersea earthquakes frequently generate tsunamis that threaten coastal communities.

Tropical Cyclones

In addition to geological hazards, the Philippines experiences approximately **20 typhoons or tropical storms annually**, making it one of the world's most disaster-prone countries.

Significance of the Ring of Fire

Source of Major Natural Hazards

The region accounts for most of the world's:

Large earthquakes.

Volcanic eruptions.

Tsunami-generating events.

Geological Processes

It plays a crucial role in:

Plate tectonics.

Mountain formation.

Crustal recycling.

Volcanic island formation.

Economic Importance

Volcanic regions are rich in:

Minerals.

Geothermal energy resources.

Fertile volcanic soils.

Challenges

Loss of Life and Property

Frequent disasters result in significant human and economic losses.

Infrastructure Damage

Earthquakes and volcanic eruptions often damage transport, communication and energy infrastructure.

Displacement of Population

Recurrent disasters force large-scale displacement of communities.

Disaster Management Burden

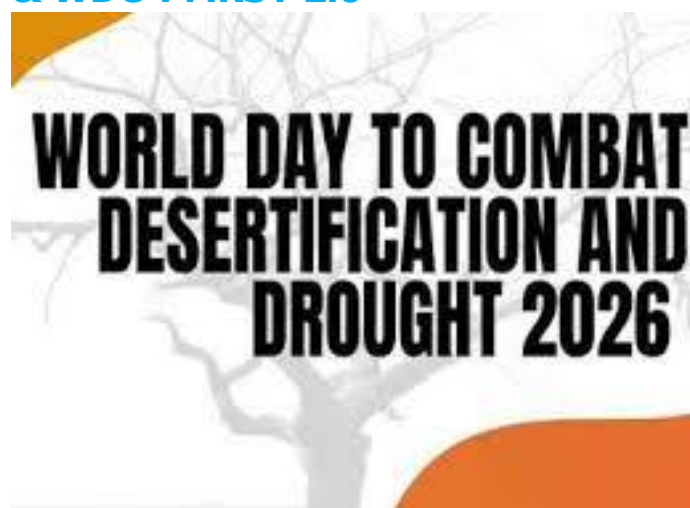
Countries along the Ring of Fire must invest heavily in preparedness, monitoring and early warning systems.

Conclusion

The **Pacific Ring of Fire** is the world's most active zone of earthquakes and volcanism, extending around the Pacific Ocean and encompassing numerous tectonic plate boundaries.

The recent earthquake near **Mindanao** underscores the continuing vulnerability of countries situated within this region and highlights the importance of robust disaster preparedness, early warning systems and resilient infrastructure to mitigate the impacts of natural hazards.

World Day to Combat Desertification and Drought 2026 & WDC-PMKSY 2.0



Why in News?

The **World Day to Combat Desertification and Drought** was celebrated across project areas under the **Watershed Development Component of Pradhan Mantri Krishi Sinchayee Yojana 2.0 (WDC-PMKSY 2.0)**.

The observance highlighted the importance of sustainable land management, restoration of degraded ecosystems, and combating desertification.

What is the World Day to Combat Desertification and Drought?

Background

UN Declaration

In **1994**, the **United Nations General Assembly** declared **17 June** as the World Day to Combat Desertification and Drought.

Significance

The day commemorates the adoption of the **United Nations Convention to Combat Desertification**.

About UNCCD

Unique Convention

UNCCD is the only legally binding international agreement linking:

Environment.

Sustainable development.

Land management.

Objective

Combat desertification.

Mitigate drought impacts.

Promote sustainable land use.

Objectives of the Day

Awareness Generation

Raise global awareness regarding:

Land degradation.

Desertification.

Drought.

Promote Land Degradation Neutrality (LDN)

Encourage sustainable land management practices.

Strengthen International Cooperation

Foster global partnerships for ecological restoration.

Key Message

Desertification is largely caused by:

Human activities.

Climate change.

and is both preventable and reversible.

Theme 2026

Theme

"Rangelands: Recognize. Respect. Restore."

Significance

Focuses on restoring and conserving rangelands.

Alignment

Linked with the **International Year of Rangelands and Pastoralists (IYRP) 2026**.

International Year of Rangelands and Pastoralists (IYRP) 2026

About

Declared by the **United Nations**.

Lead Agencies

Food and Agriculture Organization

United Nations Convention to Combat Desertification

Objectives

Highlight the role of pastoral communities.

Promote sustainable rangeland management.

Enhance food security and climate resilience.

Importance

Pastoral communities manage more than **25% of the world's land area**.

What are Rangelands?

Definition

Rangelands are large natural landscapes dominated by:

Grasslands.

Shrublands.

Deserts.

Tundra ecosystems.

Characteristics

Primarily used for grazing livestock.

Support pastoral and indigenous communities.

Global Importance of Rangelands

Largest Land-Use Category

Cover approximately **54% of Earth's land surface**.

Contribution to Food Security

Account for nearly **16% of global food production**.

Livelihood Support

Sustain around **2 billion people worldwide**.

Major Beneficiaries

Indigenous communities.

Nomadic pastoralists.

Livestock-dependent populations.

Rangelands in India

Extent

Cover approximately **1.21 million sq km**.

Geographical Spread

Extend from:

Thar Desert

To Himalayan alpine meadows.

Land Use

Nearly **40% of India's land area** is utilized for grazing.

Declining Grasslands in India

Grassland Loss

Grassland area declined from:

18 million hectares (2005)

To **12 million hectares (2015)**.

Protection Status

Less than **5% of grasslands** fall within protected areas.

Concern

Threatens biodiversity and pastoral livelihoods.

Ecological Importance of Rangelands

Carbon Sequestration

Function as significant carbon sinks.

Water Regulation

Support groundwater recharge and local hydrological cycles.

Soil Conservation

Prevent soil erosion and land degradation.

Biodiversity Conservation

Support species adapted to dry and fragile ecosystems.

Rangeland Degradation

Extent of Degradation

Global Situation

Up to **50% of the world's rangelands** face degradation or ecological stress.

Major Causes

Unsustainable Land Use

Conversion of rangelands for agriculture and infrastructure.

Overgrazing

Excessive livestock pressure.

Climate Change

Increased drought frequency and intensity.

Unscientific Agricultural Expansion

Encroachment into natural grazing lands.

Impacts

Food Insecurity

Reduced livestock productivity.

Water Scarcity

Degradation of ecosystem services.

Biodiversity Loss

Decline in native species.

Livelihood Vulnerability

Threatens pastoral and rural communities.

What is WDC-PMKSY 2.0?

Evolution

Integrated Watershed Management Programme (IWMP)

Launched in **2009–10**.

Integration with PMKSY

Merged into **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** in **2015–16**.

Current Phase

Continued as **WDC-PMKSY 2.0** for **2021–2026**.

Nodal Ministry

Implementing Agency

Department of Land Resources

Ministry

Ministry of Rural Development.

Coverage Target

Physical Target

Cover **49.50 lakh hectares**.

Objectives of WDC-PMKSY 2.0

Land Restoration

Rejuvenate degraded and rainfed lands.

Ecological Balance

Improve ecosystem health.

Groundwater Recharge

Enhance water availability.

Agricultural Productivity

Increase crop yields and farm income.

Livelihood Diversification

Promote alternative income opportunities.

Springshed Rejuvenation

Background

Introduced based on recommendations of **NITI Aayog**.

Importance

Particularly useful in Himalayan and hill regions.

Objective

Restore springs and water sources.

Technology Integration

GIS and Remote Sensing

Mandatory use by States and UTs.

Benefits

Accurate project planning.

Resource mapping.

Monitoring and evaluation.

Expected Outcomes of WDC-PMKSY 2.0

Ecological Restoration

Outcomes

Reduced soil erosion.

Increased vegetation cover.

Improved groundwater levels.

Community Ownership

Role of Gram Panchayats

Take responsibility for operation and maintenance of assets.

Economic Benefits

Outcomes

Increased cropping intensity.

Higher agricultural productivity.

Growth in household incomes.

Water Governance

Measures

Water budgeting.

Community-based water regulation.

Livelihood Security

Beneficiaries

Farmers.

Landless labourers.

Artisans.

Livestock keepers.

What is Desertification?

Definition

Desertification refers to land degradation in:

Arid areas.

Semi-arid areas.

Dry sub-humid regions.

Cause

Combination of:

Climatic variations.

Human activities.

Important Clarification

Desertification does **not** mean expansion of existing deserts.

Status of Desertification in India

Extent

According to the **Space Applications Centre** Desertification and Land Degradation Atlas:

Approximately **29.7% of India's Total Geographical Area (TGA)** is undergoing land degradation.

Major Causes of Land Degradation in India

Water Erosion

Importance

Largest contributor to land degradation.

Impact

Loss of fertile topsoil.

Vegetal Degradation

Causes

Deforestation.

Overgrazing.

Shifting cultivation.

Wind Erosion

Regions

Predominantly in:

Rajasthan

Gujarat

Salinity and Alkalinity

Causes

Excessive irrigation.

Waterlogging.

Global Initiatives Against Land Degradation

Bonn Challenge

Objective

Restore:

150 million hectares by 2020.

350 million hectares by 2030.

Great Green Wall Initiative

Lead Agency

African Union

Objective

Restore degraded landscapes across the Sahel region of Africa.

G20 Global Land Initiative

Launch

2020 under the **Saudi Arabia** G20 Presidency.

Goal

Reduce degraded land globally by **50% by 2040**.

India's Contribution

Adoption of the **Gandhinagar Implementation Roadmap (GIR)** during India's G20 Presidency in 2023.

Sustainable Development Goals (SDGs)

SDG Target 15.3

Achieve **Land Degradation Neutrality (LDN)** by 2030.

National Initiatives to Combat Desertification

India's UNCCD COP14 Commitment

Event

India hosted **UNCCD COP14**.

Commitment

Restore **26 million hectares** of degraded land by 2030.

Aravalli Green Wall Project

Objective

Create a 5-km ecological buffer around the Aravalli range.

Purpose

Prevent eastward expansion of the Thar Desert.

Significance

Inspired by Africa's Great Green Wall initiative.

Desert Development Programme (DDP)

Objective

Minimize drought impacts.
Control desertification.
Restore ecological balance.

National Mission for a Green India (GIM)

About

One of the eight missions under the **National Action Plan on Climate Change**.

Objective

Protect and expand forest and tree cover.

Significance

Environmental Security

Protects ecosystems and biodiversity.

Climate Change Mitigation

Enhances carbon sequestration.

Water Security

Improves groundwater recharge and water availability.

Food Security

Supports sustainable agriculture and livestock systems.

Livelihood Protection

Strengthens resilience of rural and pastoral communities.

Challenges

Rapid Land Degradation

Rising pressure from agriculture and urbanization.

Climate Change

Increasing drought frequency and severity.

Overgrazing

Continued stress on rangelands.

Weak Protection of Grasslands

Limited conservation coverage.

Resource Constraints

Need for greater investment in restoration programmes.

Conclusion

The observance of the **World Day to Combat Desertification and Drought 2026** highlights the urgent need to restore degraded landscapes and protect rangelands, which support billions of people and provide critical ecosystem services.

Through initiatives such as **WDC-PMKSY 2.0**, **UNCCD commitments**, and the **Aravalli Green Wall Project**, India is advancing toward the goals of **Land**

Degradation Neutrality (LDN) and sustainable land management.

Long-term success will require community participation, technological interventions, climate-resilient land-use practices, and stronger conservation efforts to secure ecological and livelihood sustainability.

Climate-Resilient Coral Reefs and Coral Bleaching



Why in News?

A study presented at the **Our Ocean Conference** highlighted that coral reefs along the coast of **Kenya** are showing remarkable resilience despite increasing climate change impacts.

Despite severe bleaching during 2024, coral cover in the studied region recovered significantly from **27% to 40% within one year**.

The findings offer a more optimistic outlook regarding the future survival of coral reef ecosystems.

What are Coral Reefs?

Definition

Coral reefs are underwater ecosystems formed by colonies of tiny marine organisms called coral polyps.

Characteristics

Often referred to as the "**Rainforests of the Sea**."

Support immense marine biodiversity.

Occupy less than 1% of the ocean floor but support nearly 25% of marine species.

Importance

Protect coastlines from erosion.

Support fisheries and tourism.

Contribute to food security and livelihoods.

Key Findings of the Study

Large Extent of Climate-Resilient Reefs

Finding

Approximately **1,66,000 sq km** of global coral reefs are relatively climate resilient.

Significance

Represents nearly one-third of the world's coral reef ecosystems.

Meaning

These reefs possess greater capacity to withstand:

Ocean warming.

Thermal stress.

Bleaching events.

Challenge to Earlier IPCC Projections

Previous Assessment

According to the **Intergovernmental Panel on Climate Change**:

70–90% coral reefs could disappear at **1.5°C warming**.

Up to 99% coral reefs could be lost at **2°C warming**.

New Perspective

The latest study suggests a larger proportion of reefs may survive if properly protected and managed.

Importance

Indicates that conservation interventions can significantly improve reef survival.

Role of Community Conservation

Kenyan Conservation Measures

Local communities have implemented:

Regulated fishing.

Reef patrolling.

Mangrove plantation.

Waste management initiatives.

Outcome

Enhanced ecosystem health and improved reef recovery.

Mechanisms Behind Coral Resilience

Favourable Ocean Microclimates

Role

Some reef regions experience naturally cooler water conditions.

Benefit

Reduced thermal stress during heatwaves.

Genetic Heat Adaptation

Observation

Certain coral species have gradually developed greater heat tolerance.

Importance

Enhances long-term survival under changing climatic conditions.

Rapid Recovery Capacity

Feature

Some reefs recover faster after bleaching events.

Result

Improved resilience against recurring climate shocks.

Technological Advancements in Reef Mapping

Method

High-resolution mapping technologies.

Finding

Identified more than three times the number of climate-resilient reefs compared to earlier estimates.

Major Regions Identified

Australia

Indonesia

Philippines

Cuba

Bahamas

What is Coral Bleaching?

Definition

Coral bleaching is a phenomenon in which corals lose their symbiotic algae known as **Zooxanthellae**, causing corals to turn white.

Significance of Zooxanthellae

Provide food through photosynthesis.

Give corals their characteristic colours.

Causes of Coral Bleaching

Ocean Warming

Primary Cause

Rising sea surface temperatures due to climate change.

Impact

Disrupts the coral-algae relationship.

Other Causes

Cold Water Stress

Sudden drops in water temperature.

Pollution

Industrial and domestic waste.

Agricultural Runoff

Excess nutrients entering marine ecosystems.

Excessive Sunlight

Increased solar radiation exposure.

Extreme Low Tides

Exposure of corals to air and sunlight.

Process of Coral Bleaching

Step 1

Environmental stress affects coral physiology.

Step 2

Corals expel zooxanthellae from their tissues.

Step 3

Corals lose colour and become white.

Step 4

Corals lose their major source of nutrition.

Step 5

Increased vulnerability to:

Disease.

Mortality.

Ecosystem collapse.

Can Corals Recover?

Yes, Under Favourable Conditions

Requirement

Stress conditions must be temporary.

Process

Zooxanthellae return to coral tissues.

Outcome

Coral regains colour and health.

If Stress Persists

Coral death becomes highly likely.

Major Coral Bleaching Events

Caribbean Bleaching Event (2005)

Impact

One of the most severe bleaching episodes recorded in the Caribbean region.

Florida Keys Cold-Stress Event (2010)

Cause

Extreme cold-water conditions.

Impact

Extensive coral mortality.

Global Significance of Coral Bleaching

GCRMN Report (2021)

Organization

Global Coral Reef Monitoring Network

Finding

Approximately **14% of the world's coral reefs** were lost between 2009 and 2018.

Major Cause

Coral bleaching linked to climate change.

Importance of Coral Reefs

Biodiversity Hotspots

Role

Support thousands of marine species.

Coastal Protection

Function

Act as natural barriers against:

Storm surges.

Coastal erosion.

Tsunamis.

Economic Importance

Support

Fisheries.

Tourism.

Coastal livelihoods.

Climate Regulation

Contribution

Assist in maintaining marine ecosystem balance.

Global Initiatives for Coral Conservation

International Coral Reef Initiative (ICRI)

Objective

Promote global cooperation for reef conservation.

Global Coral Reef Monitoring Network (GCRMN)

Role

Monitor global reef health.

Global Coral Reef Alliance (GCRA)

Objective

Reef restoration and conservation.

Global Coral Reef R&D Accelerator Platform

Purpose

Promote innovation and scientific research for coral protection.

Indian Initiatives for Coral Conservation

Coral Bleaching Alert System

Agency

Indian National Centre for Ocean Information Services

Function

Provides early warnings regarding bleaching risks.

Artificial Reef Installation Programme

Objective

Restore degraded reef ecosystems.

Coral Translocation Project

Agency

Zoological Survey of India

Purpose

Relocate and restore vulnerable coral colonies.

Pradhan Mantri Matsya Sampada Yojana (PMMSY)

Component

Promotion of artificial reefs.

Objective

Improve marine biodiversity and fisheries productivity.

Challenges Facing Coral Reefs

Climate Change

Rising ocean temperatures.

Ocean Acidification

Reduced calcification rates.

Marine Pollution

Plastic and chemical contamination.

Overfishing

Disturbs ecological balance.

Coastal Development

Habitat destruction and sedimentation.

Way Forward

Strengthen Marine Protected Areas

Expand reef conservation zones.

Community-Based Conservation

Promote local stewardship.

Reduce Greenhouse Gas Emissions

Address root causes of climate change.

Enhance Scientific Monitoring

Improve mapping and resilience assessments.

Restore Degraded Reefs

Scale up artificial reef and coral transplantation programmes.

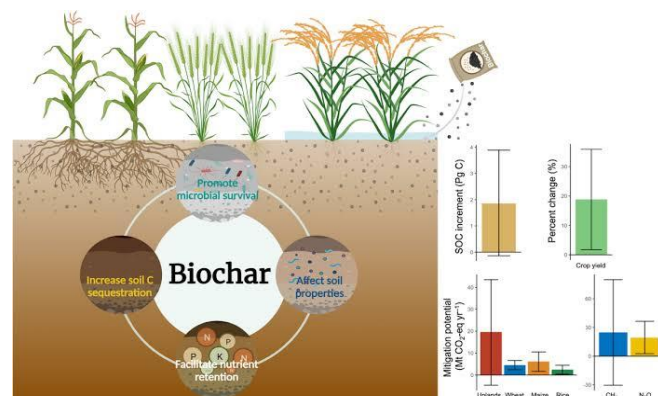
Conclusion

The discovery of extensive **climate-resilient coral reefs** offers hope for the future of marine ecosystems despite growing climate threats.

The remarkable recovery of Kenyan reefs demonstrates that conservation efforts, favourable ecological conditions, and adaptive capacity can significantly enhance coral survival.

Protecting resilient reef systems, reducing climate pressures, and strengthening community-led conservation will be crucial for safeguarding global coral biodiversity and achieving sustainable ocean governance.

Biochar: A Sustainable Solution for Agriculture and Climate Action



Why in News?

Biochar has emerged as a promising solution to two major challenges facing Indian agriculture:

Crop residue burning.

Declining soil health.

It is gaining attention for its potential to improve soil productivity, manage agricultural waste, and support climate change mitigation.

What is Biochar?

Definition

Biochar is a **carbon-rich, porous material** produced from organic biomass.

It resembles charcoal and is used primarily as a soil amendment.

Raw Materials

Agricultural residues.

Crop stubble.

Forestry waste.

Food processing waste.

Organic municipal waste.

Production Process: Pyrolysis

Produced through **Pyrolysis**, which involves heating biomass in an oxygen-limited environment.

Typically carried out at temperatures between **300°C and 700°C**.

By-products

Syngas (synthetic gas).

Bio-oil.

Both can be used as renewable energy sources.

How Biochar Works in Soil

Improves Soil Structure

Its porous structure enhances soil aggregation and aeration.

Water Retention

Increases the soil's ability to retain moisture.

Microbial Activity

Provides habitat for beneficial soil microorganisms.

Nutrient Retention

Reduces nutrient losses and improves nutrient availability to plants.

Significance of Biochar

Agricultural Productivity

Improves Crop Yield

Can increase crop productivity, especially in degraded and nutrient-deficient soils.

Enhances Soil Fertility

Increases soil organic carbon content.

Improves nutrient availability.

Drought Resilience

Improves water-holding capacity and helps crops withstand moisture stress.

Crop Residue Management

Alternative to Stubble Burning

Converts agricultural residue into a valuable resource.

Reduces open-field burning of crop waste.

Reduction in Air Pollution

Helps reduce smoke, particulate matter, and greenhouse gas emissions associated with stubble burning.

Waste Management

Utilization of Organic Waste

Converts biodegradable municipal waste and sewage sludge into useful products.

Landfill Reduction

Reduces pressure on landfill sites.

Carbon Sequestration and Climate Action

Long-Term Carbon Storage

Stores carbon in a stable form for hundreds of years.

Greenhouse Gas Reduction

Prevents release of carbon as CO₂ and methane.

Nature-Based Climate Solution

Considered an effective carbon removal technology.

Economic Benefits

Carbon Credits

Biochar projects can generate carbon credits due to long-term carbon sequestration.

Additional Income Source

Creates revenue opportunities for:

Farmers.

Cooperatives.

Rural enterprises.

Waste-to-Wealth

Converts agricultural waste into commercially valuable products.

Energy Generation Potential

Syngas Production

Syngas generated during pyrolysis can be used for electricity generation.

Bio-oil Production

Bio-oil can partially substitute fossil fuels such as diesel and kerosene.

Energy Security

Reduces dependence on imported fossil fuels.

Other Applications of Biochar

Water Purification

Wastewater Treatment

Modified biochar can remove:

Lead.

Arsenic.

Chromium.

Other heavy metals.

Construction Sector

Biochar-Based Concrete

Enhances strength and durability of concrete.

Improves heat resistance.

Helps capture carbon within building materials.

Success Stories

India

Maharashtra

Field trials in Akola demonstrated improved soil fertility and organic carbon content using maize-stalk biochar.

Kerala

Coconut-leaf biochar improved soil quality across different cropping systems.

KISAN Kiln Project

Developed by Indian Institute of Technology Kharagpur.

Enables farmers to convert crop waste into biochar and generate income.

Global Examples

Kenya

Rice-husk biochar improved soil quality and generated carbon credits.

Thailand

Linked biochar certification with national carbon markets.

Brazil

Reported significant yield improvements using sugarcane-based biochar.

Challenges

High Initial Cost

Pyrolysis technology requires significant investment.

Limited Awareness

Adoption among farmers remains low.

Lack of Standards

Need for quality standards and certification systems.

Supply Chain Constraints

Collection and transportation of biomass can be costly.

Way Forward

Promote Farmer Awareness

Conduct demonstrations and extension programmes.

Financial Incentives

Support biochar production through subsidies and carbon-credit mechanisms.

Strengthen Research

Develop region-specific biochar technologies and applications.

Integrate with Waste Management

Use biochar in agricultural, municipal, and industrial waste management systems.

Support Carbon Markets

Create frameworks for biochar-based carbon credit generation and trading.

Venezuela Earthquake Doublet and Seismic Vulnerability



Why in News?

The Government of **Venezuela** declared a nationwide state of emergency after two powerful earthquakes of **magnitude 7.2 and 7.5** struck off its north-central coast.

The back-to-back earthquakes formed a rare **Seismic Doublet**, causing extensive damage to infrastructure and loss of life.

What is a Seismic Doublet?

Definition

A **Seismic Doublet (Doublet Earthquake)** refers to two earthquakes of nearly similar magnitude occurring close together in both time and location.

Difference from Mainshock-Aftershock Sequence

In a typical earthquake sequence:

The mainshock is followed by smaller aftershocks.

In a seismic doublet:

Both earthquakes are of comparable magnitude.

The second event can be nearly as powerful as the first.

Mechanism

Stress Transfer

The first earthquake does not completely release accumulated tectonic stress.

Instead, it transfers static stress to a nearby fault segment.

Triggering the Second Earthquake

The transferred stress activates a neighbouring fault or an asperity (locked rock segment).

This results in a second major earthquake occurring shortly after the first.

Why is Venezuela Highly Earthquake-Prone?

Tectonic Setting

Venezuela lies along the active boundary between:

Caribbean Plate

South American Plate

Plate Movement

The Caribbean Plate moves eastward relative to the South American Plate.

The relative movement is approximately **20 mm per year**.

Strike-Slip Fault System

Definition

A strike-slip fault is a fault where rock masses move horizontally past one another.

Impact

Northern Venezuela contains several east-west trending strike-slip faults.

Stress accumulation and sudden fault movement generate powerful earthquakes.

Shallow-Focus Earthquakes

Many Venezuelan earthquakes occur close to the Earth's surface.

Significance

Seismic waves travel shorter distances.

Less energy is lost before reaching the surface.

Results in greater damage to buildings and infrastructure.

Types of Plate Boundaries

Convergent Boundary

Plates move towards each other.

Example:

Indian Plate–Eurasian Plate Boundary.

Divergent Boundary

Plates move away from each other.

Commonly found along mid-ocean ridges.

Transform Boundary

Plates slide horizontally past each other.

Often associated with strike-slip faults.

Relevance for India

Tectonic Vulnerability

India remains highly vulnerable to earthquakes due to the continuous collision between:

Indian Plate

Eurasian Plate

Himalayan Seismic Zone

The Himalayan region is one of the most active seismic belts in the world.

Continuous tectonic compression generates large amounts of stress.

High-Risk Regions

Seismic Zone V

India's highest earthquake-risk zone includes:

Himalayan states.

Northeastern India.

Parts of **Gujarat**.

Andaman & Nicobar Islands.

Possibility of Earthquake Doublets

Highly stressed fault systems in India may experience earthquake doublets under suitable tectonic conditions.

India's Earthquake Risk Classification

Zone II

Low-risk zone.

Zone III

Moderate-risk zone.

Zone IV

High-risk zone.

Zone V

Very high-risk zone with the greatest probability of severe earthquakes.

Impacts of Major Earthquakes

Loss of Human Life

Collapse of buildings and infrastructure.

Economic Damage

Destruction of transport, communication, and utility networks.

Environmental Effects

Landslides.

Ground deformation.

Tsunami generation in coastal regions.

Social Disruption

Displacement of communities.

Interruption of essential services.

India's Earthquake Preparedness Measures

National Centre for Seismology (NCS)

Monitors seismic activity across the country.

Earthquake-Resistant Construction

Implementation of earthquake-resistant building codes.

Disaster Management Framework

Led by the **National Disaster Management Authority**.

Public Awareness and Preparedness

Regular mock drills and community-based disaster preparedness programmes.

Significance

Understanding Seismic Hazards

The Venezuela earthquake doublet highlights the complexity of tectonic processes and earthquake forecasting.

Need for Resilient Infrastructure

Reinforces the importance of earthquake-resistant urban planning and construction.

Lessons for India

Emphasizes the need for continuous monitoring of active fault systems, especially in high-risk seismic zones.

Way Forward

Strengthen Seismic Monitoring

Expand earthquake observation and early warning capabilities.

Improve Building Standards

Ensure strict compliance with seismic safety codes.

Enhance Disaster Preparedness

Promote community awareness and emergency response mechanisms.

Advance Scientific Research

Improve understanding of fault behaviour and earthquake doublets.

Build Resilient Infrastructure

Prioritize earthquake-resistant infrastructure in vulnerable regions.



Crux of The Hindu & Indian Express

Geography

Zoji-La Tunnel Breakthrough: Transforming Connectivity Between Kashmir and Ladakh



Why in News?

The **Zoji-La Tunnel Project** achieved a major milestone with the **final breakthrough of the main tunnel** on 11 June 2026.

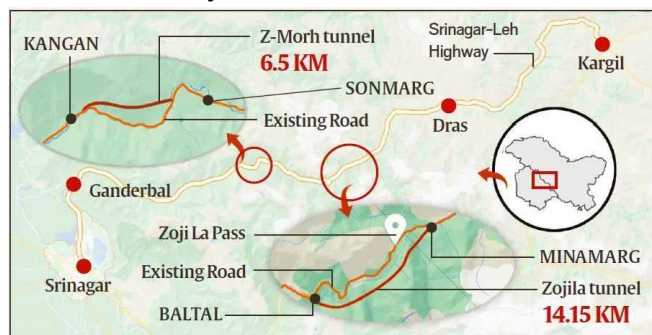
Union Minister for Road Transport and Highways **Nitin Gadkari** triggered the final blast at **Minamarg (Ladakh)**, connecting both ends of the tunnel for the first time.

The breakthrough marks a historic step towards realizing the long-standing objective of **all-weather connectivity between the Kashmir Valley and Ladakh**.

The tunnel is scheduled to be commissioned by **February 2028** and is expected to significantly

strengthen connectivity, defence preparedness, tourism and economic development in the region.

What is the Zoji-La Tunnel?



The **Zoji-La Tunnel** is a high-altitude road tunnel being constructed beneath the **Zoji-La Pass** on **National Highway-1 (NH-1)**.

It will connect:

Baltal (Kashmir Valley)

Minamarg (Drass Region, Ladakh)

The project aims to provide **year-round road connectivity between Srinagar, Kargil and Leh**, overcoming the seasonal closure of the existing highway during winters.

About Zoji La Pass

Zoji La is a high mountain pass located in the **Kargil district of Ladakh**.

It connects:

Srinagar

Sonamarg

Drass

Kargil

Leh

The pass serves as the principal gateway between the **Kashmir Valley and Ladakh**.

"Mountain Pass of Blizzards"

Zoji La is popularly known as the **"Mountain Pass of Blizzards"** because of:

Heavy snowfall

Frequent avalanches

Harsh weather conditions

Strong snowstorms

As a result, the pass remains closed for nearly **five to six months every year**, cutting off Ladakh from the rest of the country.

Key Features of the Zoji-La Tunnel

Feature	Details
Location	Between Baltal and Minamarg
Highway	National Highway-1 (NH-1)
Length	Approximately 13.15 km

Altitude	Around 11,578 feet above sea level
Type	Single-Tube, Bi-Directional Road Tunnel
Status	Main Tunnel Breakthrough Achieved
Expected Completion	February 2028

Components of the Project

The project includes:

13.15 km Main Tunnel

Escape Tunnel

Three Vertical Ventilation Shafts

Nearly 18 km of Approach Roads

Together, these components will ensure safe and efficient movement through the difficult Himalayan terrain.

Why Was the Tunnel Needed?

Seasonal Isolation of Ladakh

The existing **Srinagar–Leh Highway** passes through Zoji La and remains closed during winter because of:

Heavy snowfall

Avalanches

Landslides

Extreme weather conditions

As a result:

Ladakh remains isolated for several months.

Transportation of goods becomes difficult.

Emergency services face disruptions.

Military logistics are affected.

Connectivity Challenges

The closure of the Zoji La route has historically caused difficulties in:

Education

Healthcare access

Tourism

Trade and commerce

Supply of essential goods

The tunnel is expected to eliminate these challenges by ensuring uninterrupted movement throughout the year.

Strategic Importance of the Zoji-La Tunnel

Strengthening National Security

The Zoji-La Tunnel is among India's most strategically important infrastructure projects.

It will significantly improve the movement of:

Defence personnel

Military vehicles

Ammunition

Essential supplies

towards sensitive border areas.

Importance for LoC and LAC

The tunnel will improve logistical support for troops deployed near:

Line of Control (LoC) with Pakistan.

Line of Actual Control (LAC) with China.

Faster troop mobilization can be crucial during emergencies and military operations.

Lessons from the Kargil War (1999)

During the **Kargil War**, the Srinagar–Kargil highway became vulnerable to Pakistani shelling.

This created serious difficulties in:

Transporting troops.

Moving military equipment.

Maintaining supply lines.

The Zoji-La Tunnel is expected to address such vulnerabilities by providing a safer and more reliable route.

Part of India's Strategic Himalayan Connectivity Network

The Zoji-La Tunnel forms part of India's broader strategy to improve connectivity in the Himalayan region.

It is one of the three major corridors connecting Ladakh:

1. Zoji-La Corridor

Srinagar – Kargil – Leh Route

2. Rohtang Corridor

Through Himachal Pradesh

3. Shinku La Corridor

Connects Himachal Pradesh with Zaskar Valley in Ladakh

Together, these corridors strengthen India's strategic and economic integration with Ladakh.

Major Benefits of the Zoji-La Tunnel

1. All-Weather Connectivity

The most significant benefit is the establishment of **year-round road connectivity** between:

Kashmir

Kargil

Leh

Ladakh

This will end the seasonal isolation of Ladakh.

2. Reduced Travel Time

Currently, crossing Zoji La takes:

More than **3 hours**

Often longer during adverse weather

After completion:

Travel time will reduce to approximately **15 minutes**.

This will greatly improve transportation efficiency.

3. Boost to Tourism

The tunnel is expected to significantly boost tourism by ensuring uninterrupted access to:

Sonamarg

Drass

Kargil

Leh

Other Himalayan destinations

Benefits

Increased tourist arrivals.

Growth of hospitality sector.

Higher local income generation.

Expansion of adventure tourism.

4. Economic Development

Year-round connectivity will strengthen:

Trade

Commerce

Freight transportation

Agricultural supply chains

It will also improve access to markets for local communities.

5. Improved Access to Essential Services

The tunnel will help residents of remote areas gain better access to:

Healthcare facilities

Educational institutions

Government services

Emergency assistance

6. Better Freight Movement

Reliable transportation throughout the year will:

Reduce transportation costs.

Ensure uninterrupted supply of essential commodities.

Improve economic integration of Ladakh with the rest of India.

Engineering Significance

The breakthrough of the tunnel represents a major engineering achievement because construction was undertaken:

At an altitude of over **11,500 feet**.

In extremely difficult geological conditions.

In a region characterized by:

Heavy snowfall.

Avalanches.

Harsh winters.

Rugged Himalayan terrain.

Upon completion, it is expected to become **Asia's longest bi-directional road tunnel** and one of the world's longest high-altitude road tunnels.

Challenges Faced During Construction

The project had to overcome multiple challenges:

Extreme weather conditions.

Heavy snowfall.

Avalanche-prone zones.

Geological instability.

High-altitude construction difficulties.

Limited working season during winters.

The successful breakthrough demonstrates India's growing capability in executing complex mountain infrastructure projects.

Significance for Jammu & Kashmir and Ladakh

For **Jammu & Kashmir** and **Ladakh**, the project is expected to become a transformative infrastructure asset.

It will:

Strengthen regional integration.

Improve connectivity between Kashmir and Ladakh.

Promote socio-economic development.

Reduce regional isolation.

Enhance national security.

Way Forward

With the breakthrough completed, attention will now shift towards:

Tunnel lining and finishing works.

Installation of ventilation systems.

Safety infrastructure.

Electrical and communication systems.

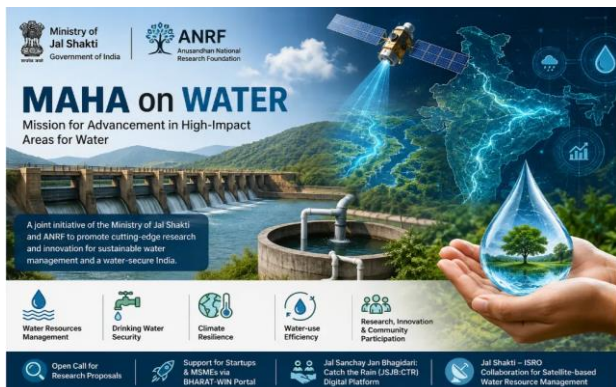
Testing and commissioning.

The project is expected to become operational by **February 2028**.

Conclusion

The breakthrough of the **Zoji-La Tunnel** marks a landmark achievement in India's infrastructure development journey. By providing all-weather connectivity between Kashmir and Ladakh, the tunnel will strengthen national security, improve military logistics, boost tourism, facilitate economic development and enhance the quality of life for people living in remote Himalayan regions. Once completed, it will stand as one of India's most important strategic infrastructure projects and a symbol of engineering excellence in the Himalayas.

MAHA Water Mission: Boosting Innovation for India's Water Security



Why in News?

The Government of India has launched the **MAHA Water Mission**, a ₹200 crore initiative jointly implemented by the **Anusandhan National Research Foundation (ANRF)** and the **Ministry of Jal Shakti** to support innovation and technology development in the water sector.

The mission was launched by Union Minister of State for Science & Technology, Earth Sciences **Jitendra Singh**.

The programme aims to support startups, MSMEs, universities, research institutions and industry partners in developing scalable solutions to India's growing water challenges.

What is the MAHA Water Mission?

The **MAHA Water Mission** has been conceived as a national innovation platform designed to accelerate technological solutions in the water sector.

The mission seeks to bring together:

Science and technology institutions

Universities

Research organisations

Startups

MSMEs

Industry partners

Government agencies

Grassroots stakeholders

The objective is to create an ecosystem where research can be translated into practical solutions that strengthen India's long-term water security.

Why Was the Mission Needed?

India faces multiple water-related challenges that increasingly threaten sustainable development.

Major Challenges

Declining groundwater levels.

Water scarcity in several regions.

Pollution of rivers, lakes and groundwater.

Inefficient water use in agriculture.

Climate change-induced water stress.

Increasing demand due to urbanisation and population growth.

Traditional approaches alone are insufficient to address these challenges. Therefore, innovation, technology and scientific research are becoming critical for achieving sustainable water management.

About the MAHA Programme

The Water Mission is part of the broader:

Missions for Advancement in High-Impact Areas (MAHA)

launched under the **Anusandhan National Research Foundation (ANRF)**.

The MAHA framework aims to promote mission-oriented research in sectors of strategic and national importance.

Other MAHA Missions

ANRF has already launched missions in areas such as:

Electric Vehicles (EVs)

Drones

Medical Technologies

6G Communications

Water Technologies

These missions seek to create a seamless pathway from: **Research → Innovation → Validation →**

Deployment

thereby bridging the gap between laboratories and real-world applications.

Objectives of the MAHA Water Mission

The mission seeks to:

Accelerate Innovation

Promote development of cutting-edge technologies and solutions for water management.

Bridge Research and Deployment

Support innovations from laboratory research to field implementation.

Promote Localised Solutions

Encourage region-specific and community-oriented solutions for water challenges.

Strengthen Water Security

Develop sustainable approaches for ensuring long-term water availability.

Foster Collaboration

Create partnerships among academia, industry, startups and government agencies.

Financial Support Under the Mission

Total Outlay

The programme has a projected outlay of: **₹200 Crore** over a period of five years.

Funding Partners

The funding will be jointly contributed by:

Anusandhan National Research Foundation (ANRF)

Ministry of Jal Shakti

Support for Selected Consortia

The programme will provide: **Up to ₹20 Crore** for selected multidisciplinary consortia.

The funding can be used for:

Technology development.

Field assessment.

Validation studies.

Pilot testing.

Deployment of solutions.

This support is intended to help promising technologies move beyond the laboratory stage and achieve real-world impact.

Who Can Participate?

The mission promotes a collaborative approach by encouraging participation from diverse stakeholders.

Eligible Participants

Universities

National laboratories

Research institutions

Startups

MSMEs

Industry partners

Innovation ecosystems

The emphasis is on multidisciplinary collaboration rather than isolated research efforts.

Five Priority Themes of the Mission

The MAHA Water Mission will focus on five critical areas.

1. Water Resource Assessment and Sustainable Management

This theme focuses on improving understanding and management of available water resources.

Key Areas

Groundwater mapping.

Water accounting.

Hydrological modelling.

Watershed management.

Sustainable extraction practices.

Significance

Scientific assessment is essential for ensuring long-term availability of water resources.

2. Drinking Water

The mission seeks to develop innovative solutions for ensuring safe and reliable drinking water access.

Focus Areas

Water purification technologies.

Rural drinking water systems.

Smart monitoring systems.

Affordable treatment solutions.

Importance

Access to safe drinking water remains a fundamental public health requirement.

3. Water Quality and Ecological Health

This theme addresses growing concerns regarding water pollution and ecosystem degradation.

Focus Areas

Pollution monitoring.

Wastewater treatment.

River rejuvenation.

Aquatic ecosystem restoration.

Real-time water quality monitoring.

Significance

Healthy water ecosystems are critical for biodiversity, agriculture and human well-being.

4. Water Use Efficiency and Circular Economy

The mission aims to promote efficient utilization and reuse of water resources.

Focus Areas

Water-saving technologies.

Precision irrigation.

Wastewater recycling.

Industrial water efficiency.

Circular water systems.

Importance

Improving efficiency is essential for reducing water stress and enhancing sustainability.

5. Climate Resilience and Adaptation

Climate change is increasingly affecting water availability and quality.

Focus Areas

Drought management.
Flood resilience.
Climate-resilient infrastructure.
Water security planning.
Adaptation technologies.

Significance

Building resilience is necessary to cope with future climate-related water challenges.

Major Initiatives Launched Alongside the Mission

The launch event witnessed several complementary initiatives.

MoU Between Department of Water Resources and ISRO

A Memorandum of Understanding was signed between:

Department of Water Resources

Indian Space Research Organisation (ISRO)

Significance

The partnership is expected to strengthen:

Satellite-based monitoring.
Water resource assessment.
Remote sensing applications.
Data-driven water management.

Launch of JSJB-CTR Portal and App

The government also launched: **Jal Sanchay Jan Bhagidari – Citizen Tracking and Reporting (JSJB-CTR) Portal and App**

Purpose

To encourage citizen participation in:
Water conservation.
Monitoring water structures.
Reporting local water initiatives.

Importance

The initiative promotes community participation in water management.

Role of ANRF in India's Research Ecosystem

According to Dr. Jitendra Singh, the **Anusandhan National Research Foundation (ANRF)** aims to democratise research funding in India.

Key Objectives

Expand research opportunities beyond elite institutions.
Support startups and MSMEs.
Promote mission-oriented innovation.
Strengthen industry-academia collaboration.

Encourage participation from institutions across the country.

The broader objective is to make research and innovation more inclusive and outcome-oriented.

India's Growing Startup Ecosystem

The launch of the MAHA Water Mission also reflects the government's increasing focus on innovation-led development.

Growth of Indian Startup Ecosystem

Over the past decade:

Startups increased from around **350–400** to more than **2 lakh**.

Generated approximately **20–24 lakh jobs**.

The government sees startups as important drivers of:

Innovation.
Employment generation.
Economic growth.
Technological self-reliance.

Significance of the MAHA Water Mission

Strengthening Water Security

The mission directly addresses one of India's most critical developmental challenges—ensuring sustainable access to water.

Promoting Research-Based Solutions

Supporting Startups and MSMEs

Encouraging Multi-Stakeholder Collaboration

The initiative brings together:

Government.
Academia.
Industry.
Startups.
Research institutions.

This integrated approach increases the likelihood of successful innovation.

Contributing to Sustainable Development Goals (SDGs)

The mission supports progress towards:

SDG 6 (Clean Water and Sanitation)

Climate resilience goals.
Sustainable resource management.

Challenges Ahead

Bridging the Research–Implementation Gap

Ensuring Scalability

Coordination Among Stakeholders

Long-Term Sustainability

Way Forward

Promote Field-Level Demonstration Projects

Strengthen Industry–Academia Partnerships

Encourage State Participation

Leverage Emerging Technologies

Use of:

Artificial Intelligence (AI)

Remote Sensing

Internet of Things (IoT)

Big Data Analytics

can significantly improve water governance.

Focus on Local Solutions

Region-specific innovations should be encouraged to address diverse water challenges across India.

Conclusion

The **MAHA Water Mission** represents an important step towards building a technology-driven and innovation-led approach to water management in India. By bringing together research institutions, startups, MSMEs, industry and government agencies, the mission seeks to transform scientific knowledge into practical solutions for water security. With a dedicated outlay of **₹200 crore**, focus on high-priority water challenges and strong emphasis on collaboration and deployment, the initiative has the potential to strengthen India's long-term water resilience while promoting innovation, entrepreneurship and sustainable development.



Internal Security

Border Roads Organisation Celebrates 37th Raising Day of Project UDAYAK



Why in News?

The Border Roads Organisation (BRO) celebrated the 37th Raising Day of Project UDAYAK, recognizing its role in developing strategic infrastructure in India's far-eastern border regions.

About Project UDAYAK

Etymology: The project is named *Udayak*, which translates to the "Rising Sun." This name was chosen because the first rays of the rising sun in India fall directly within the project's designated Area of Responsibility (AOR).

Historical Origins: It was formally raised on June 1, 1990, at Doomdooa, Assam. The project was conceived during a strategic restructuring phase aimed at accelerating infrastructure development in the country's easternmost frontier.

Executive Arms: The project was established by carving out two dedicated task forces—the **48 Border Roads Task Force (BRTF)** and the **752 BRTF**—from Project Vartak and Project Sewak respectively.

Key Achievements and Strategic Mandate

North-East Connectivity: It has been the driving force behind constructing and maintaining critical road infrastructure across the easternmost districts of Arunachal Pradesh and parts of Assam.

National Security: The project serves a vital national security mandate by enhancing all-weather connectivity along highly sensitive international frontiers, including the **Line of Actual Control (LAC)** with China and the **Indo-Myanmar border**.

Border Modernization: Project UDAYAK is currently executing high-priority road construction and border fencing infrastructure along the Indo-Myanmar border to curb cross-border vulnerabilities while boosting accessibility for local border communities.

Successful Flight-Tests of RudraM-II Missile



Why in News?

Flight-tests of the indigenous **RudraM-II** air-to-surface missile were successfully conducted by the **DRDO** and the **Indian Air Force (IAF)**. The launch was executed from an airborne platform, which was reported to be the IAF's **Su-30MKI fighter aircraft**. All mission objectives were met by the missile under extreme release conditions during the trials managed at the **Integrated Test Range (ITR)** in Chandipur, Odisha.

About the RudraM-II Missile

Type: It is categorized as an advanced, indigenously developed **air-to-surface anti-radiation missile**.

Primary Role: It is built specifically for **Suppression of Enemy Air Defence (SEAD)** operations. Hostile radars, communication networks, and other radio-frequency sources that protect enemy airspace are tracked and destroyed by these missiles.

Strategic Purpose: Enemy air defense assets are struck from a safe, **stand-off range** during the initial phase of an air conflict. Through this mechanism, a safer operational environment is ensured for friendly aircraft in follow-on missions.

Development: The missile was completely developed in India by **DRDO**, with the **Research Centre Imarat (RCI)** in Hyderabad acting as the nodal laboratory.

The RudraM Missile Family

Variant	Development Status	Key Mission Focus
RudraM-I	Comprehensive initial testing was completed	First-generation anti-radiation capabilities
RudraM-II	Flight-testing was successfully executed from Su-30MKI	Advanced high-speed tracking and precision strike
RudraM-III	Active development is currently being carried out	Next-generation extended range and speed capabilities

Significance of the Test

Precision Power: The IAF's capability to locate and neutralize hidden enemy air defense networks is drastically boosted.

Self-Reliance: Progress toward **Aatmanirbharta in defence** is advanced by this deployment, reducing the reliance placed on foreign weapon systems.

Tech Maturity: India's growing mastery over high-speed weapon technologies and indigenous defense engineering is clearly demonstrated.

Delivery of 4th S-400 Triumf Air Defence Squadron



Why in News?

The **4th squadron of the Russia-made S-400 Triumf** was recently received by India. This arrival significantly strengthens the nation's long-range air defense network.

About the S-400 Triumf System

Overview: Officially named '**Sudarshan**' in Indian service, the system functions as a state-of-the-art long-range air defense asset. An impenetrable, multi-layered security shield is established by it over critical airspace.

Design: It was developed by Russia and is widely recognized as one of the world's most advanced mobile **Surface-to-Air Missile (SAM)** systems.

Procurement Status: A **USD 5.43 billion** deal was signed by India with Russia in 2018 for five regimental systems. While three squadrons are already operational, the fourth has just arrived, and the final fifth squadron is expected by **2027**.

Technical and Operational Capabilities

Capability	Technical Mechanism and Operational Scope
Multi-Tiered Defence	Layered air defense is provided using missiles with ranges spanning 40-400 km . A wide spectrum of aerial threats—including stealth fighter jets, drones (UAVs), and ballistic or cruise missiles—can be neutralized.
Simultaneous Target Tracking	Up to 300 targets can be tracked simultaneously using advanced panoramic radar capabilities, enabling the system to actively engage up to 36 threats at once with high precision.
AI-Enabled Targeting	Identifying, classifying, and prioritizing aerial threats is assisted by integrated AI-assisted decision-support systems , though final engagement decisions are strictly maintained by human operators.
Indigenous Synergy	Seamless integration is achieved with India's existing networks, complementing the DRDO-developed Ballistic Missile Defence (BMD) system and parallel indigenous initiatives like Project Kusha (Extended Range Air Defence System).

Operational Role and Deployment

Border Security: The system forms a critical pillar of India's layered air defense architecture along the **western and northern borders** to counter potential two-front threats from China and Pakistan.

Combat Validation: Its operational effectiveness was clearly demonstrated during **Operation Sindoor**, where hostile drones and missiles were successfully intercepted.

De-escalation at the Assam-Meghalaya Border



Why in News?

Farming activities were recently resumed by villagers from Assam and Meghalaya in the disputed **Tapat-Lapangap sector**, ending weeks of intermittent conflict. The area lies along an unclear inter-State boundary and has witnessed repeated tensions over access to agricultural land.

About the Temporary Arrangement

Brokered Compromise: The resumption of work was made possible through a temporary arrangement worked out by representatives of both State governments to reduce border tensions and allow seasonal cultivation.

The Agreed Formula: Under this mutual understanding, fields claimed by Meghalaya will be cultivated by **Karbi community farmers** from Assam for one agricultural season. In exchange, fields claimed by Assam will be cultivated by **Khasi-Pnar community farmers** from Meghalaya.

Historical Context of the Boundary Row

Aspect	Historical Status and Resolution Progress
Origin of Dispute	Assam and Meghalaya have shared a volatile 855-km border with 12 disputed sectors since Meghalaya was carved out of Assam as a full-fledged state in 1972 .
The 2022 Agreement	High-level political negotiations led to a formal agreement signed in March 2022 , successfully resolving territorial disputes in six of the twelve sectors .

Pending Areas

Final resolution is still awaited in **six sectors**, including the sensitive **Tapat-Lapangap sector**, located near Assam's West Karbi Anglong and Meghalaya's West Jaintia Hills districts.

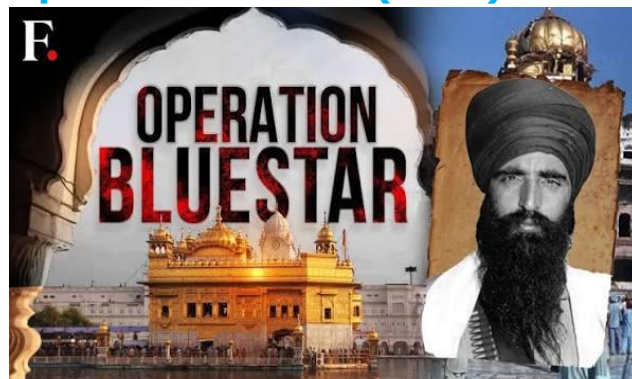
Significance of the Interim Step

Livelihood Protection: Continuity of agricultural livelihoods is ensured for vulnerable border families who are heavily dependent on seasonal farming.

Trust Building: Grassroots trust is actively strengthened between neighboring communities that have historically faced violent standoffs.

Cooperative Resolution: A cooperative, dialogue-driven approach is effectively demonstrated for managing complex inter-State border disputes until permanent boundaries are legally fixed.

Operation Bluestar (1984)



Why in News?

Recently, **pro-Khalistan slogans** were raised inside the **Golden Temple complex** during the **42nd anniversary of Operation Bluestar**.

The incident has renewed discussions on the historical, political and security dimensions of **Operation Bluestar** and the **Khalistan movement**.

About Operation Bluestar

Operation Bluestar was a military operation conducted by the **Indian Army** in **June 1984** within the Golden Temple complex in **Amritsar**.

The operation was launched to remove armed militants led by **Jarnail Singh Bhindranwale**, who had established fortified positions inside the temple complex.

It was undertaken against the backdrop of the growing **Khalistan separatist movement** in Punjab.

Background of the Khalistan Movement

Origins after Partition

The demand for **Khalistan**, a separate Sikh homeland, emerged in the decades following the **Partition of India (1947)**.

Partition resulted in the division of Punjab, with several historically and religiously significant Sikh sites becoming part of **Pakistan**.

Important Sikh Sites in Pakistan

Important religious centres that remained in Pakistan include:

Nankana Sahib

Lahore

This contributed to feelings of historical and cultural loss among sections of the Sikh community.

Political and Economic Grievances

Separatist sentiments were further intensified by issues such as:

River water-sharing disputes.

Demands for greater state autonomy.

Perceived political marginalization.

Alleged external support from Pakistan.

The **reorganisation of Punjab in 1966** did not completely resolve these concerns.

Rise of Jarnail Singh Bhindranwale

Emergence as a Religious Leader

Bhindranwale emerged as a prominent religious and political figure during the late 1970s and early 1980s.

He gained support among sections of Sikh youth through his religious preaching and political messaging.

Militant Consolidation

Over time, he became associated with militant activities and separatist demands.

To evade arrest, he and his supporters moved into the **Akal Takht** within the Golden Temple complex. The complex was subsequently fortified with defensive positions and weapons.

Launch of Operation Bluestar

Preparatory Measures

Before the operation, the government imposed:

Curfew across parts of Punjab.

Restrictions on communications.

Media censorship and movement controls.

Army Deployment

The Indian Army entered the Golden Temple complex on the night of **5 June 1984**.

The objective was to remove militants and restore state authority within the complex.

Key Features of the Operation

Initial Strategy

Security forces initially attempted to neutralize militant positions through conventional military action.

Heavy Resistance

Armed resistance from within the complex proved stronger than anticipated.

Militants had established fortified positions and possessed sophisticated weaponry.

Use of Tanks

Due to intense resistance, **Vijayanta tanks** were deployed against the **Akal Takht**, which had become the principal stronghold of Bhindranwale and his supporters.

Significant damage was caused to parts of the structure during the operation.

Outcome of the Operation

Death of Bhindranwale

Bhindranwale was found dead inside the damaged Akal Takht complex.

Several militants were killed during the operation.

Restoration of Control

By **10 June 1984**, the remaining militants had either: Surrendered.

Been killed during military action.

Government control over the complex was restored.

Impact of Operation Bluestar

Religious and Emotional Impact

The operation deeply affected the sentiments of many Sikhs because it took place at Sikhism's holiest shrine.

Damage to the Akal Takht generated widespread anger and controversy.

Political Consequences

The operation intensified tensions between sections of the Sikh community and the government.

It became one of the most debated events in post-independence Indian history.

Assassination of Indira Gandhi

On **31 October 1984**, Prime Minister **Indira Gandhi** was assassinated by two of her Sikh bodyguards.

The assassination was widely viewed as a retaliation for Operation Bluestar.

Anti-Sikh Riots (1984)

Following the assassination, large-scale **anti-Sikh riots** occurred in several parts of India.

Thousands of Sikhs lost their lives and extensive property damage was reported.

The riots remain a significant chapter in India's contemporary history.

Significance

Operation Bluestar remains a critical event in understanding:

Internal security challenges.

Religious sensitivities.

Federal politics in India.

The evolution of the Khalistan movement.

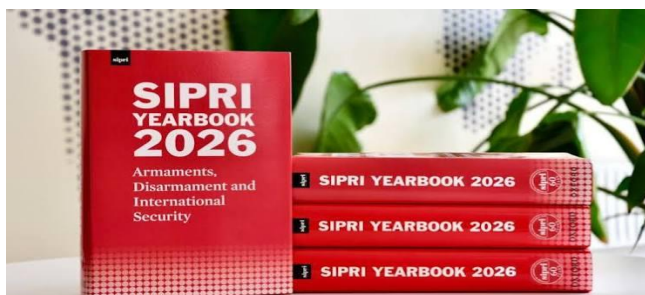
The episode highlights the importance of balancing national security concerns with community trust and political dialogue.

Conclusion

Operation Bluestar was a major military operation undertaken to remove militants from the **Golden Temple complex** during a period of escalating separatist violence in Punjab.

While it succeeded in eliminating militant leadership, it also produced profound political, social and religious consequences whose effects continue to influence discussions on national security, communal harmony and federal relations in India.

SIPRI Yearbook 2026: Global Nuclear Trends and India's Nuclear Posture



Why in News?

The **Stockholm International Peace Research Institute** released the **SIPRI Yearbook 2026**, which assesses global developments related to **armaments, disarmament and international security**.

The report highlighted that India has expanded its nuclear arsenal and, for the first time, placed a portion of its nuclear warheads in an operationally **deployed** state.

The yearbook also noted rising global reliance on nuclear weapons, growing military expenditure and

the increasing role of artificial intelligence in warfare.

Key Highlights of SIPRI Yearbook 2026

India

Fifth-Largest Military Spender

India emerged as the world's **fifth-largest military spender** in 2025 after:

United States

China

Russia

Germany

Defence expenditure increased by **8.9%** over 2024.

Total military spending reached approximately **USD 92.1 billion**.

Security Environment

India's security environment in 2025 was shaped by: Nuclear rivalry with Pakistan.

Strategic competition with China in the Indo-Pacific.

Weakening multilateral security frameworks.

Major Arms Importer

India was the **second-largest importer of major arms** during **2021–25**, after **Ukraine**.

It accounted for **8.2% of global arms imports**.

India's Nuclear Arsenal

As of January 2026, India's nuclear stockpile was estimated at:

190 nuclear warheads

12 deployed warheads

178 warheads in reserve or storage

Comparative figures:

China: **620 warheads**

Pakistan: **170 warheads**

Cyber Warfare Integration

The report highlighted **Operation Sindoor (May 2025)**.

According to SIPRI, India and Pakistan integrated cyber operations into active military confrontation for the first time.

This reflects the growing role of cyber capabilities in modern deterrence and conflict.

Global Highlights

Growing Reliance on Nuclear Weapons

The world's nine nuclear-armed states continue to modernize their arsenals:

United States

Russia

United Kingdom

France

China

India

Pakistan

North Korea

Israel

Nuclear weapons are increasingly being viewed as instruments of national power and strategic deterrence.

Rising Military Expenditure

In June 2025, **North Atlantic Treaty Organization** members agreed to increase defence spending targets.

The target was raised from **2% of GDP** to **5% of GDP by 2035**.

Highest Military Burden

Ukraine recorded the world's highest military burden.

Military expenditure accounted for nearly **40% of its GDP**.

Global Nuclear Inventory

Total Nuclear Warheads

Global nuclear inventory was estimated at **12,187 warheads**.

Military Stockpiles

Around **9,745 warheads** remain available for potential military use.

Deployed Nuclear Weapons

More than **4,000 warheads** are currently deployed with:

Ballistic missiles.

Strategic bombers.

Other delivery systems.

US–Russia Nuclear Dominance

Share of Global Arsenal

The United States and Russia together possess approximately **86% of the world's nuclear weapons**.

Modernization Programmes

Both countries continue to invest heavily in nuclear modernization.

New START Concerns

The expiration of the **New START Treaty** in February 2026 has raised concerns regarding strategic stability.

No replacement agreement has yet been finalized.

Slowing Pace of Nuclear Disarmament

The overall global nuclear inventory continues to decline gradually as older Cold War-era weapons are dismantled.

However, the pace of disarmament has slowed because modern warheads are simultaneously being added to national arsenals.

Challenges to Arms Control Frameworks

Convention on Cluster Munitions

In March 2025, **Lithuania** became the first country to withdraw from the **Convention on Cluster Munitions**.

Anti-Personnel Mine Convention

Five European countries withdrew from the convention:

Estonia

Finland

Latvia

Lithuania

Poland

These developments indicate weakening commitment to certain arms-control arrangements.

Armed Conflicts

The highest conflict-related fatalities in 2025 were recorded in:

Ukraine

Gaza

Artificial Intelligence and Emerging Technologies

Battlefield Integration of AI

Artificial intelligence-assisted targeting systems are increasingly being used in active conflict zones.

AI-enabled military technologies have been reported in:

Gaza

Ukraine

Rise of Drone Warfare

Drone swarms and **First-Person View (FPV) Uncrewed Aerial Vehicles (UAVs)** are transforming modern warfare.

Low-cost drones are increasingly being used for surveillance and precision attacks.

Operation Spider's Web

In June 2025, Ukraine reportedly used over **100 smuggled drones** to damage Russian aircraft.

The incident demonstrated the growing strategic significance of UAVs in asymmetric warfare.

India's Nuclear Doctrine

About

India formally adopted its nuclear doctrine in **2003**. The doctrine is based on the principle of **No First Use (NFU)** and **Credible Minimum Deterrence**.

Nuclear weapons are viewed primarily as instruments of deterrence rather than war-fighting tools.

Core Principles

Credible Minimum Deterrence

India seeks to maintain a nuclear arsenal sufficient to deter adversaries.

The objective is to ensure that any nuclear attack on India would result in unacceptable consequences for the aggressor.

No First Use (NFU)

India commits to using nuclear weapons only in retaliation to a nuclear attack on:

Indian territory.

Indian armed forces anywhere in the world.

Massive Retaliation

Any nuclear attack against India would invite a massive retaliatory response.

The objective is to inflict unacceptable damage on the aggressor.

Civilian Political Control

Authority over nuclear weapons remains under civilian leadership.

Decisions regarding nuclear retaliation are exercised through the **Nuclear Command Authority (NCA)**.

Nuclear Command Authority (NCA)

Political Council

Chaired by the **Prime Minister of India**.

Sole authority empowered to authorize the use of nuclear weapons.

Executive Council

Chaired by the **National Security Advisor (NSA)**.

Provides advice and implements decisions of the Political Council.

Negative Security Assurance

India has pledged not to use nuclear weapons against **Non-Nuclear Weapon States (NNWS)**.

However, India reserves the right to use nuclear weapons in response to a major:

Chemical Weapons attack.

Biological Weapons attack.

Commitment to Global Disarmament

India supports universal, verifiable and non-discriminatory nuclear disarmament.

A voluntary moratorium on nuclear testing continues to be maintained.

Evolution of India's Nuclear Programme

Phase I: Peaceful Nuclear Programme (1947–1974)

Early Development

India's nuclear programme was led by **Homi J Bhabha** under the leadership of **Jawaharlal Nehru**.

The initial focus was on energy security and scientific advancement.

Pokhran-I (Smiling Buddha)

Conducted on **18 May 1974** at **Pokhran Test Range**.

Officially described as a **Peaceful Nuclear Explosion (PNE)**.

Marked India's first successful nuclear test.

Phase II: Weaponization (1974–1998)

International Pressure

Following Pokhran-I, India faced sanctions and technology restrictions.

The **Nuclear Suppliers Group** was established partly in response to India's nuclear test.

Pokhran-II (Operation Shakti)

Five underground nuclear tests were conducted in **May 1998**.

India formally declared itself a nuclear-weapon state.

The announcement was made under the leadership of **Atal Bihari Vajpayee**.

National Technology Day

Observed annually on **11 May** to commemorate **Operation Shakti (Pokhran-II)**.

Phase III: Established Nuclear Power (1998–Present)

Formal Nuclear Doctrine

Draft nuclear doctrine released in **1999**.

Official doctrine operationalized in **2003**.

Civil Nuclear Cooperation

India entered global nuclear commerce through the **India United States Civil Nuclear Agreement**.

A special waiver from the **NSG** enabled civilian nuclear trade despite India's non-membership in the NPT.

India's Position on Global Nuclear Treaties

Non-Proliferation Treaty (NPT)

India is not a signatory to the **Treaty on the Non Proliferation of Nuclear Weapons**.

India argues that the treaty is discriminatory because it legitimizes existing nuclear powers while restricting others.

Comprehensive Nuclear-Test-Ban Treaty (CTBT)

India has not signed the **Comprehensive Nuclear Test Ban Treaty**.

Concerns have been raised regarding its unequal obligations and verification issues.

Export Control Regimes

India is a Member of:

Missile Technology Control Regime

Wassenaar Arrangement

Australia Group

Pending Membership

India continues to pursue membership in the **Nuclear Suppliers Group (NSG)**.

Treaty on the Prohibition of Nuclear Weapons (TPNW)

India has not joined the **Treaty on the Prohibition of Nuclear Weapons (2017)**.

The treaty is viewed as lacking a comprehensive and credible verification mechanism.

Conclusion

The **SIPRI Yearbook 2026** highlights an increasingly complex global security environment characterized by nuclear modernization, rising military expenditure, emerging technologies and weakening arms-control frameworks.

For India, the report underscores the need to maintain a **credible minimum deterrent**, strengthen strategic stability and continue advocating for universal, verifiable and non-discriminatory nuclear disarmament while safeguarding national security interests.

Gallantry Awards in India



Why in News?

Recently, the President of India conferred **51 Gallantry Awards** at the **Defence Investiture Ceremony 2026** held at **Rashtrapati Bhavan**.

The awards included:

7 Kirti Chakras

15 Vir Chakras

29 Shaurya Chakras

These awards recognized exceptional courage, bravery and sacrifice displayed by personnel of the Armed Forces, Central Armed Police Forces (CAPFs) and Police Forces.

Gallantry Awards:

About

Gallantry Awards are among India's highest honours awarded for acts of exceptional bravery, courage, valour and self-sacrifice in service of the nation.

They are conferred upon both military personnel and civilians depending on the nature of the act performed.

Gallantry Awards are broadly classified into:

Wartime Gallantry Awards

Peacetime Gallantry Awards

Wartime Gallantry Awards

About

Wartime Gallantry Awards recognize acts of bravery performed in the presence of the enemy during military operations.

Param Vir Chakra (PVC)

The **Param Vir Chakra** is India's highest military decoration.

It is awarded for the most conspicuous bravery, daring or self-sacrifice in the presence of the enemy.

Maha Vir Chakra (MVC)

Awarded for acts of conspicuous gallantry in the presence of the enemy on land, sea or air.

Vir Chakra

Awarded for acts of gallantry in the presence of the enemy during military operations.

Historical Significance

The **Param Vir Chakra**, **Maha Vir Chakra** and **Vir Chakra** were the first gallantry awards instituted by independent India.

Peacetime Gallantry Awards

About

Peacetime Gallantry Awards are conferred for acts of bravery, valour and self-sacrifice other than in the face of the enemy.

These may include:

Counter-insurgency operations.

Internal security duties.

Rescue missions.

Disaster response operations.

Ashoka Chakra

The **Ashoka Chakra** is the highest peacetime gallantry award.

It is awarded for the most conspicuous bravery or self-sacrifice away from the battlefield.

Kirti Chakra

Awarded for conspicuous gallantry other than in the face of the enemy.

Shaurya Chakra

Awarded for gallantry and courage displayed in peacetime situations.

Evolution of Peacetime Gallantry Awards

These awards were instituted in **1952** with retrospective effect from **15 August 1947**.

Initially, they were known as:

Ashoka Chakra Class-I

Ashoka Chakra Class-II

Ashoka Chakra Class-III

In **1967**, they were renamed as:

Ashoka Chakra

Kirti Chakra

Shaurya Chakra

Order of Precedence

The order of precedence among India's Gallantry Awards is:

Param Vir Chakra

Ashoka Chakra

Maha Vir Chakra

Kirti Chakra

Vir Chakra

Shaurya Chakra

The order reflects the relative rank and prestige of the decorations.

Eligibility

Param Vir Chakra, Maha Vir Chakra and Vir Chakra

Eligible recipients include:

All ranks of the:

Army

Navy

Air Force

Reserve Forces

Territorial Army

Medical and Nursing Services personnel.

Civilians serving under military command.

Ashoka Chakra, Kirti Chakra and Shaurya Chakra

Eligible recipients include:

Armed Forces personnel.

Reserve and Territorial Forces.

Military Nursing Services.

Police personnel.

Central Armed Police Forces (CAPFs).

Railway Protection Force (RPF).

Civilian citizens.

Recommendation and Conferment Process

Recommendation Stage

Recommendations originate from:

Military units.

CAPFs.

Police organizations.

These recommendations are scrutinized through the chain of command.

Examination and Approval

Cases are examined by the **Central Honours and Awards Committee**.

The final list is approved by the **President of India**.

Announcement

Gallantry Awards are announced twice every year:

Republic Day

Independence Day

Presentation

Most awards are formally presented by the President during the **Defence Investiture Ceremony** at Rashtrapati Bhavan.

Special Procedure for Highest Awards

The **Param Vir Chakra** and **Ashoka Chakra** are presented by the President during the **Republic Day Parade**.

Awards may be received by the awardee or the next of kin in case of posthumous conferment.

Additional Recognition: Bar to the Chakra About

Subsequent acts of similar gallantry are recognized through the award of a **Bar** to the respective Chakra.

The Bar is represented by a miniature replica of the award on the ribbon.

Posthumous Awards

Both the original award and any Bar may be conferred posthumously.

Major Gallantry Awards and Their Features

Param Vir Chakra (PVC)

Purpose

Most conspicuous bravery, valour or self-sacrifice in the presence of the enemy.

Medal

Bronze medal featuring four replicas of **Indra's Vajra** surrounding the State Emblem.

Ribbon

Plain purple ribbon.

Maha Vir Chakra (MVC)

Purpose

Conspicuous gallantry in the presence of the enemy.

Medal

Standard silver medal with a five-pointed heraldic star and gold-gilt centre.

Ribbon

Half white and half orange.

Vir Chakra

Purpose

Acts of gallantry in the presence of the enemy.

Medal

Standard silver medal with a five-pointed heraldic star and gold-gilt centre.

Ribbon

Half blue and half orange.

Ashoka Chakra

Purpose

Most conspicuous bravery, valour or self-sacrifice other than in the face of the enemy.

Medal

Gold-gilt medal bearing the Ashoka Chakra surrounded by a lotus wreath.

Ribbon

Green ribbon divided by one orange vertical line.

Kirti Chakra

Purpose

Conspicuous gallantry other than in the face of the enemy.

Medal

Standard silver medal bearing the Ashoka Chakra surrounded by a lotus wreath.

Ribbon

Green ribbon divided into three equal parts by two orange vertical lines.

Shaurya Chakra

Purpose

Gallantry other than in the face of the enemy.

Medal

Bronze medal bearing the Ashoka Chakra surrounded by a lotus wreath.

Ribbon

Green ribbon divided into four equal parts by three orange vertical lines.

Supreme Court Judgment on National Awards

Balaji Raghavan vs Union of India (1995)

In **Balaji Raghavan vs Union of India**, the **Supreme Court of India** upheld the constitutional validity of National Awards.

The Court clarified that National Awards do not constitute "**titles**" prohibited under **Article 18(1)** of the Constitution.

It further held that awardees should not use such honours as prefixes or suffixes to their names.

Significance of Gallantry Awards

Recognition of Exceptional Courage

They honour extraordinary acts of bravery and sacrifice.

Promotion of National Service

They inspire citizens and security personnel to serve the nation with dedication.

Preservation of Military Traditions

They uphold the values of duty, courage and patriotism within the Armed Forces and security services.

Project Kusha (Extended Range Air Defence System)



Why in News?

Recently, the Defence Minister described **Project Kusha** as a “game changer” for India's security architecture while inaugurating the Advanced Weapon System Complex at the **Defence Research and Development Organisation's Dr APJ Abdul Kalam Missile Complex** in Hyderabad.

The project is a major indigenous initiative aimed at strengthening India's long-range air and missile defence capabilities.

What is Project Kusha?

About

Project Kusha, also known as the **Extended Range Air Defence System (ERADS)**, is an indigenous long-range surface-to-air missile (SAM) system being developed by DRDO.

It is intended to provide a **multi-layered air defence shield** against a wide range of aerial threats.

The system is often viewed as India's indigenous alternative to advanced foreign air defence platforms.

Objective

Strengthen India's air defence network.

Protect critical military and civilian infrastructure.

Enhance self-reliance in strategic defence technologies.

Reduce dependence on imported air defence systems.

Key Features of Project Kusha

Multi-Tier Interceptor System

M1 Interceptor

Operational range of approximately **150 km**.

Designed to engage medium-range aerial threats.

M2 Interceptor

Operational range of approximately **250 km**.

Provides extended area defence coverage.

M3 Interceptor

Expected range between **350–400 km**.

Intended for long-range interception of advanced aerial threats.

Layered Air Defence Capability

The three interceptor variants create multiple defensive layers.

Enhances interception probability against diverse threats at varying distances.

Threat Coverage

Fighter Aircraft

Capable of engaging hostile fighter aircraft at long ranges.

Stealth Platforms

Designed to detect and intercept low-observable stealth targets.

Drones and UAVs

Effective against unmanned aerial vehicles and swarm threats.

Cruise Missiles

Provides defence against low-flying and manoeuvrable cruise missiles.

Precision-Guided Munitions

Can counter advanced precision strike weapons.

Ballistic Missile Threats

Expected to provide limited interception capability against certain ballistic missile threats.

Operational Role

Integration with IAF Networks

Integrated Air Command and Control System (IACCS)

Project Kusha is expected to be integrated with the **Integrated Air Command and Control System**.

Functions

Real-time monitoring of airspace.

Threat assessment.

Coordinated response to aerial threats.

Network-centric warfare operations.

Radar Integration

Integration with:

Military radar systems.

Civilian radar networks.

Early warning systems.

Benefits

Faster decision-making.

Improved situational awareness.

Enhanced airspace management.

Role in India's Air Defence Architecture

Quick Reaction Surface-to-Air Missile (QRSAM)

Purpose

Provides short-to-medium range air defence against fast-moving aerial threats.

Complementarity

Acts as the lower tier of the air defence network.

Very Short-Range Air Defence System (VSHORADS)

Purpose

Protects against low-altitude aerial threats at close range.

Role

Forms the innermost defensive layer.

Ballistic Missile Defence (BMD) Programme

Purpose

Defends against incoming ballistic missiles.

Integration

Project Kusha will complement existing BMD capabilities.

Directed-Energy Weapons

Future Integration

Expected to work alongside future:

Laser weapons.

High-energy directed-energy systems.

Strengthening Indigenous Defence Capability

Atmanirbhar Bharat

Supports the vision of **Atmanirbhar Bharat** in defence manufacturing.

Technological Advancement

Promotes indigenous development of advanced missile technologies.

Reducing Dependence on Imports

Alternative to Foreign Systems

Reduces dependence on imported air defence platforms such as the **S-400 Triumph**.

Benefits

Greater operational independence.

Reduced vulnerability to geopolitical restrictions.

Lower long-term maintenance dependency.

Strategic Autonomy

National Security

Enhances India's ability to independently secure its airspace.

Operational Flexibility

Allows customization according to India's strategic requirements.

Importance in Modern Warfare

Emerging Threat Environment

Modern conflicts increasingly involve:

Drones.

Cruise missiles.

Hypersonic weapons.

Precision-guided munitions.

Need for Layered Defence

No single system can neutralize all threats.

Multiple defensive layers improve interception success rates.

Protection of Critical Assets

Project Kusha can help protect:

Military bases.

Strategic installations.

Nuclear facilities.

Major cities.

Critical infrastructure.

Advantages of Project Kusha

Extended Engagement Range

Provides long-range threat engagement capability.

Network-Centric Operations

Enables seamless integration with command-and-control networks.

Enhanced Survivability

Improves protection against saturation attacks and multiple simultaneous threats.

Indigenous Technology Development

Strengthens domestic defence research and manufacturing capabilities.

Challenges

Technological Complexity

Development of long-range interception systems requires advanced sensors, radars and guidance technologies.

Integration Challenges

Effective integration with existing defence networks is critical.

Evolving Threats

Rapid advancements in hypersonic and stealth technologies require continuous upgrades.

Cost and Deployment

Large-scale deployment will require substantial financial and logistical resources.

Related DRDO Air Defence Systems

Akash Missile System

Indigenous medium-range surface-to-air missile system.

QRSAM

Quick reaction air defence system for mobile battlefield protection.

VSHORADS

Man-portable air defence system for short-range engagements.

Ballistic Missile Defence (BMD) Programme

Designed to intercept incoming ballistic missiles.

Rogue Drones and India's Counter-Drone Preparedness



Why in News?

The Union Government has warned of possible **rogue drone attacks** targeting critical installations and strategic assets along India's border regions. Security agencies have accelerated the deployment of advanced **counter-drone systems** to protect critical infrastructure, military establishments and civilian assets.

The concern arises amid ongoing conflicts in **Ukraine** and **West Asia**, where low-cost drones have emerged as transformative tools of modern warfare.

What are Rogue Drones?

About

Rogue drones are unauthorized or hostile unmanned aerial systems (UAS) used for:

- Surveillance.
- Smuggling.
- Intelligence gathering.
- Sabotage.
- Precision strikes.

Threat Perception

They pose significant risks to:

- Military installations.
- Airports.
- Power infrastructure.
- Border security.
- Strategic facilities.

Why are Drones Gaining Prominence in Modern Warfare?

Cost-Effectiveness

Low-Cost High Impact

Drones are significantly cheaper than conventional fighter aircraft, helicopters and missile systems. They provide:

- Surveillance.
- Reconnaissance.
- Precision strike capability.
- Target acquisition.

Advantage

Enables cost-effective military operations.

Multi-Role Capability

Intelligence, Surveillance and Reconnaissance (ISR)

Continuous battlefield monitoring.

Artillery Spotting

Improves targeting accuracy.

Electronic Warfare

Supports jamming and signal intelligence operations.

Logistics Support

Delivery of supplies and equipment.

Deep Strike Missions

Attacks on strategic enemy infrastructure.

Operational Adaptability

Rapid Modification

Commercial drones can be quickly modified for military use.

Mass Deployment

Large numbers can be deployed simultaneously.

Flexibility

Suitable for conventional and asymmetric warfare.

Precision Strike Revolution

First Person View (FPV) Drones

Operators control drones through real-time video feeds.

Loitering Munitions

Also known as "kamikaze drones."

Remain airborne until a target is identified and then strike it.

Advantages

- High precision.
- Low operational cost.
- Minimal collateral damage.

Electronic Warfare Resilience

Advanced Technologies

- Fibre-optic communication systems.
- Anti-jamming mechanisms.
- Autonomous navigation systems.

Benefit

Reduced vulnerability to electronic warfare measures.

Persistent Battlespace Surveillance

Continuous Monitoring

Drones create a highly transparent battlefield.

Impact

Logistics hubs, rear areas and military bases remain vulnerable to real-time detection and attacks.

Concerns Associated with the Rising Use of Drones

Lower Entry Barrier to Warfare

Accessibility

Commercial drones are widely available and inexpensive.

Risk

Non-state actors, insurgents and terrorist groups can access advanced capabilities.

Asymmetric Warfare

Challenge

Small groups can inflict disproportionate damage using low-cost drone systems.

Implication

Increases national security vulnerabilities.

Escalation of Conflicts

Reduced Cost of Attacks

Cheap and expendable drones lower the cost of initiating military action.

Result

Increased frequency of limited strikes and hybrid warfare.

Threat to Critical Infrastructure

Potential Targets

Airports.

Ports.

Oil refineries.

Military bases.

Power plants.

Communication networks.

Border Security Threats

Drones are increasingly used for:

Arms smuggling.

Drug trafficking.

Counterfeit currency distribution.

Detection Challenges

Small Radar Signature

Many drones fly at low altitudes and evade conventional radar systems.

Low-Speed Operations

Difficult to detect using traditional air-defence networks.

Swarm Warfare

Concept

Multiple drones attack simultaneously.

Challenge

Can overwhelm existing air-defence systems.

Electronic Warfare Vulnerabilities

Threats

Jamming.

Spoofing.

Cyberattacks.

Impact

May compromise drone operations and communications.

Civilian Risks

Collateral Damage

Increased use of drones raises concerns regarding civilian casualties and infrastructure damage.

Governance and Regulatory Gaps

Issue

International legal frameworks have not kept pace with rapid technological developments.

Challenge

Absence of universally accepted norms governing drone warfare.

Key Developments in India's Counter-Drone Preparedness

Indian Army Initiative

The **Indian Army** has released a Technology Roadmap for:

Unmanned Aerial Systems (UAS).

Loitering Munitions.

Scope

Identifies requirements for approximately:

30 categories of unmanned systems.

Nearly 80 variants.

Objective

Provide clear technological goals to domestic defence manufacturers and startups.

Acquisition of Advanced Drones

Government Approval

Approval of a programme worth approximately ₹32,350 crore.

Objective

Procurement of **87 Medium Altitude Long Endurance (MALE)** drones for:

Indian Army.

Indian Navy.

Indian Air Force.

Foreign Platforms

MQ-9B Predator/SkyGuardian

Procurement from the United States for immediate operational requirements.

Indigenous Alternatives

TAPAS-BH-201

Developed by **Defence Research and Development Organisation**.

Rustom Series

Indigenous MALE drone programme.

Significance

Enhances self-reliance in defence technology.

Innovations for Defence Excellence (iDEX)

Objective

Encourage defence innovation through startups and MSMEs.

ADITI Scheme

Purpose

Support development of critical defence technologies.

AI-Based Drone Challenges

Focus Areas

Autonomous recognition.

Target identification.

GPS-denied navigation.

Electronic warfare resistance.

Mission Sudarshan Chakra

About

A proposed integrated, AI-enabled national defence architecture expected to be developed by **2035**.

Concept

Create a nationwide "Shield and Sword" security framework.

Hard-Kill Capabilities

Include:

Close-In Weapon Systems (CIWS).

Directed Energy Weapons.

Laser-based systems.

Soft-Kill Capabilities

Include:

Electronic jamming.

Signal disruption.

Cyber countermeasures.

Significance

Neutralises hostile drones without relying on expensive missile systems.

Major Stakeholders

Border Security Force (BSF)

Border surveillance and interdiction.

Central Industrial Security Force (CISF)

Protection of critical infrastructure.

DRDO

Research and development of counter-drone technologies.

Intelligence Bureau (IB)

Threat intelligence and monitoring.

Airports Authority of India (AAI)

Airport security and airspace management.

Ministry of Home Affairs (MHA)

Internal security coordination.

Ministry of Defence (MoD)

Military preparedness and operational integration.

How Can Drones Be Used Responsibly?

Measures

Develop robust domestic and international regulations governing drone operations.

Principles

Accountability.

Proportionality.

Compliance with humanitarian law.

Strict Operational Controls

Requirements

Authorization of operators.

Real-time tracking.

Geo-fencing.

Unique identification systems.

Benefits

Improved traceability and accountability.

Layered Counter-Drone Defence Architecture

Components

Radar systems.

Radio Frequency (RF) detectors.

Electro-optical sensors.

Jamming systems.

Kinetic interceptors.

Application

Protection of:

Airports.

Military bases.

Critical infrastructure.

Border regions.

Strengthening Indigenous Capabilities

Institutions

DRDO.

Bharat Electronics Limited (BEL).

Defence startups.

Academic institutions.

Focus

AI-enabled counter-drone technologies.

Institutional Coordination

Need

Standard Operating Procedures (SOPs) among:

MHA.

MoD.

BSF.

CISF.

Intelligence agencies.

Objective

Faster detection and response.

Capacity Building

Training

Enhance skills of security personnel in:

Drone operations.

Electronic warfare.

Counter-drone technologies.

Civilian Regulation

Strengthen registration and monitoring of civilian drone usage.

Significance for India

Border Security

Protects against infiltration, smuggling and surveillance threats.

Critical Infrastructure Protection

Enhances security of airports, ports, military installations and energy facilities.

Technological Self-Reliance

Supports the vision of **Atmanirbhar Bharat** in defence manufacturing.

Future Warfare Preparedness

Enables India to respond effectively to emerging drone-centric battlefield environments.

Challenges

Rapid Technological Evolution

Drone technologies evolve faster than regulatory systems.

Swarm Attacks

Large-scale coordinated drone attacks remain difficult to counter.

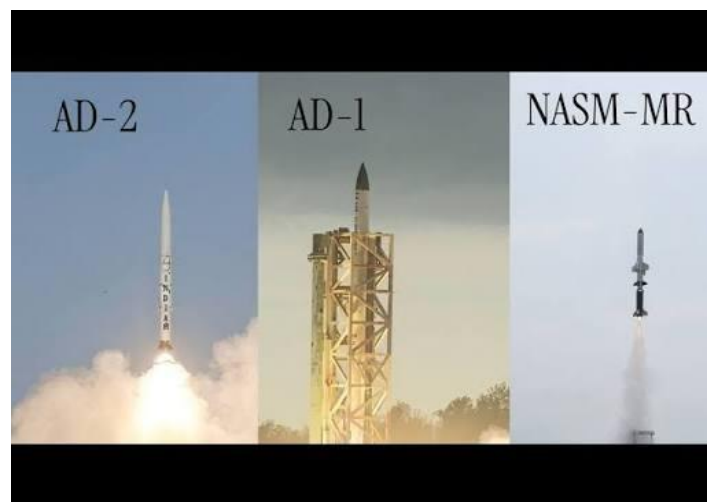
Detection Limitations

Small and low-flying drones remain challenging to identify.

Resource Requirements

Nationwide deployment of counter-drone systems requires substantial investment.

India's Ballistic Missile Defence (BMD) System, NASM-MR and LRLACM



Why in News?

The **Defence Research and Development Organisation** successfully conducted a series of major missile tests, including:

Validation of the **Multi-layered Ballistic Missile Defence (BMD) System** under Phase-II.

Maiden flight test of the **Naval Anti-Ship Missile–Medium Range (NASM-MR)**.

Successful flight test of the **Long-Range Land Attack Cruise Missile (LRLACM)**.

These achievements significantly strengthen India's missile defence architecture and long-range precision strike capabilities.

Multi-layered Ballistic Missile Defence (BMD) System

What is a Ballistic Missile Defence (BMD) System?

Definition

A Ballistic Missile Defence (BMD) system is a highly integrated network of:

Long-range tracking radars.

Command-and-control centres.

Interceptor missiles.

It is designed to detect, track and destroy incoming hostile ballistic missiles before they reach their targets.

Background

Launch of Programme

The BMD programme was initiated by DRDO in 1999.

Reason

Growing regional missile and nuclear threats necessitated a credible missile shield for India.

Global Significance

Elite Missile Defence Club

With successful validation of Phase-II BMD capabilities, India joins a select group of nations possessing advanced ballistic missile interception capability:

United States

Russia

China

Israel

India

Capability

Ability to intercept:

Short-Range Ballistic Missiles (SRBMs).

Medium-Range Ballistic Missiles (MRBMs).

Intermediate-Range Ballistic Missiles (IRBMs).

Intercontinental Ballistic Missiles (ICBMs).

Two-Tier Interceptor Architecture

Exo-Atmospheric Interception

Meaning

Interception outside Earth's atmosphere.

Purpose

Destroy ballistic missiles during their mid-course phase.

Endo-Atmospheric Interception

Meaning

Interception within Earth's atmosphere.

Purpose

Neutralize missiles during the terminal phase before impact.

Mission Sudarshan Chakra

About

Mission Sudarshan Chakra is India's proposed future integrated missile and air defence architecture.

Objective

Build a comprehensive multi-layered defensive shield for:

Strategic military assets.

Nuclear installations.

Critical infrastructure.

Major population centres.

Significance

BMD Phase-II validation marks a major step toward achieving this vision.

Phases of India's BMD Programme

Phase-I (Completed)

Status

Successfully completed in 2019.

Target Capability

Interception of:

SRBMs.

MRBMs.

Range Coverage

Ballistic missiles up to 2,000 km range.

Key Interceptors

Prithvi Defence Vehicle (PDV)

Role

Exo-atmospheric interceptor.

Function

Destroys targets outside the atmosphere.

Advanced Air Defence (AAD)

Role

Endo-atmospheric interceptor.

Function

Neutralizes threats within the atmosphere.

Tracking Infrastructure

Long Range Tracking Radar (LRTR)

Popular Name

Swordfish Radar.

Features

Active phased-array radar.

Tracks multiple high-speed targets simultaneously.

Long-range surveillance capability.

Phase-II (Under Validation)

Objective

Counter:

Intermediate-Range Ballistic Missiles (IRBMs).

ICBM-class threats.

Target Range

Missiles with ranges from 3,000 km to over 5,500 km.

New Interceptors

AD-1 Interceptor

Features

Long-range interceptor.

Effective against:

Low exo-atmospheric targets.

Endo-atmospheric targets.

Role

Provides flexible interception capability.

AD-2 Interceptor

Features

High-speed solid-fuel interceptor.

Role

Designed against:

Faster ballistic missiles.

IRBM-class threats.

ICBM-class threats.

Significance

Enhances India's capability to defend against strategic missile attacks.

Phase-III (Under Development)

Objective

Counter next-generation missile threats.

AD-AH (Anti-Hypersonic Interceptor)

Purpose

Designed to intercept **Hypersonic Glide Vehicles (HGVs)**.

Challenge

HGVs travel at speeds above **Mach 5** and can maneuver unpredictably.

Importance

One of the most challenging threats in modern missile defence.

AD-AM (Anti-MIRV Interceptor)

Purpose

Designed to counter **Multiple Independently Targetable Re-entry Vehicles (MIRVs)**.

What is MIRV?

A single ballistic missile carrying multiple nuclear warheads.

Each warhead can strike different targets independently.

Importance

Essential for future strategic deterrence.

Naval Anti-Ship Missile – Medium Range (NASM-MR)

About

NASM-MR is an indigenous subsonic anti-ship cruise missile developed by DRDO for the **Indian Navy**.

Purpose

Destroy hostile:

Frigates.

Corvettes.

Destroyers.

Other medium-sized naval vessels.

Key Features of NASM-MR

Multi-Platform Launch Capability

Future Variants

Ship-launched.

Air-launched.

Submarine-launched.

Operational Advantage

Provides flexibility across different naval platforms.

Complementing NASM-SR

NASM-SR

Naval Anti-Ship Missile – Short Range.

Role

Helicopter-launched anti-ship missile.

Benefit

Together, NASM-SR and NASM-MR create a layered anti-ship strike capability.

Propulsion System

Small Gas Turbine Jet Engine (SGTJE)

Features

Indigenous propulsion technology.

Supports sustained cruise flight.

Sea-Skimming Flight Profile

Meaning

Missile flies extremely close to the sea surface.

Advantages

Reduces radar detection.

Increases survivability against enemy air defence systems.

Range and Payload

Maximum Range

Up to **350 km**.

Warhead

More than **200 kg** payload.

Capability

All-weather operational performance.

Advanced Guidance System

Dual-Mode Seeker

Active Radar Seeker

Detects and tracks naval targets.

Imaging Infrared (IIR) Seeker

Provides terminal precision guidance.

Advantage

High resistance against electronic countermeasures (ECM).

Enhanced target accuracy.

Long Range Land Attack Cruise Missile (LRLACM)

About

LRLACM is a fully indigenous long-range precision strike cruise missile.

Objective

Enable deep strikes against strategic enemy targets.

Technological Indigenisation

Atmanirbhar Bharat

Developed using indigenous technologies under the **Atmanirbhar Bharat** initiative.

Collaborative Development

Multiple DRDO laboratories and Indian defence industries contributed to the programme.

Nodal Agency

Aeronautical Development Establishment (ADE)

Location

Aeronautical Development Establishment

Role

Lead laboratory responsible for development of LRLACM.

Strategic Significance of LRLACM

Long-Range Precision Strike Capability

Enables engagement of targets deep inside enemy territory.

Enhanced Deterrence

Strengthens India's conventional deterrence posture.

Operational Readiness

Improves flexibility across multiple theatres of operation.

Indigenous Capability

Reduces dependence on foreign missile technologies.

Strategic Significance of Recent DRDO Tests

Strengthening National Security

Enhances protection against advanced missile threats.

Improving Deterrence

Increases India's ability to deter hostile actions.

Technological Self-Reliance

Promotes indigenous defence innovation.

Future Warfare Preparedness

Builds capabilities against:

Hypersonic weapons.

MIRVs.

Long-range missile threats.

Advanced naval warfare challenges.

Challenges

High Development Costs

Advanced missile defence technologies require substantial investment.

Emerging Threats

Hypersonic and maneuverable missiles remain difficult to intercept.

Technological Complexity

Integration of radars, sensors and interceptors requires sophisticated command systems.

Continuous Modernisation

Constant upgrades are needed to counter evolving threats.

Conclusion

The successful testing of the **Multi-layered Ballistic Missile Defence System, NASM-MR, and LRLACM** marks a major milestone in India's defence modernisation journey.

These developments significantly enhance India's missile defence shield, naval strike capability and long-range precision attack potential while advancing the goals of **Atmanirbhar Bharat** and strengthening national security.

As Phase-II and Phase-III missile defence capabilities mature, India is steadily emerging as one of the world's leading powers in advanced missile and air defence technologies.

Lieutenant General Dhiraj Seth Appointed as the Next Chief of the Army Staff



Why in News?

The Government of India has appointed **Lieutenant General Dhiraj Seth** as the next **Chief of the Army Staff (COAS)**.

He will assume office on **30 June 2026**, succeeding **General Upendra Dwivedi**.

His appointment comes at a time when the Indian Army is pursuing major reforms in force modernisation, technology integration and joint military preparedness.

About Lieutenant General Dhiraj Seth

Professional Education

Higher Command Course

Graduated from the Higher Command Course, one of the premier military leadership programmes for senior officers.

National Defence College (NDC)

Alumni of the prestigious **National Defence College**, which prepares senior officers for strategic leadership roles.

International Military Training

Attended the Command and Staff Course in **Paris**. Undertook defence acquisition and strategic studies training at the **Naval Postgraduate School**.

Career Distinction

Association with 2nd Lancers

Historic Achievement

He will become the **third Army Chief** from the prestigious **2nd Lancers Regiment**.

Previous Army Chiefs from the Regiment

General Maharaj Shri Rajendrasinhji Jadeja

General Bipin Chandra Joshi

Armoured Corps Representation

Rare Achievement

He will be the first officer from the **Armoured Corps** to become Army Chief in nearly three decades.

Previous Armoured Corps Army Chief

General Shankar Roy Chowdhury

Significance

Highlights the growing importance of mechanised warfare and armoured capabilities in India's defence planning.

Major Command Appointments

South Western Command

Role

Commanded the **South Western Command**, responsible for a strategically important theatre along India's western front.

Importance

Oversaw operational preparedness and force deployment in a sensitive region.

Southern Command

Role

Commanded the **Southern Command**.

Significance

Responsible for strategic military planning, logistics and operational readiness across southern India.

Rare Distinction

Lieutenant General Dhiraj Seth is among a select group of officers to have commanded **two operational Army Commands**.

He provided strategic leadership across critical military theatres for more than two-and-a-half years.

Operational Legacy

Operation Sindoor

Role

Served as General Officer Commanding-in-Chief of Southern Command during **Operation Sindoor**.

Responsibilities

Oversaw military formations tasked with:

Securing sectors in Gujarat.

Securing sectors in Rajasthan.

Countering hostile drone threats.

Responding to aerial security challenges.

Importance

Demonstrated leadership in managing emerging security threats such as drone warfare and cross-border aerial incursions.

International Experience

United Nations Mission

UN Angola Verification Mission

Served with the **United Nations Angola Verification Mission**.

Significance

Gained valuable international operational and peacekeeping experience.

Contribution

Enhanced India's role in global peacekeeping and multilateral military cooperation.

Awards and Honours

Param Vishisht Seva Medal (PVSM)

About

One of India's highest peacetime military decorations.

Awarded For

Distinguished service of the most exceptional order.

Uttam Yudh Seva Medal (UYSM)

About

Awarded for distinguished service during conflict and operational situations.

Ati Vishisht Seva Medal (AVSM)

About

Awarded for exceptional service of a high order.

Significance

These honours reflect his distinguished military career and operational excellence.

Role in Army Modernisation

Strategic Planning Experience

Army Headquarters

Held key appointments in:

Strategic Planning.

Capability Development.

Force Modernisation.

Technology Integration

Focus Areas

Adoption of emerging military technologies.

Network-centric warfare.

Artificial Intelligence (AI).

Drone and counter-drone systems.

Capability Enhancement

Strengthening combat readiness through technological transformation.

Expected Priorities as Chief of Army Staff

Technology Absorption

Objective

Accelerate integration of advanced technologies into military operations.

Modern Equipment Induction

Focus

Induction of next-generation:

Armoured platforms.

Artillery systems.

Air defence systems.

Unmanned systems.

Platform Modernisation

Goal

Upgrade existing military platforms to meet future battlefield requirements.

Force Restructuring

Objective

Create a leaner, agile and technology-driven force.

Jointness and Integration

Importance

Strengthen coordination among:

Indian Army.

Indian Navy.

Indian Air Force.

Goal

Advance theatre command structures and integrated military operations.

Significance of the Appointment

Operational Experience

Brings extensive command experience across multiple operational theatres.

Strategic Vision

Possesses expertise in capability development and defence planning.

Modern Warfare Preparedness

Well-positioned to guide the Army through challenges posed by:

Drone warfare.

Cyber threats.

Artificial Intelligence.

Multi-domain operations.

Atmanirbhar Bharat in Defence

Expected to promote indigenous defence technologies and military self-reliance.

Challenges Before the New Army Chief

Border Security

Managing security challenges along western and northern borders.

Technology Transformation

Rapid adoption of emerging technologies in military operations.

Joint Military Integration

Enhancing interoperability among the three services.

Force Modernisation

Balancing operational readiness with long-term modernization goals.

Hybrid Warfare Threats

Countering cyber threats, drones, misinformation and electronic warfare.

Exercise Pitch Black 2026



Why in News?

The **Indian Air Force** will participate in **Exercise Pitch Black 2026**, a major multinational air combat exercise hosted by **Royal Australian Air Force**.

The exercise is one of the largest and most significant air warfare drills in the Indo-Pacific region.

What is Exercise Pitch Black?

About

Exercise Pitch Black is the flagship multinational air combat exercise conducted by the Royal Australian Air Force (RAAF).

Location

Conducted in the **Northern Territory**.

Duration

Scheduled from **20 July to 7 August 2026**.

Nature

High-intensity multinational air warfare exercise.

Focuses on realistic combat scenarios and integrated military operations.

Scale of the Exercise

Large Participation

Involves more than **100 aircraft** and thousands of military personnel.

Significance

Considered one of the world's largest multinational air combat exercises.

Training Components

Advanced air combat tactics.

Mission planning.

Air-to-air operations.

Air-to-ground operations.

Integrated combat training.

Joint force coordination.

Objectives of Exercise Pitch Black 2026

Enhancing Operational Interoperability

Purpose

Improve coordination among participating air forces.

Importance

Enables seamless joint operations during real-world contingencies.

Strengthening Military Cooperation

Objective

Promote defence collaboration among friendly nations.

Benefit

Builds mutual trust and strategic partnerships.

High-Intensity Combat Training

Focus

Simulate complex air warfare environments.

Outcome

Improve operational readiness and combat effectiveness.

Mission Planning and Coordination

Purpose

Develop integrated planning capabilities.

Importance

Enhances multinational operational efficiency.

Participating Countries

Major Participants

The exercise will include more than 19 countries, including:

India

Australia

United States

United Kingdom

Japan

France

Indonesia

Singapore

South Korea

Canada

along with several other Indo-Pacific partners.

Significance for India

Enhanced Operational Readiness

Benefit

Provides exposure to advanced air combat environments.

Importance

Improves IAF's capability to operate in multinational missions.

Interoperability with Friendly Air Forces

Objective

Improve coordination with partner countries.

Outcome

Facilitates joint responses to regional security challenges.

Technology and Tactical Learning

Benefit

Exposure to advanced aircraft, weapons systems, and operational doctrines.

Result

Strengthens professional competence and tactical expertise.

Strengthening India-Australia Defence Relations

Importance

Reflects growing strategic cooperation between India and Australia.

Context

Defence cooperation has become a key pillar of the India-Australia Comprehensive Strategic Partnership.

Significance for the Indo-Pacific Region Regional Security

Role

Promotes a stable and secure Indo-Pacific.

Collective Defence Preparedness

Benefit

Enhances readiness against emerging security threats.

Confidence Building

Importance

Strengthens military-to-military trust among participating nations.

Rules-Based Order

Contribution

Supports a free, open, and inclusive Indo-Pacific region.

India–Australia Defence Cooperation Exercise AUSTRA HIND

Service

Army Exercise.

Objective

Strengthen cooperation between the Indian Army and Australian Army.

Exercise AUSINDEX

Service

Naval Exercise.

Participants

Indian Navy and Royal Australian Navy.

Focus

Maritime security and naval interoperability.

Exercise MALABAR

Nature

Multilateral Naval Exercise.

Participants

India

United States

Japan

Australia

Objective

Strengthen maritime cooperation and security in the Indo-Pacific.

Conclusion

Exercise Pitch Black 2026 highlights the growing importance of multinational military cooperation in the Indo-Pacific region.

India's participation reflects its commitment to enhancing operational readiness, strengthening defence partnerships, and contributing to regional security.

Alongside exercises such as **AUSTRA HIND**, **AUSINDEX**, and **MALABAR**, Pitch Black reinforces India's expanding strategic engagement with Australia and other like-minded partners in support of a stable, secure, and rules-based Indo-Pacific.

Exercise Khaan Quest 2026



Why in News?

An **Indian Army contingent** participated in the opening ceremony of **Exercise Khaan Quest 2026** in **Mongolia**, held from **20 June to 3 July 2026**.

About Exercise Khaan Quest

Definition

Exercise Khaan Quest is a **multilateral military exercise** focused on preparing participating armed forces for **United Nations Peacekeeping Operations (UNPKOs)** and peace support missions in a multinational environment.

Objective

Enhance:

Interoperability among participating militaries.

Operational readiness.

Coordination and cooperation.

Capability for UN peace support operations.

Historical Background

Origin

Started in **2003** as a bilateral exercise between:

United States

Mongolia

Multilateral Expansion

Converted into a multinational peacekeeping exercise in **2006**.

2026 Edition

Marks the **23rd edition** of the exercise.

Participation

Countries Involved

Troops from **18 countries** are participating in the 2026 edition.

India's Participation

India has deployed a **40-member contingent**.

Composition

Troops from the **JAT Regiment**.

Personnel from various Arms and Services of the Indian Army.

Training Activities

Operational Training

Joint planning exercises.

Tactical drills.

Patrolling operations.

Checkpoint establishment.

Security Operations

Cordon and search operations.

Counter-IED (Improvised Explosive Device) drills.

Humanitarian and Peacekeeping Tasks

Evacuation of civilians.

Combat first aid.

Casualty evacuation procedures.

UN Charter Connection

Chapter VII of the UN Charter

About

Deals with actions by the **United Nations Security Council** in response to:

Threats to peace.

Breaches of peace.

Acts of aggression.

Purpose

Authorizes enforcement measures to maintain or restore international peace and security.

Significance for India

Commitment to UN Peacekeeping

Demonstrates India's continued support for global peace and stability.

Operational Experience

Provides exposure to multinational military environments and peacekeeping scenarios.

Enhanced Interoperability

Improves coordination and compatibility with foreign armed forces.

Strategic Partnership with Mongolia

Strengthens defence cooperation and bilateral relations with **Mongolia**.

Global Security Role

Reinforces India's image as a responsible stakeholder in international peace and security.

Importance of UN Peacekeeping for India

Leading Contributor

India has been one of the largest contributors to UN Peacekeeping Missions.

Professional Expertise

Indian forces have earned global recognition for professionalism and humanitarian service.

Diplomatic Benefits

Strengthens India's international standing and support for multilateralism.

Way Forward

Expand Defence Cooperation

Increase participation in multinational exercises and peacekeeping training.

Strengthen Peacekeeping Capabilities

Enhance preparedness for future UN missions.

Promote Strategic Partnerships

Deepen military cooperation with friendly countries through joint exercises.

Support Global Peace Efforts

Continue contributing to international peace, stability, and humanitarian operations through UN frameworks.

Commissioning of INS Dunagiri, INS Sanshodhak and INS Agray



Why in News?

The Prime Minister commissioned three indigenously built naval vessels—**INS Dunagiri**, **INS Sanshodhak**, and **INS Agray**—in **Kolkata**.

The ships were built by **Garden Reach Shipbuilders & Engineers** with over **75% indigenous content**, highlighting India's growing self-reliance in defence manufacturing.

About the Three Naval Vessels

Key Features

Built under the **Aatmanirbhar Bharat** initiative.

Strengthen India's naval capabilities across:

Blue-water operations.

Hydrographic surveys.

Anti-submarine warfare.

Maritime domain awareness.

INS Dunagiri

About

A **Project 17A Stealth Guided-Missile Frigate**.

Designed for **blue-water operations**, enabling deployment far from India's coastline.

Capabilities

Largest and most heavily armed among the three vessels.

Equipped with advanced stealth features.

Major Systems

BrahMos Missile surface-to-surface missiles.

Medium Range Surface-to-Air Missile (MRSAM) system.

MFSTAR radar.

Advanced sonar systems.

Electronic warfare suite.

Anti-submarine warfare weapons.

Significance

Enhances India's ability to counter:

Surface threats.

Air threats.

Submarine threats.

Non-conventional maritime challenges.

INS Sanshodhak

About

A **Survey Vessel Large (SVL)** designed for hydrographic and oceanographic surveys.

Functions

Mapping seabed features.

Measuring water depths.

Charting navigational routes.

Surveying port approach channels.

Collecting oceanographic data.

Equipment

Autonomous Underwater Vehicles (AUVs).

Remotely Operated Vehicles (ROVs).

Multi-beam echo sounders.

Importance

Supports:

Naval operations.

Submarine route planning.

Port development.

Safe maritime navigation.

Disaster management.

Marine scientific research.

INS Agray

About

An **Arnala-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC)**.

Role

Detects and neutralizes submarines operating in shallow and coastal waters.

Weapons and Sensors

Lightweight torpedoes.

Indigenous anti-submarine rocket launchers.

Shallow-water sonar systems.

Significance

Strengthens coastal defence and anti-submarine warfare capabilities.

Strategic Significance

Enhanced Maritime Capability

Strengthens India's naval presence across the full maritime spectrum:

Deep-sea operations.

Coastal defence.

Hydrographic surveys.

Maritime Domain Awareness

Improves monitoring and understanding of maritime activities in the Indian Ocean Region.

Countering Emerging Threats

Enhances preparedness against conventional and non-conventional maritime threats.

Indian Ocean Security

Supports India's strategic interests amid increasing naval activity by **China** and **Pakistan** in the Indian Ocean Region.

Boost to Indigenous Defence Manufacturing

Demonstrates progress under:

Aatmanirbhar Bharat.

Make in India.

Indigenous naval shipbuilding programmes.

Garden Reach Shipbuilders & Engineers (GRSE)

About

A leading Defence Public Sector Undertaking (DPSU) under the Ministry of Defence.

Headquarters

Kolkata

Role

Specializes in the design and construction of:

Warships.

Survey vessels.

Patrol vessels.

Auxiliary naval platforms.

Importance for India

Naval Modernisation

Supports the modernization of the **Indian Navy**.

Strategic Autonomy

Reduces dependence on foreign defence imports.

Blue Economy Support

Enhances maritime security necessary for economic and trade interests.

Regional Stability

Strengthens India's role as a net security provider in the Indian Ocean Region.

Way Forward

Expand Indigenous Shipbuilding

Accelerate construction of advanced naval platforms.

Strengthen Maritime Surveillance

Improve integration of survey and intelligence capabilities.

Enhance Anti-Submarine Warfare

Develop advanced underwater detection and response systems.

Promote Defence Self-Reliance

Increase indigenous content in future naval projects.

Secure the Indian Ocean Region

Continue strengthening naval capabilities to safeguard India's maritime interests and sea lines of communication (SLOCs).

BRICS National Security Advisers' (NSA) Meeting 2026



Why in News?

As the Chair of **BRICS 2026**, India hosted the **BRICS National Security Advisers' (NSA) Meeting** in **New Delhi**.

The meeting was chaired by **Ajit Doval**.

The high-level discussions took place amid evolving geopolitical developments and rising tensions in **West Asia**.

About the BRICS NSA Meeting

Purpose

To discuss emerging global security challenges.

To strengthen strategic cooperation among BRICS countries.

To prepare the agenda for the upcoming BRICS Leaders' Summit.

Focus Theme

"Non-Traditional Security Challenges Confronting the World Today"

The discussions focused on:

Cybersecurity.

Terrorism.

Artificial Intelligence (AI).

Technology governance.

Emerging global security threats.

Key Discussions

Cybersecurity

Emphasis on strengthening cyber resilience.

Addressing cybercrime and cyber threats affecting critical infrastructure.

Artificial Intelligence and Technology Governance

Discussion on responsible and ethical use of AI.

Need for global frameworks governing emerging technologies.

Counter-Terrorism

Reaffirmed the importance of collective efforts against terrorism.

Highlighted the need to combat terror financing and cross-border terrorism.

West Asia Developments

US–Iran Islamabad MoU

India welcomed the understanding reached between the United States and Iran.

Viewed it as a positive step toward regional stability.

Opening of the Strait of Hormuz

India highlighted the reopening of the **Strait of Hormuz** as crucial for:

Global energy security.

Uninterrupted oil supplies.

Reduction of supply-chain disruptions.

Stability in international trade.

Key Bilateral Engagements

India–China Discussions

Key Outcomes

A forward-looking dialogue was held with the Chinese Foreign Minister.

Both sides acknowledged progress in the gradual normalization of bilateral relations.

Significance

Emphasized the importance of:

Stable relations.

Predictability in engagement.

Mutual trust and confidence-building.

India–Iran Discussions

Focus Areas

Review of the security situation in West Asia.

Cooperation under the BRICS framework.

Strengthening bilateral relations.

Significance

Reinforced India's engagement with Iran on regional and strategic issues.

India's BRICS Chairship 2026

Chairship

India is holding the BRICS Chairship for the **fourth time**.

Previous chairships:

- 2012
- 2016
- 2021
- 2026

Rotational Mechanism

BRICS chairmanship rotates annually among member countries according to the acronym **B-R-I-C-S**.

Theme of BRICS 2026

"Building for Resilience, Innovation, Cooperation and Sustainability"

Key Objectives

Strengthen global resilience.

Promote innovation-driven growth.

Enhance multilateral cooperation.

Advance sustainable development.

Foster a humanity-centric approach to global governance.

Importance of the NSA Meeting

Preparatory Platform

Serves as an important preparatory track for the BRICS Leaders' Summit scheduled later in 2026.

Strategic Coordination

Facilitates dialogue on emerging security challenges among BRICS members.

Strengthening Multilateralism

Promotes cooperation among major emerging economies on global issues.

About BRICS

Members

- **Brazil**
- **Russia**
- **India**
- **China**
- **South Africa**

Objective

Promote economic cooperation.

Strengthen multilateralism.

Reform global governance institutions.

Enhance cooperation among emerging economies.

Significance for India

Global Leadership

Strengthens India's role in shaping global governance discussions.

Strategic Diplomacy

Provides a platform to engage major powers on security and economic issues.

Voice of the Global South

Reinforces India's commitment to representing developing countries' concerns.

Regional Stability

Enables India to contribute to discussions on regional and international peace and security.

Way Forward

Strengthen BRICS Cooperation

Enhance collaboration on security, technology, and economic issues.

Develop Common Frameworks

Promote joint approaches to AI governance and cybersecurity.

Enhance Counter-Terrorism Cooperation

Improve intelligence sharing and coordinated action against terrorism.

Promote Inclusive Multilateralism

Strengthen the role of developing countries in global decision-making.

Advance the BRICS 2026 Agenda

Focus on resilience, innovation, cooperation, and sustainability for a more stable and inclusive global order.

Foreign Contribution (Regulation) Amendment Rules, 2026



Why in News?

The **Ministry of Home Affairs (MHA)** has notified the **Foreign Contribution (Regulation) Amendment Rules, 2026**, introducing stricter compliance requirements for NGOs and associations receiving foreign funds in India.

The amendments aim to improve **transparency, accountability, and regulatory oversight** while preventing the misuse of foreign contributions.

Key Highlights of the FCRA Amendment Rules, 2026

Activity-Specific Registration

NGOs must clearly specify:

Their exact objectives.

Operational areas.

States/UTs where activities will be undertaken.

Separate fees will be charged for each activity category and State/UT.

Existing FCRA-registered organizations have one year to update and retain their approved activities and operational areas.

Regulation of Religious Activities

Foreign contributions may be used for:

Religious worship.

Religious education.

Preservation of religious heritage.

Community kitchens and charitable activities.

Ban on Proselytisation

Foreign funds cannot be used for religious conversion activities.

The rules repeatedly emphasize "**excluding proselytisation**" for permissible religious activities.

Judicial Position

In **Rev. Stainislaus v. State of Madhya Pradesh**, the Supreme Court held that:

Article 25 guarantees the right to profess, practice, and propagate religion.

However, it does not confer a fundamental right to convert another person.

Restrictions on Key Functionaries

Organizations having foreign nationals (except Persons of Indian Origin) as key functionaries will generally not be considered for registration or prior permission.

Expanded Definition of Key Functionary

Includes:

Directors.

Trustees.

Partners.

Office-bearers.

Karta of a Hindu Undivided Family (HUF).

Stricter Financial Compliance

NGOs must utilize at least **75% of previously received funds** before obtaining additional installments.

For renewal eligibility, organizations must spend at least **₹10 lakh** on approved activities over two years.

Enhanced Transparency Measures

Mandatory disclosure of:

Ultimate donor details.

Official websites.

Social media accounts.

Publications and outreach platforms.

Foreign Contribution (Regulation) Act (FCRA), 2010

About

The **Foreign Contribution (Regulation) Act (FCRA), 2010** regulates the acceptance and utilization of foreign contributions and foreign hospitality in India.

It functions as an important national security legislation.

Historical Background

Originally enacted as the **FCRA, 1976** during the Emergency period.

Replaced by the more stringent **FCRA, 2010**.

Subsequently amended in:
2016.

Recent Legislative Development

The **Foreign Contribution (Regulation) Amendment Bill, 2026** proposes changes regarding the management of foreign-funded assets of organizations whose FCRA registration is cancelled, surrendered, or not renewed.

Nodal Ministry

Ministry of Home Affairs (MHA)

Responsible for implementation, monitoring, and enforcement of the FCRA framework.

Objectives of FCRA

Regulation of Foreign Funding

Monitor foreign contributions received by individuals, associations, and companies.

Protection of National Interests

Ensure foreign funds do not adversely affect:

Sovereignty and integrity of India.

Internal security.

Public interest.

Democratic institutions.

Constitutional Linkage

Article 19(1)(c)

Guarantees the fundamental right to form associations.

Judicial Interpretation

In **Noel Harper v. Union of India**, the Supreme Court upheld the constitutional validity of FCRA, 2010.

The Court held that the restrictions are reasonable under **Article 19(4)** to protect:

Public order.

Sovereignty.

Integrity of India.

Salient Features of FCRA, 2010

Registration Requirement

No person or organization can receive foreign contributions without:

FCRA Registration, or

Prior Permission from the Central Government for a specific grant.

Eligibility for Registration

Organizations must be registered under:

Societies Registration Act, 1860

Indian Trusts Act, 1882

Companies Act, 2013

Eligible Sectors

Organizations engaged in:

Cultural activities.

Educational activities.

Religious activities.

Economic development.

Social welfare.

Persons Prohibited from Receiving Foreign Contributions

Restricted Categories

Election candidates.

Members of Parliament (MPs).

Members of Legislative Assemblies (MLAs).

Political parties.

Judges.

Government servants.

Employees of government-owned corporations.

Publishers, editors, and cartoonists of registered news media.

Judicial Clarification

In **Indian Social Action Forum v. Union of India**, the Supreme Court upheld FCRA's objectives.

The Court clarified that only organizations engaged in active or party politics are barred from receiving foreign contributions.

SBI FCRA Account Mandate

Designated Bank Account

All foreign contributions must first be received in a designated **FCRA Account** at the **State Bank of India New Delhi Main Branch**.

Ban on Transfer of Foreign Funds

FCRA Amendment Act, 2020

Prohibits transfer or sub-granting of foreign contributions to any other person or organization, including FCRA-registered entities.

Registration Validity and Renewal Validity

FCRA registration remains valid for **5 years**.

Renewal

Renewal applications must be submitted online at least **6 months before expiry**.

Significance of FCRA

National Security

Prevents undue foreign influence on India's political and social institutions.

Financial Transparency

Promotes accountability in the utilization of foreign funds.

Regulatory Oversight

Ensures proper monitoring of foreign-funded activities.

Protection of Democratic Processes

Safeguards sovereignty and public interest.

Challenges

Compliance Burden

Increased procedural requirements may affect smaller NGOs.

Operational Constraints

Restrictions on fund transfers can impact collaborative projects.

Balancing Regulation and Freedom

Need to balance national security concerns with the functioning of civil society organizations.

Way Forward

Strengthen Transparency

Enhance digital monitoring and disclosure mechanisms.

Facilitate Genuine NGOs

Simplify procedures for organizations engaged in legitimate developmental work.

Capacity Building

Support NGOs in meeting compliance requirements.

Balanced Regulation

Ensure that regulatory measures protect national interests without unnecessarily restricting humanitarian and developmental activities.

Promote Accountability

Maintain robust oversight while encouraging responsible utilization of foreign contributions.

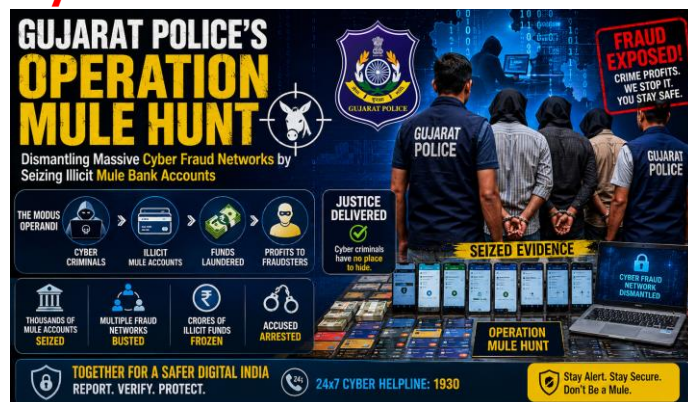


EDITORIALS

Crux of The Hindu & Indian Express

Internal Security

Operation Mule Hunt 1.0: Gujarat Police's Mega Crackdown on Cyber Fraud



Why in News?

Gujarat Police conducted "**Operation Mule Hunt 1.0**", one of India's biggest cybercrime crackdowns. The operation exposed cyber fraud worth **₹2,289 crore**.

It led to:

565 FIRs

638 arrests

Action against **913 mule accounts**

Detection of **4,000+ cybercrime cases**

The operation targeted **mule accounts**, which are the financial backbone of cyber fraud networks.

What is Operation Mule Hunt 1.0?

A statewide anti-cybercrime operation launched by **Gujarat Police**.

Led by the **Cyber Centre of Excellence (CCOE)**.

Focused on dismantling financial networks used by cybercriminals.

Shifted focus from merely catching fraudsters to disrupting the money trail.

Objective

Protect citizens from online fraud.

Trace stolen money.

Break cybercrime ecosystems.

Strengthen cybercrime prevention mechanisms.

What are Mule Accounts?

Definition

A **Mule Account** is a bank account used to:

Receive fraud money.

Transfer stolen funds.

Hide the identity of cybercriminals.

Money Mule

A person whose account is used for illegal transactions.

The account holder may:

Knowingly assist criminals for commission.

Unknowingly allow misuse of the account.

Why are Mule Accounts Important?

Cybercriminals use mule accounts to:

Receive stolen funds.

Move money across multiple accounts.

Avoid detection.

Launder illegal proceeds.

Therefore , Mule Accounts = Financial Lifeline of Cyber Fraud Networks

How Was the Operation Conducted?

Agencies Involved

The operation involved:

Cyber Centre of Excellence (CCOE)

Police Commissionerates

Range Headquarters

Local Crime Branches

Cyber Police Stations

Banks and Financial Institutions

Intelligence Sources Used

Indian Cyber Crime Coordination Centre (I4C)

Provided cybercrime intelligence and data.

National Cyber Crime Reporting Portal (NCRP)

Helped identify fraud complaints and suspicious accounts.

Cybercrime Helpline 1930

Provided real-time information regarding cyber fraud cases.

Coordination Portal

Facilitated information sharing among agencies.

Institutional Measures

Nodal Officers

Appointed in every district.

Responsible for coordination and monitoring.

Dedicated Investigation Teams

Focused on:

Complaint verification.

Financial tracking.

Arrest operations.

Real-Time Banking Support

Banks were directed to:

Share transaction data quickly.

Report suspicious activities.

Assist investigators.

Major Achievements

Indicator	Outcome
Total Cyber Fraud Exposed	₹2,289 Crore
FIRs Registered	565
Arrests Made	638
Mule Accounts Targeted	913
Cybercrime Cases Detected	4,000+

Impact on Cyber Fraud Networks

Reduction in Cheque Withdrawals

Before Operation

Monthly withdrawals: ₹126 crore

After Operation

Monthly withdrawals: ₹25 crore

Result

Nearly **80% decline**

Reduction in First-Layer Mule Accounts

First-Layer Mule Accounts

Accounts where stolen money is first deposited.

Outcome

Around **30% decline**

Observed between August–December 2025.

Reduction in ATM Withdrawals

Outcome

Around **66% decline**

Observed between September–December 2025.

Significance

Indicates cybercriminals found it difficult to access stolen funds.

Why is the Operation Significant?

Shift Towards Data-Driven Policing

The operation relied on:

Big Data Analytics

Digital Intelligence

Financial Transaction Monitoring

Inter-Agency Coordination

Targeting the Root Cause

Instead of focusing only on cybercriminals, the operation targeted:

Financial Infrastructure of Cybercrime

This significantly disrupted the functioning of organised fraud networks.

Model for Future Cybercrime Investigations

The operation demonstrates how:

Technology

Financial intelligence

Banking cooperation

can be combined to combat cybercrime effectively.

New Initiatives After the Operation

AI-Based Risk Scoring System

Being developed under guidance of the **Reserve Bank of India (RBI)**.

Features

Transactions will be classified as:

Low Risk

Medium Risk

High Risk

Benefits

Early fraud detection.

Real-time monitoring.

Faster intervention.

MuleHunter.ai Platform

Purpose

Intelligence sharing among banks.

Detection of suspicious accounts.

Identification of fraud patterns.

Significance

Improves coordination against cyber fraud networks.

About I4C , Indian Cyber Crime Coordination Centre (I4C)

Nodal Ministry

Ministry of Home Affairs

Functions

Cybercrime coordination.

Cyber intelligence gathering.

Capacity building.

Cyber forensics support.

Public awareness.

Key Platforms

National Cyber Crime Reporting Portal

Cybercrime Helpline 1930

Challenges in Combating Cyber Fraud

Rapidly Evolving Cybercrime Techniques

AI-enabled frauds.

Deepfakes.

Phishing attacks.

Cross-Border Networks

Many syndicates operate from outside India.

Low Public Awareness

Citizens often become victims or money mules unknowingly.

Technological Complexity

Increasing use of:

Cryptocurrency.

Encrypted communication.

Anonymous digital platforms.

Way Forward

Strengthen AI-Based Monitoring Systems

Real-time fraud detection.

Predictive risk assessment.

Improve Banking Surveillance

Stronger KYC norms.

Better transaction monitoring.

Enhance Inter-Agency Coordination

Police.

RBI.

Banks.

I4C.

Increase Public Awareness

Awareness campaigns on cyber fraud.

Education regarding mule accounts.

Update Cyber Laws

Address emerging technological threats.

Strengthen enforcement mechanisms.

Conclusion

Operation Mule Hunt 1.0 represents a major shift in India's cybercrime strategy by targeting the **financial lifelines of cybercriminals**. The exposure of **₹2,289 crore worth of cyber fraud**, hundreds of arrests, and the disruption of mule account networks demonstrate the effectiveness of intelligence-led and technology-driven policing. The initiative provides a model for future cybercrime enforcement and strengthens India's efforts to build a safer digital ecosystem.

AUKUS Underwater Drone Project: US, UK and Australia Deepen Defence Cooperation



Why in News?

The **United States, United Kingdom and Australia** have announced a joint project to develop advanced **Uncrewed Undersea Vehicle (UUV)** technology under the **AUKUS security partnership**.

Key highlights include:

Announcement made during the **Shangri-La Dialogue 2026** in Singapore.

The UUV technology is expected to be operational by **2027**.

The UK has committed **£150 million (about USD 201 million)** to the project.

It is the first major project under **AUKUS Pillar II**.

The project aims to strengthen protection of **undersea cables, pipelines and critical maritime infrastructure**.

The initiative comes amid growing concerns regarding undersea activities by Russia and China and increasing threats to critical seabed infrastructure.

What is AUKUS?

AUKUS is a trilateral security partnership among:

Australia

United Kingdom

United States

The partnership was announced in **September 2021**.

Objective

Strengthen defence cooperation.

Enhance military capabilities.

Accelerate technological integration.

Promote stability in the Indo-Pacific region.

Counter emerging security challenges.

AUKUS builds upon long-standing defence and intelligence cooperation among the three countries.

Two Pillars of AUKUS

The partnership consists of two major pillars.

Pillar I: Nuclear-Powered Submarine Programme

Objective

To assist Australia in acquiring its first fleet of:

Conventionally armed

Nuclear-powered submarines

Key Features

Does **not involve transfer of nuclear weapons**.

Australia becomes only the second country after the UK to receive US nuclear propulsion technology. Submarines are expected to enter service in the **2040s**.

Interim Arrangement

Before the AUKUS submarines become operational: US and UK nuclear submarines will rotate through Australia.

Australia will purchase second-hand US nuclear-powered submarines during the 2030s.

Pillar II: Advanced Defence Technologies

Objective

To jointly develop next-generation military capabilities.

Areas of Cooperation

Artificial Intelligence (AI)

Quantum Technologies

Cyber Technologies

Information Sharing

Undersea Systems

Hypersonic Weapons

Counter-Hypersonic Technologies

Electronic Warfare

The newly announced underwater drone project falls under Pillar II.

What is the New Underwater Drone Project?

The three countries will jointly develop advanced:

Uncrewed Undersea Vehicles (UUVs)

These are underwater drones capable of operating without onboard human crews.

The project is considered the first flagship initiative under **AUKUS Pillar II**.

Purpose of the Project

The UUVs will be designed to perform multiple missions including:

Protection of Critical Infrastructure

Undersea communication cables.

Energy pipelines.

Strategic seabed assets.

Surveillance and Reconnaissance

Intelligence gathering.

Maritime monitoring.

Detection of suspicious activities.

Strike Operations

Deployment of advanced payloads.

Offensive military capabilities.

Logistics Support

Transport of equipment and supplies.

Support for naval operations.

Key Technologies to be Developed

According to the joint announcement, the project will focus on developing:

Advanced Payload Systems

Sensors.

Monitoring equipment.

Mission-specific technologies.

Weapons Systems

Precision engagement capabilities.

Advanced underwater combat systems.

Autonomous Technologies

Artificial intelligence-enabled navigation.

Autonomous mission execution.

Undersea Robotics

Long-duration underwater operations.

Remote and autonomous control systems.

Why Are Undersea Cables Important?

The project places special emphasis on protecting undersea infrastructure.

Importance of Undersea Cables

Undersea cables carry:

Internet traffic.

International communications.

Financial transactions.

Data transfers.

More than 95% of global internet and communication traffic travels through submarine cables.

Strategic Importance

Damage to undersea cables can disrupt:

Digital communications.

Banking systems.

International trade.

National security operations.

As a result, protecting these cables has become a major security priority.

Growing Concerns Over Undersea Infrastructure Security

The announcement comes amid increasing concerns regarding sabotage and damage to underwater infrastructure.

Russian Activities

The UK has repeatedly raised concerns regarding:

Russian naval activities.

Surveillance of underwater infrastructure.

Potential threats to cables and pipelines.

Recent Developments

UK reported a significant increase in Russian vessels near its waters.

The UK and Norway signed an agreement in 2025 to track Russian submarine activity in the North Atlantic.

Russia has denied allegations of targeting underwater infrastructure.

Chinese Activities

Chinese vessels have also been linked to incidents involving damaged undersea cables.

Areas of Concern

Waters around Taiwan.

Baltic Sea region.

Northern European waters.

Although direct evidence remains disputed in some cases, concerns over undersea infrastructure security have increased significantly.

Strengthening Indo-Pacific Security

The project is widely viewed as part of broader efforts to strengthen security in the Indo-Pacific.

Context

Rising maritime competition.

Increasing military modernization.

Territorial disputes in the South China Sea.

The project enhances the ability of AUKUS countries to monitor and secure critical maritime regions.

Enhancing Deterrence

Advanced UUV capabilities can improve deterrence by:

Increasing surveillance capacity.

Improving underwater domain awareness.

Enhancing response capabilities.

This contributes to strategic stability in:

Indo-Pacific region.

Atlantic Ocean.

Arctic and High North regions.

Boosting Technological Integration

The project strengthens collaboration among:

Defence industries.

Research institutions.

Military establishments.

This supports the broader AUKUS objective of accelerating defence innovation.

Challenges Facing AUKUS

Despite its strategic importance, AUKUS faces several challenges.

Concerns Regarding Slow Progress

Critics have argued that implementation of AUKUS projects has been slower than expected.

Key Concern

Delays in submarine construction.

Long timelines for capability development.

During the announcement, UK Defence Secretary **John Healey** acknowledged criticism and stated that the three governments are now accelerating implementation.

Australia's Submarine Capability Gap

Australia faces concerns regarding:

Ageing submarine fleet.

Long wait until AUKUS submarines become operational.

Challenge

The first AUKUS submarines are expected only in the 2040s.

To bridge the gap:

US and UK submarines will rotate through Australia.

Australia will acquire second-hand US submarines.

Regional Concerns

Some countries have expressed concerns that AUKUS may:

Intensify strategic competition.

Contribute to regional militarisation.

Increase tensions in the Indo-Pacific.

China has repeatedly criticized the partnership.

Significance for Australia

For Australia, AUKUS represents the most significant defence modernization initiative in its history.

Benefits

Access to advanced military technology.

Enhanced naval capabilities.

Greater interoperability with allies.

Improved maritime security.

Australia's Defence Minister **Richard Marles** has described AUKUS as critical for the country's future security and stated that there is no viable alternative ("no Plan B").

Challenges to Undersea Infrastructure Globally

Recent incidents have highlighted the vulnerability of underwater infrastructure.

Major Threats

State-sponsored sabotage.

Maritime espionage.

Accidental damage by ships.

Cyber-enabled attacks.

Geopolitical tensions.

As global dependence on undersea cables increases, securing these assets has become a major international security concern.

Way Forward

Accelerate AUKUS Implementation

Ensure timely delivery of projects.

Reduce bureaucratic delays.

Strengthen Undersea Surveillance

Deploy advanced sensors.

Expand maritime domain awareness.

Promote Technology Sharing

Enhance collaboration in AI, robotics and autonomous systems.

Protect Critical Infrastructure

Improve monitoring of undersea cables and pipelines.

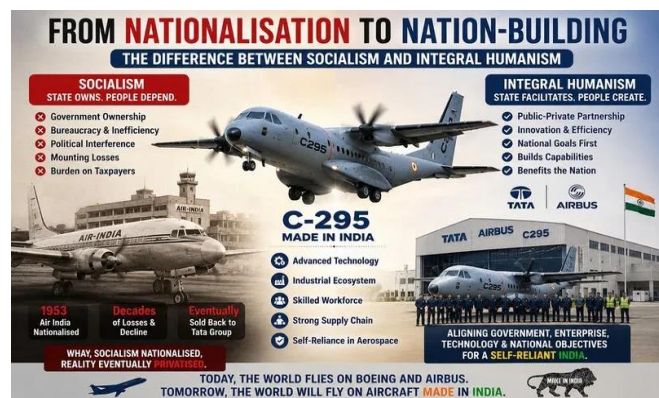
Strengthen international cooperation.

Maintain Regional Stability

Balance deterrence with diplomatic engagement.

Promote a free, open and rules-based Indo-Pacific.

C295 Military Transport Aircraft: India Builds Its First Military Aircraft in the Private Sector



Why in News?

On **10 June 2026**, the first **C295 military transport aircraft** manufactured in India successfully completed its maiden test flight from the **Tata-Airbus Final Assembly Line (FAL), Vadodra, Gujarat**.

This aircraft has been built by **Tata Advanced Systems Limited (TASL)** in partnership with **Airbus Defence and Space**.

The achievement is historic because it is the **first military aircraft ever manufactured and rolled out by a private Indian company**, marking a major step towards **Aatmanirbhar Bharat (Self-Reliant India)** in the defence sector.

Historic Significance

First Military Aircraft Built by India's Private Sector

Traditionally, military aircraft production in India was dominated by public sector organisations such as:

Hindustan Aeronautics Limited (HAL)

Defence Public Sector Undertakings (DPSUs)

The C295 programme marks:

The first successful military aircraft production by a private Indian company.

A major expansion of private sector participation in defence manufacturing.

A shift from defence imports towards domestic production.

Growing confidence in India's private aerospace industry.

Why is it a Landmark Event?

The successful maiden flight demonstrates India's growing capability in:

Aerospace manufacturing

Aircraft assembly

Defence industrial production

Technology absorption

Global defence collaboration

It shows that India is moving beyond merely importing defence equipment and is developing the capability to manufacture sophisticated military platforms domestically.

About the C295 Programme

Background

In **September 2021**, India signed a contract with Airbus for the procurement of:

56 C295 Military Transport Aircraft

Contract Value

₹21,935 crore

Production Distribution

First 16 Aircraft

Manufactured in Spain by Airbus.

Delivered directly to the Indian Air Force (IAF).

Remaining 40 Aircraft

Manufactured in India.

Produced at the Tata-Airbus facility in Vadodra, Gujarat.

This arrangement aims to gradually transfer manufacturing capabilities to India.

Objective of the Programme

The C295 aircraft is being inducted to replace the ageing:

Avro HS-748 transport aircraft

The Avro fleet has served the Indian Air Force for more than six decades and has become increasingly outdated.

Maiden Test Flight: What Happened on 10 June 2026?

Successful First Flight

The first India-built C295:

Successfully completed its maiden flight.

Tested key onboard systems.

Demonstrated manufacturing quality standards.

Entered the certification process before induction into the IAF.

Purpose of the Test Flight

The flight was conducted to verify:

Aircraft performance

Structural integrity

Flight control systems

Safety and reliability standards

Successful completion of these tests is essential before final delivery to the Indian Air Force.

How Indigenous is the Aircraft?

Current Status

The aircraft is not yet fully indigenous.

India currently undertakes:

Structural manufacturing

Component fabrication

Final assembly

System integration

However, some high-end systems continue to be imported.

Imported Components

Engines

Supplied by **Pratt & Whitney (USA)**

Avionics

Supplied by **Collins Aerospace (USA)**

These systems are imported and integrated into the aircraft during assembly in India.

Indigenous Components

Airframe Manufacturing

Major structures manufactured in India include:

Fuselage sections

Tail assembly

Structural components

Production of these parts began at Tata's Hyderabad facility in 2023.

Indigenous Defence Systems

Bharat Electronics Limited (BEL)

Developed:

Radar Warning Receivers (RWR)

Missile Approach Warning Systems (MAWS)

Bharat Dynamics Limited (BDL)

Manufactured:

Countermeasure Dispensing Systems

These systems improve aircraft survivability during combat operations by detecting threats and deploying defensive measures.

Indigenisation Roadmap

Component Manufacturing

The C295 airframe contains:

More than **14,000 components**

Out of these:

Around **3,500 components** are expected to be manufactured annually in India.

Increasing Indigenous Content

According to Airbus:

Initial Aircraft

Lower indigenous content.

Greater dependence on imported systems.

Later Aircraft

Increasing local manufacturing participation.

By the 32nd Aircraft

Indigenisation expected to reach **98% on a labour-hour basis**.

Last Eight Aircraft

Expected to have the highest level of indigenous manufacturing.

This indicates a gradual transfer of manufacturing expertise and production capabilities to India.

Final Assembly Line (FAL), Vadodara

Importance

The Vadodara facility is:

India's first private military aircraft assembly line.

The first complete military aircraft manufacturing ecosystem in the private sector.

It represents a major breakthrough for India's defence-industrial base.

Production Capacity

The facility is expected to:

Manufacture all 40 India-built aircraft.

Deliver aircraft between 2026 and 2031.

Produce approximately 12 aircraft annually.

About the C295 Aircraft

Type

Tactical Military Transport Aircraft

Developed By

Airbus Defence and Space

Key Features

Twin-Engine Aircraft

Powered by turboprop engines.

Medium Transport Category

Used for:

Troop transport

Cargo transport

Logistics support

Humanitarian missions

Disaster relief operations

Operational Capability

The aircraft can operate from:

Short runways

Semi-prepared airstrips

Remote and rugged locations

This makes it highly suitable for:

Himalayan regions

Northeast India

Island territories

Impact on India's Defence Ecosystem

Employment Generation

The programme is expected to create:

More than 15,000 Jobs

Including:

Direct employment

Indirect employment

Skilled aerospace jobs

This will help build a highly trained aerospace workforce in India.

Boost to MSMEs

The programme creates opportunities for:

Micro, Small and Medium Enterprises (MSMEs)

Tier-II suppliers

Tier-III suppliers

These companies will become part of India's defence manufacturing supply chain.

Benefits to Industry

Indian firms will gain:

Aerospace manufacturing expertise

Exposure to global standards

Advanced engineering capabilities

Participation in global supply chains

Contribution to Aatmanirbhar Bharat

Reducing Import Dependence

For decades, India has been among the world's largest defence importers.

The C295 programme supports:

Domestic defence manufacturing

Indigenous capability development

Strategic self-reliance

Growth of Defence Manufacturing

India's defence production reached:

₹1.46 Lakh Crore (2024-25)

The C295 programme is an important contributor to this growing defence-industrial capacity.

Challenges Ahead

Complete Indigenisation

India still needs to develop:

Indigenous aircraft engines

Advanced avionics

High-end aerospace systems

These remain critical gaps in self-reliance.

Supply Chain Development

Success will depend on:

Strengthening domestic suppliers

Maintaining global quality standards

Building aerospace manufacturing clusters

Technology Absorption

India must continue investing in:

Research and Development (R&D)

Aerospace engineering

Advanced manufacturing technologies

Way Forward

Expand Private Sector Participation

Encourage more private aerospace projects.

Increase private investment in defence manufacturing.

Strengthen Indigenous Components

Develop Indian aircraft engines.

Promote indigenous avionics and electronic systems.

Increase local content in future aircraft programmes.

Build a Strong Aerospace Ecosystem

Support MSMEs.

Improve skill development.

Encourage collaboration between industry and academia.

Promote global technology partnerships.

Leverage Technology Transfer

Move from assembly to complete design capability.

Develop indigenous aircraft design and manufacturing expertise.

Conclusion

The successful maiden flight of the first India-built C295 transport aircraft is a historic milestone in India's defence manufacturing journey. It is the first military aircraft manufactured by a private Indian company and reflects the growing strength of India's aerospace industry. Although the aircraft is not yet fully indigenous, the programme is laying the foundation for advanced domestic manufacturing, skilled workforce development, technology acquisition, and strategic self-reliance. It represents a major step towards achieving the vision of **Aatmanirbhar Bharat** and transforming India into a global defence manufacturing hub.

Great Nicobar Island Development Project: New ₹13,000 Crore Airport Approved



Why in News?

The Government of India has approved a **₹13,000 crore Greenfield Civil-Military Airport** in **Great Nicobar Island**.

The airport will be developed near **Galathea Bay** under the larger **₹81,000 crore Great Nicobar Island Development Project**.

The government has decided **not to expand INS Baaz**, the existing naval air station at Campbell Bay. The project has triggered debate over its **strategic benefits, environmental impact, and tribal rights concerns**.

Key Decision : New Greenfield Civil-Military Airport

Location

Chingen, near **Galathea Bay**.

Southeastern coast of Great Nicobar Island.

Cost

Approximately **₹13,000 crore**.

Timeline

Expected completion within **5 years**.

Operational Structure

Will function as a **dual-use airport**.

Serve both:

Civilian aviation.

Military operations.

Will remain under **Indian Navy operational control**.

Why Was INS Baaz Expansion Dropped?

Earlier Proposal

Expansion of runway at **INS Baaz** in Campbell Bay.

Existing runway length: **4,500 feet**.

Proposed expansion: Around **10,000 feet**.

Reasons for Rejection

Terrain Constraints

Difficult geographical conditions.

Limited availability of land.

Navigational Challenges

Operational difficulties due to surrounding terrain.

Infrastructure Limitations

Large supporting infrastructure required.

Environmental Concerns

Expansion could have led to:

Greater forest diversion.

Disturbance to wildlife habitats.

Impact on tribal settlements.

Government Assessment

Greenfield airport considered more feasible.

Better scope for future expansion.

Why Great Nicobar Matters?

Strategic Location

India's **southernmost island**.

Located in the **Andaman and Nicobar archipelago**.

Positioned near major international sea routes.

Near the Malacca Strait

Importance

One of the world's busiest maritime chokepoints.

Connects:

Indian Ocean.

South China Sea.

Pacific Ocean.

Significance

Large share of global trade passes through it.

Major route for oil and energy shipments.

Critical for international supply chains.

Six Degree Channel

Great Nicobar lies close to the **Six Degree Channel**.

Important sea route leading into the Malacca Strait.

Strategic Value

Enables India to:

Monitor maritime traffic.

Track naval movements.

Strengthen maritime surveillance.

Protect Sea Lines of Communication (SLOCs).

Strategic Significance for India

Strengthening Indo-Pacific Presence

The project will help India:
Expand its strategic footprint.
Enhance influence in the Indo-Pacific.
Improve maritime domain awareness.

Military Advantages

Enhanced Surveillance

Better monitoring of Indian Ocean shipping routes.
Improved tracking of military activities.

Increased Operational Reach

Faster deployment of aircraft and troops.
Improved logistics support.

Disaster Response

Quicker humanitarian assistance and disaster relief operations.

Countering Chinese Presence

The project is expected to:
Strengthen India's position in the Indian Ocean Region (IOR).
Respond to increasing Chinese maritime activity.
Improve strategic deterrence capabilities.

Existing Military Infrastructure

Andaman and Nicobar Command (ANC)

Established

2001

Significance

India's only **Tri-Service Command**.
Integrates:

Army.
Navy.
Air Force.

INS Baaz

Commissioned

2012

Importance

India's southernmost military air station.
Strategic surveillance base in the Indian Ocean.

Great Nicobar Island Development Project

Total Cost

₹81,000 Crore

The airport is one component of a larger mega-project.

Major Components

1. International Container Transshipment Terminal (ICTT)

Location

Galathea Bay.

Objective

Reduce dependence on foreign transshipment hubs such as:

Singapore
Colombo

Benefits

Boost maritime trade.
Improve logistics efficiency.
Increase India's role in global shipping.

2. Greenfield Airport

Civil-military airport.
Strategic aviation hub.

3. Power Infrastructure

Reliable electricity supply.
Support industrial and urban growth.

4. Township Development

Includes:
Residential infrastructure.
Roads.
Commercial facilities.

Social infrastructure.

Government's Justification

Strategic Importance

Government argues that the project will:
Enhance national security.
Strengthen maritime surveillance.
Improve military preparedness.

Economic Benefits

Transform Great Nicobar into a maritime hub.
Increase trade and investment.
Create employment opportunities.

Connectivity Benefits

Better connectivity with mainland India.
Improved movement of people and goods.

Environmental Concerns

Deforestation

Critics argue the project may require:
Felling of over **1.5 crore trees**.

Biodiversity Loss

Potential impact on:
Tropical rainforests.
Endemic species.
Wildlife habitats.

Coral Reef Damage

Concerns regarding:
Destruction of coral ecosystems.
Marine biodiversity loss.

Tribal Concerns

Impact on Indigenous Communities

Shompen Tribe

Most vulnerable community likely to be affected.

Concerns

Habitat loss.
Cultural disruption.
Reduced access to traditional resources.

Importance of Shompen Tribe

Classified as a **Particularly Vulnerable Tribal Group (PVTG)**.

Indigenous inhabitants of Great Nicobar.
Depend heavily on forests for livelihood.

Criticism by Opposition

Rahul Gandhi's Concerns

Rahul Gandhi

Criticised the project on grounds of:
Environmental destruction.
Tribal displacement.
Lack of transparency.

Major Questions Raised

Environmental Clearances

Adequacy of impact assessments.

Financial Viability

Cost-benefit justification.

Tribal Rights

Protection of indigenous communities.

Alternative Options

Why not expand INS Baaz instead?

Key Advantages of the New Airport

Greater Expansion Potential

More land availability.
Long-term infrastructure growth.

Better Military Utility

Larger aircraft operations.
Enhanced logistics capabilities.

Improved Civilian Connectivity

Supports tourism and economic development.

Strategic Surveillance

Better monitoring of maritime routes.

Challenges Ahead

Environmental Sustainability

Balancing development with conservation.

Protection of Tribal Rights

Ensuring participation and welfare of indigenous communities.

Project Implementation

Cost management.
Timely execution.
Infrastructure development.

Strategic-Ecological Balance

Meeting security needs without irreversible ecological damage.

Conclusion

The **Great Nicobar Island Development Project** is one of India's most ambitious strategic infrastructure initiatives. The proposed **₹13,000 crore Greenfield Airport**, along with the transshipment port and township development, can significantly strengthen India's **Indo-Pacific strategy, maritime security, trade connectivity and military reach**. However, concerns relating to **forest loss, biodiversity, coral reefs and tribal communities such as the Shompen** highlight the need for a balanced approach that combines **national security, economic development and environmental sustainability**.

Rim of the Pacific (RIMPAC) 2026



Why in News?

The **Rim of the Pacific (RIMPAC) 2026**, the world's largest multinational maritime exercise, commenced on **24 June 2026** in **Hawaii**.

The exercise is being hosted by the **United States Pacific Fleet** and will continue until **31 July 2026**.

It brings together military forces from **30 countries** to strengthen maritime security, interoperability, and regional stability in the Indo-Pacific.

What is RIMPAC?

About

Rim of the Pacific (RIMPAC) is the world's largest international maritime military exercise.

It is a multinational naval exercise involving naval, air, and land forces.

Conducted biennially under the leadership of the United States Navy.

Origin

First held in **1971**.

Edition

RIMPAC 2026 is the **30th edition** of the exercise.

Objective

Enhance interoperability among participating nations.

Improve operational readiness and combat capabilities.

Promote a free, open, and secure Indo-Pacific region.

Theme of RIMPAC 2026

"Partners: Integrated and Prepared"

Focus Areas

Collective preparedness.

Joint operational capability.

Multinational cooperation.

Regional maritime security.

Key Highlights of RIMPAC 2026

Scale of Participation

30 participating countries.

More than **30 warships and surface vessels.**

5 submarines.

More than **206 aircraft.**

15 national land forces.

Approximately **30,000 military personnel.**

Area of Operations

Conducted in and around the Hawaiian Islands and the Pacific Ocean region.

Multinational Command Structure

Deputy Commander

Andres Howard (Chile)

Vice Commander

Takuo Kobayashi (Japan)

Combined Forces Maritime Component Commander

In-Ho Kim (South Korea)

Combined Forces Air Component Commander

J.S. Davis (Canada)

Major Exercises Conducted

Amphibious Operations

Joint coastal and beach assault exercises.

Missile and Gunnery Drills

Live-fire and precision engagement exercises.

Anti-Submarine Warfare

Detection, tracking, and neutralization of submarines.

Air Defence Operations

Protection against aerial threats and missile attacks.

Counter-Piracy Missions

Maritime security and anti-piracy operations.

Mine Countermeasure Operations

Detection and removal of naval mines.

Explosive Ordnance Disposal (EOD)

Handling and disposal of explosive threats.

Diving and Salvage Operations

Underwater recovery and rescue missions.

Humanitarian Assistance and Disaster Relief (HADR)

Emergency response and disaster management exercises.

Military Medicine

Medical support and casualty management training.

Objectives of RIMPAC 2026

Strengthen Maritime Security

Enhance the safety of international sea lanes and maritime trade routes.

Improve Interoperability

Enable participating militaries to operate effectively together.

Enhance Combat Readiness

Improve tactical proficiency and operational preparedness.

Promote Regional Stability

Support peace, security, and stability in the Indo-Pacific.

Build Strategic Partnerships

Strengthen cooperation among allied and partner nations.

Importance of the Indo-Pacific Region

Global Trade Hub

A significant share of global trade passes through Indo-Pacific sea routes.

Strategic Importance

Home to major economic and military powers.

Critical for global supply chains and energy transportation.

Emerging Security Challenges

Maritime disputes.

Piracy.

Illegal fishing.

Strategic competition among major powers.

Significance of RIMPAC

Collective Security

Demonstrates the ability of partner nations to respond jointly to security challenges.

Operational Coordination

Improves coordination among naval, air, and land forces.

Confidence Building

Enhances trust and cooperation among participating countries.

Support for a Free and Open Indo-Pacific

Reinforces commitment to freedom of navigation and rule-based maritime order.

Disaster Response Preparedness

Strengthens multinational humanitarian and emergency response capabilities.

India and RIMPAC

India's Participation

India has participated in previous editions of RIMPAC through the **Indian Navy**.

Participation supports India's vision of a secure and inclusive Indo-Pacific.

Alignment with India's Maritime Vision

Complements India's **SAGAR (Security and Growth for All in the Region)** doctrine.

Supports cooperation with like-minded maritime partners.

Challenges

Complex Multinational Coordination

Managing diverse military doctrines and operational procedures.

Geopolitical Rivalries

Strategic competition among major powers may affect cooperation.

Resource and Logistics Management

Large-scale exercises require extensive planning and coordination.

Emerging Maritime Threats

Cyber threats, unmanned systems, and hybrid warfare challenges.

Way Forward

Strengthen Multilateral Cooperation

Expand collaboration among Indo-Pacific nations.

Enhance Joint Training

Increase interoperability through regular multinational exercises.

Focus on Emerging Security Domains

Include cyber security, artificial intelligence, and autonomous systems.

Improve Maritime Domain Awareness

Strengthen information-sharing mechanisms.

Promote Rule-Based Maritime Order

Uphold international law and freedom of navigation.

Conclusion

RIMPAC 2026 highlights the growing importance of multinational maritime cooperation in maintaining peace, security, and stability across the Indo-Pacific. By bringing together **30 nations and around 30,000 personnel**, the exercise strengthens collective readiness, operational interoperability, and commitment to a **free, open, and secure Indo-Pacific region**.



History, Art & Culture

Legacy of Lokmata Ahilyabai Holkar: The Philosopher Queen



Why in News?

The Prime Minister of India paid rich tributes to Lokmata Ahilyabai Holkar on the occasion of her birth anniversary, celebrating her visionary governance, structural contributions, and deep spiritual legacy.

About Ahilyabai Holkar

Historical Profile: Maharani Ahilyabai Holkar (31 May 1725 – 13 August 1795) was an exceptionally capable queen who ruled the Malwa territory as part of the Maratha Confederacy from 1767 until her death in 1795.

Honorific Titles: She is widely revered as *Punyashlok* ("One as Pure as the Sacred Chants"). Recognizing her outstanding administrative acumen, British historian John Keay famously bestowed upon her the title of "**The Philosopher Queen.**"

Early Life and Marriage

Origins: Born on May 31, 1725, in Chondi village (Jamkhed, Ahmednagar district, Maharashtra). Her father, Mankoji Rao Shinde, served as the village head.

Alliance: She was married to Khanderao Holkar, the son of the prominent Maratha commander Malhar Rao Holkar, in 1733.

Ascent to Power

Personal Tragedies: Her husband Khanderao was killed during the Battle of Kumbher in 1754. Within a short span, her father-in-law Malhar Rao passed away in 1766, followed closely by the tragic demise of her young son, Male Rao, in 1767.

Accession: Overcoming severe personal loss, she formally ascended the throne to become the absolute ruler of Indore on December 11, 1767.

Military Administration: She wisely appointed the seasoned general Tukoji Rao Holkar as the supreme commander of her armed forces.

Capital Shift: She strategically relocated the administrative seat, establishing **Maheshwar** (located in modern-day Madhya Pradesh) as the permanent capital of the Holkar dynasty.

Landmark Contributions

1. Architectural & Spiritual Reconstruction

Ahilyabai dedicated massive state resources toward rebuilding damaged cultural institutions. Her most notable achievement was the reconstruction of the iconic **Kashi Vishwanath Temple** in Varanasi in 1780. Beyond this, she sponsored a vast network of public dharmashalas (rest houses), free kitchens, and riverfront ghats at major pilgrimage centers spanning from Badrinath to Dwarka and Puri.

2. Craft and Industrial Promotion

She actively patronized the handloom weavers of Malwa and established a thriving textile ecosystem in her capital. This initiative laid the direct foundation for the world-renowned **Maheshwari Sarees**, transforming the region into an enduring center of fine artisanal weaving.

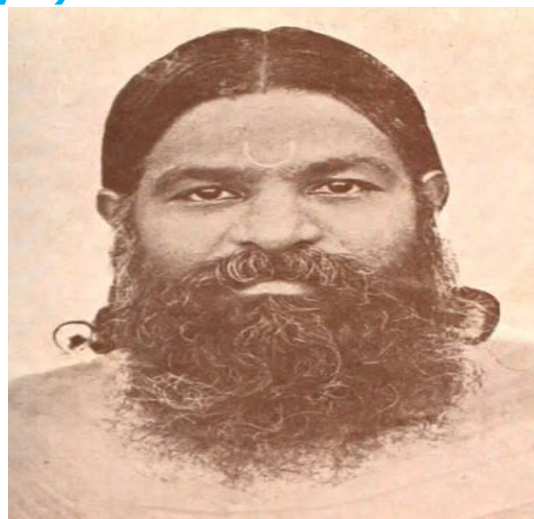
3. Education, Literature, and Social Reforms

Literary Patronage: She extended royal support to literary giants, including the prominent Marathi poet Moropant, Shahir Ananta Gandhi, and the brilliant Sanskrit scholar Khushali Ram.

Educational Focus: Recognizing learning as a pillar of stable society, she funded and built numerous gurukuls and traditional schools.

Women's Empowerment: In a highly revolutionary move for the 18th century, she formed a dedicated women's military wing, ensuring they received advanced training in active warfare, strategic self-defense, and state administrative security.

Legacy of Varahaneri Venkatesa Subramaniam Aiyar (V. V. S. Aiyar)



Why in News?

Homage was paid by the Vice President of India to the great freedom fighter, revolutionary, and Tamil scholar **Varahaneri Venkatesa Subramaniam Aiyar (V. V. S. Aiyar)** on his death anniversary (**June 3**).

Early Life and Revolutionary Phase

Origin and Shift: Born in Tiruchirappalli on **April 2, 1881**, a journey to London was undertaken by him in 1907 to study law. However, his career path was decisively shifted toward becoming a committed revolutionary.

India House and Savarkar: In London, he operated as a core member of **India House** (founded by Shyamji Krishna Varma). He worked closely with **Vinayak Damodar Savarkar** within the secret **Abhinav Bharat Society**, supporting revolutionary plans and facilitating the clandestine smuggling of arms into India.

Pondicherry Network: To evade British intelligence, an escape to the French territory of Pondicherry was executed by him in 1910. There, a formidable intellectual and revolutionary network was formed alongside nationalist poet **Subramania Bharati** and spiritual leader **Aurobindo Ghosh**.

The Ashe Assassination (1911): His role as a mentor is historically recognized for providing secret arms training to the young revolutionary **Vanchinathan**, by whom the tyrannical British Collector of Tirunelveli, Robert Ashe, was subsequently assassinated.

Ideological Shift and Later Politics

Aspect	Historical Reality and Transitions
Nationalist Convictions	Despite qualifying as a barrister, the title was refused by Aiyar as it required an oath of allegiance to the British Crown.
Ideological Shift	Though described by Mahatma Gandhi as a “ fierce anarchist ” in 1907, the path of Ahimsa (non-violence) was later embraced by Aiyar.
Mainstream Politics	Alignment closer to the Indian National Congress was sought during World War I, the Tamil daily <i>Desabhaktan</i> was edited by him, and imprisonment for sedition was faced by him in 1921.
Nationalist Education	Rejecting the British system, the Bharadwaja Ashrama (a Tamil Gurukulam) was established by him in Cheranmahadevi in 1922 to focus on cultural and vocational education.

Literary Pioneering and Contributions

Father of the Tamil Short Story: Aiyar is widely regarded as the **Father of the Tamil Short Story**. Modern Tamil storytelling was pioneered by him through his collection *Mangayarkkarasiyin Kaadhal*. His legacy is particularly associated with **Kulathangarai Arasamaram**, a landmark short story from this collection.

Classical Translations: Global recognition for Tamil literature was aided by his English translations of the **Thirukkural** and **Kamba Ramayanam**. The English translation of Savarkar’s *The Indian War of Independence, 1857* was also supervised by him.

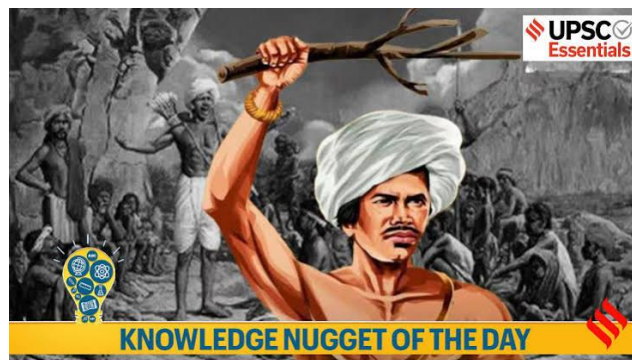
Admiration for Kamban: Deep admiration was held by Aiyar for Kamban (author of Kamba Ramayanam), whom he regarded as superior to classical Sanskrit poets Valmiki and Vyasa.

Biographies of Revolutionaries: To inspire Indian youth, Tamil biographies of global figures like **Giuseppe Garibaldi**, **Guru Gobind Singh**, and **Napoleon** were authored by him.

Tragic End

His life was abruptly ended on **June 3, 1925**, when he drowned in the **Papanasam falls** while attempting to save his daughter.

Birsa Munda and the Ulgulan Movement



Why in News?

The Prime Minister paid tribute to **Birsa Munda** on **9 June 2026** on the occasion of his **Martyr's Day**.

Birsa Munda is remembered as one of the most influential tribal leaders who challenged British colonial rule and fought for the protection of tribal identity, land rights and self-governance.

About Birsa Munda

Early Life

Birsa Munda was born on **15 November 1875** in the **Chotanagpur region**, located in present-day **Jharkhand**.

He belonged to the **Munda tribe**, one of the prominent tribal communities of central and eastern India.

He emerged as a tribal leader, socio-religious reformer and anti-colonial freedom fighter at a young age.

Socio-Religious Reformer

Birsa Munda sought to revive tribal traditions and cultural identity.

He advocated:

Social reform.

Moral discipline.

Community unity.

Resistance to social exploitation.

His teachings inspired the emergence of a distinct faith community known as the **Birsait community**.

Anti-Colonial Mobilisation

Resistance Against Colonial Rule

Birsa Munda mobilised tribal communities against: British colonial administration.

Exploitative landlords.

Moneylenders.

Forced labour practices.

Missionary influence.

Land alienation.

Protection of Tribal Identity

He emphasized the preservation of tribal customs, traditions and self-governing institutions.

His movement became a symbol of tribal resistance against external domination.

Historical Background

Influence of the Sardari Larai Movement

Birsa Munda's movement drew inspiration from the earlier **Sardari Larai (Sardar Movement)**.

The movement had emerged in the Chotanagpur region against:

Land dispossession.

Exploitative revenue policies.

Interference in traditional tribal rights.

It laid the foundation for organized tribal political consciousness.

Assertion of Tribal Land Rights

Khuntkatti System

Birsa Munda strongly opposed the erosion of the traditional **Khuntkatti system**.

Under this customary system:

Tribal communities collectively owned and managed land.

Land rights were inherited through clan lineages.

Community control over natural resources was protected.

Opposition to Land Alienation

British land policies facilitated the entry of:

Zamindars.

Moneylenders.

Non-tribal settlers.

These developments weakened traditional tribal ownership and increased exploitation.

Political Ideology

Famous Slogan

Birsa Munda popularized the slogan:

"Abua Raj Ete Jana, Maharani Raj Tundu Jana"

Meaning

"Let our rule be established and the Queen's rule end."

Significance

The slogan reflected:

Tribal self-rule.

Resistance to colonial authority.

Assertion of indigenous rights and identity.

Ulgulan Movement (Great Tumult)

About

Birsa Munda led the **Ulgulan Movement**, meaning the **"Great Tumult"**, at the turn of the twentieth century.

It represented one of the most significant tribal uprisings against British rule.

Objectives

End British colonial domination.

Restore tribal self-governance.

Protect traditional land rights.

Resist exploitation by outsiders, commonly referred to as **Dikus**.

Revive tribal social and cultural institutions.

Nature of the Movement

The movement combined:

Political resistance.

Social reform.

Religious revivalism.

Economic justice.

It united large sections of tribal communities across the Chotanagpur region.

Arrest and Death

British Suppression

The British administration launched extensive operations to suppress the uprising.

Birsa Munda was eventually arrested along with several followers.

Death

He died in **Ranchi Jail** on **9 June 1900**.

The official cause of death was recorded as **cholera**.

He was only **25 years old** at the time of his death.

Legal and Historical Impact

Influence on Tribal Land Protection

Birsa Munda's struggle highlighted the need for legal safeguards against tribal land alienation.

His movement influenced subsequent land reforms and protective legislation.

Chotanagpur Tenancy Act, 1908

The movement contributed to the enactment of the **Chotanagpur Tenancy Act 1908**.

The Act:

Restricted the transfer of tribal land to non-tribals.

Protected customary land rights.

Recognized the unique socio-economic conditions of tribal communities.

Legacy and Recognition

Symbol of Tribal Resistance

Birsa Munda remains an enduring symbol of:

Tribal pride.

Social justice.

Anti-colonial resistance.

Indigenous rights.

Janjatiya Gaurav Divas

His birth anniversary, **15 November**, is observed as **Janjatiya Gaurav Divas**.

The observance honors:

Tribal freedom fighters.

Tribal heritage.

Contributions of indigenous communities to India's history and nation-building.

Contemporary Relevance

Birsa Munda's ideas continue to inspire discussions on:

Tribal rights.

Forest rights.

Land governance.

Inclusive development.

Protection of indigenous cultures.

Conclusion

Birsa Munda was not only a tribal freedom fighter but also a visionary social reformer who championed the cause of tribal dignity, self-rule and land rights.

Through the **Ulgulan Movement**, he challenged colonial exploitation and laid the foundation for future legal protections for tribal communities, making him one of the most revered figures in India's tribal and freedom struggle history.

India's Heritage Conservation and Cultural Preservation Initiatives



Why in News?

The government has highlighted major achievements in **heritage conservation, cultural preservation, and promotion of India's civilisational legacy** over the last 12 years.

These initiatives align with the vision of "**Vikas Bhi, Virasat Bhi**", integrating heritage conservation with tourism, livelihoods, and economic development.

Heritage and Development: Integrated Approach

Heritage Conservation Framework

Heritage conservation has evolved from mere monument protection to an integrated model linking:

Tourism.

Livelihood generation.

Cultural diplomacy.

Local economic development.

Adopt a Heritage 2.0

Launch

Introduced in **2017** and revamped in **2023**.

Objective

Encourage participation of:

Private companies.

PSUs.

NGOs.

Trusts and societies.

Purpose

Improve visitor amenities at protected monuments through CSR and public participation.

Tourism and Heritage Promotion

PRASHAD Scheme

Full Form

Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive.

Launch

Objective

Develop pilgrimage and heritage destinations through:

Better infrastructure.

Sanitation.

Safety.

Visitor facilities.

Notable Projects

Somnath Temple Promenade Development.

Kedarnath Temple infrastructure upgrades.

Swadesh Darshan Scheme

Launch

2014–15.

Focus

Development of thematic tourism circuits:

Heritage.

Buddhist.

Coastal.

Tribal.

Desert.

Eco-tourism.

Swadesh Darshan 2.0

Shifted from circuit-based development to destination-centric tourism.

Focuses on sustainable and responsible tourism.

Archaeology and Monument Preservation

Archaeological Survey of India (ASI)

About

India's premier archaeological and heritage conservation agency.

Protected Monuments

Protects **3,686** centrally protected monuments across India.

National Mission on Monuments and Antiquities (NMMA)

Objective

Create a national database of monuments and antiquities.

Achievements

Documented:

1.84 lakh monuments and heritage sites.

17.20 lakh antiquities.

HRIDAY Scheme

Full Form

Heritage City Development and Augmentation Yojana.

Launch

Objective

Integrate urban development with heritage conservation.

Cities Covered

Varanasi

Amritsar

Puri

Ajmer

Gaya and others.

Heritage Diplomacy and Repatriation

Repatriation of Antiquities

Achievements

India has recovered **653 antiquities** since 2014.

More than **600 artefacts** have been returned during the last five years.

Major Recoveries

Piprahwa Relics of Buddha

Returned in 2025 after more than a century abroad.

Goddess Annapurna Idol

Repatriated from **Canada** in 2021.

Ram, Sita and Lakshmana Idols

Returned from the **United Kingdom** in 2020.

Museums and Cultural Preservation

Museum Grant Scheme

Supports:

Establishment of new museums.

Modernisation and digitisation of existing museums.

Capacity building of museum professionals.

Archaeological Experiential Museum, Vadnagar

Location

Vadnagar

Significance

India's first archaeological experiential museum.

Displays over **5,000 artefacts** and archaeological findings.

Yuge Yugeen Bharat National Museum

Being developed in New Delhi.

Will showcase India's civilisational journey spanning thousands of years.

Technology and Heritage Conservation

Gyan Bharatam Mission (2025)

Objective

Preserve, digitise, and disseminate India's manuscript heritage.

Achievements

More than **8 lakh manuscripts** digitised.

Over **1.29 lakh manuscripts** available through the National Digital Repository.

National Manuscript Survey (2026)

Launched to create a comprehensive national database of manuscripts.

Technology-Supported Conservation

Technologies Used

LiDAR.

GIS Mapping.

Drone Surveys.

Artificial Intelligence.

Benefits

Accurate documentation.

Better conservation planning.

Improved accessibility of heritage records.

Preservation of Intangible Heritage

Vedic Heritage Portal (2023)

Objective

Digitally preserve India's Vedic traditions.

Coverage

Rigveda.

Yajurveda.

Samaveda.

Atharvaveda.

Features

Audio-visual archives.

Manuscripts.

Vedic recitation records.

UNESCO Recognition

Vedic Chanting is recognised as **UNESCO** Intangible Cultural Heritage.

National Film Heritage Mission (NFHM)

Objective

Preserve, restore, and digitise India's cinematic heritage.

Achievements

More than **1,400** film titles digitised.

Includes feature films, documentaries, and short films.

National Museum of Indian Cinema (NMIC)

Location

Mumbai

Inauguration

Significance

Showcases the evolution of Indian cinema from the silent era to the present.

Significance of Heritage Conservation

Cultural Identity

Preserves India's civilisational and cultural legacy.

Tourism Development

Promotes heritage-led tourism and local economies.

Employment Generation

Creates livelihoods through tourism and conservation activities.

Soft Power Diplomacy

Strengthens India's cultural influence globally.

Knowledge Preservation

Protects both tangible and intangible heritage for future generations.

Challenges

Urbanisation Pressure

Rapid urban growth threatens heritage structures and sites.

Conservation Funding

Large-scale restoration requires sustained financial support.

Illicit Trafficking

Continued threat of smuggling and illegal trade in antiquities.

Documentation Gaps

Many heritage assets remain undocumented.

Way Forward

Expand Digital Preservation

Accelerate digitisation of manuscripts, artefacts, and cultural records.

Strengthen Heritage Tourism

Develop sustainable and community-based tourism models.

Promote Public Participation

Encourage CSR and citizen involvement in heritage conservation.

Leverage Emerging Technologies

Increase use of AI, GIS, drones, and LiDAR for heritage management.

Enhance Global Cooperation

Continue efforts for repatriation of stolen artefacts and cultural diplomacy initiatives.

Ambabai Mahalaxmi Temple Redevelopment Project



Why in News?

The Union Home Minister laid the foundation stone for the **Pradakshina Marg** and conservation works

of the **Shri Ambabai Mahalaxmi Temple** in **Kolhapur**.

The project aims to combine **heritage conservation** with **modern pilgrimage infrastructure** under the vision of "**Vikas Bhi, Virasat Bhi**".

About the Redevelopment Project

Objective

Preserve the temple's historical and cultural heritage.

Improve facilities for pilgrims and visitors.

Promote spiritual tourism and local economic development.

Project Cost

Estimated cost of around **₹1,500 crore**.

Key Components

Development of a new **Pradakshina Marg**.

Conservation and restoration of temple structures.

Enhancement of visitor facilities.

Heritage Conservation

Preservation of Historical Character

Special emphasis is being placed on maintaining the temple's original architectural and cultural identity.

Conservation of Associated Temples

Restoration of **41 Parivar Devata Mandirs** (subsidiary temples) surrounding the main shrine.

Conservation work is being undertaken in consultation with archaeological experts and heritage authorities.

Modern Pilgrimage Infrastructure

Pilgrim Facilities

Darshan Mandap.

Annachhatra (community dining facility).

Multipurpose hall.

First-aid and emergency facilities.

Technology Integration

AI-based security systems.

Modern surveillance infrastructure.

LED lighting systems.

Tourism Enhancement

Heritage galleries.

Light-and-sound shows.

Improved parking and visitor amenities.

Tourism and Economic Significance

Spiritual Tourism Hub

Aims to transform **Kolhapur** into a major pilgrimage and spiritual tourism destination.

Employment Generation

Expected to create direct and indirect employment opportunities.

Local Economic Development

Boosts tourism-related sectors such as:

Hospitality.

Transport.

Handicrafts.

Local businesses.

Ambabai Mahalaxmi Temple

About

Located in the historic **Karveer** region of Maharashtra.

One of India's most revered **Shakti Peethas**.

Has been an important centre of faith and pilgrimage for centuries.

Presiding Deity

Dedicated to **Goddess Lakshmi**, worshipped locally as **Ambabai**.

Regarded as the goddess of wealth, prosperity, and well-being.

Architecture

Hemadpanti Style

Built in the traditional **Hemadpanti architectural style**, known for:

Use of black stone.

Intricate carvings.

Durable construction without mortar.

Main Idol

Houses a black stone idol of Goddess Ambabai.

The idol is traditionally adorned with ornaments, flowers, and precious jewellery.

Temple Complex

Associated Shrines

The complex includes temples dedicated to:

Lord Vishnu

Lord Shiva

Lord Ganesha

Other deities and family shrines.

Cultural Importance

Functions as a major religious, cultural, and social centre in western India.

Significance of the Project

Heritage Preservation

Protects an important symbol of India's cultural and religious heritage.

Pilgrim Experience

Improves accessibility, safety, and convenience for devotees.

Tourism Development

Strengthens heritage and religious tourism in Maharashtra.

Balanced Development

Demonstrates the model of combining infrastructure development with cultural conservation.

Way Forward

Sustainable Heritage Management

Ensure restoration work maintains the temple's historical authenticity.

Community Participation

Involve local stakeholders and religious institutions in project implementation.

Promote Heritage Tourism

Integrate the temple with broader tourism circuits in Maharashtra.

Leverage Technology

Use digital and AI-based solutions for visitor management and heritage interpretation.

Preserve Cultural Legacy

Ensure that modernization complements, rather than compromises, the temple's spiritual and historical significance.

ASI Discovers 16th-Century Vijayanagara Inscriptions in Seshachalam Forest



Why in News?

The **Archaeological Survey of India** has discovered three significant **16th-century inscriptions** of **Sadasivaraya** in the **Seshachalam Forest** of **Tirupati**.

The inscriptions provide valuable insights into the religious, administrative, and cultural history of the **Vijayanagara Empire**.

Key Findings of the Inscriptions

Linguistic Diversity

The inscriptions are written in:

Telugu.

Tamil.

Kannada.

They have been dated to **31 July 1554 CE**.

Royal Patronage

The main inscription records the construction of:

A Shiva temple.

A monastery (Mutt).

These were established at **Papavinasa** during a pilgrimage undertaken by King Sadasivaraya.

Temple Administration and Revenue Management

The inscriptions mention:

Allocation of taxes (**Kaanika**).

Land grants from two villages.

Revenue was earmarked for:

Daily worship.

Food offerings.

Maintenance of temple rituals.

Administrative Officials Mentioned

Sadasiva Basavanna Odeya, disciple of Linganna Vodaya.

Peddayya, son of Chembhaperiya, who served as temple accountant and record composer.

Historical Significance of Gudimallam Temple

About Gudimallam Temple

The inscriptions refer to the **Gudimallam Parasurameswara Temple**.

Widely regarded as India's oldest known Shiva temple.

Historical Importance

Dates back to approximately the **2nd century BCE**.

Houses one of the earliest known Shiva Linga representations.

Significance of the Discovery

Confirms continued royal patronage during the Vijayanagara period.

Demonstrates the temple's religious and administrative importance even during the 16th century.

Vijayanagara Empire

About

One of the greatest empires of medieval South India.

Existed from **1336 CE to 1646 CE**.

Founders

Harihara I

Bukka Raya I

Location

Established on the banks of the **Tungabhadra River**.

Significance

Promoted political stability.

Encouraged economic prosperity.

Fostered cultural and architectural development.

Dynasties of the Vijayanagara Empire

Sangama Dynasty

Founding dynasty of the empire.

Saluva Dynasty

Succeeded the Sangama rulers.

Tuluva Dynasty

Period of maximum territorial expansion and cultural achievements.

Aravidu Dynasty

Last ruling dynasty of the empire.

Krishnadevaraya

About

Greatest ruler of the Vijayanagara Empire.

Belonged to the **Tuluva Dynasty**.

Literary Contributions

Authored **Amuktamalyada**, a celebrated Telugu literary masterpiece.

Patronage of Scholars

Supported the **Ashtadiggajas**, the eight eminent scholars of his court.

Military Achievements

Defeated:

Gajapati rulers of Odisha.

Adil Shahi rulers of the Deccan.

Administration of the Vijayanagara Empire

Nayankara (Amara-Nayaka) System

Features

Decentralized administrative and military arrangement.

Military chiefs were granted territories known as **Amaram**.

Responsibilities of Nayakas

Maintain military contingents.

Ensure law and order.

Pay tribute to the central authority.

Importance

Strengthened military preparedness.

Facilitated efficient regional administration.

Architecture of the Vijayanagara Empire

Dravidian Architectural Style

Represented the final and most elaborate phase of Dravidian temple architecture.

Key Features

Massive **Raya Gopurams** (tower gateways).

Ornate monolithic pillars.

Kalyana Mandapas (marriage halls).

Intricate sculptures and carvings.

Important Monuments

Vittala Temple

Famous for its stone chariot and musical pillars.

Hazara Rama Temple

Known for Ramayana-themed carvings.

Accounts of Foreign Travellers

Ibn Battuta

Provided observations on South Indian society and trade.

Nicolo de Conti

Recorded details of Vijayanagara's prosperity.

Abdur Razzak

Described the grandeur and wealth of the empire.

Domingo Paes

Left detailed accounts of administration, trade, and urban life.

Battle of Talikota (1565)

About

Also known as the **Battle of Rakshasi-Tangadi**.

Participants

Vijayanagara Empire.

Combined forces of the Deccan Sultanates.

Outcome

Defeat of Vijayanagara forces.

Beginning of the empire's decline and fragmentation.

Significance of the Discovery

Historical Evidence

Provides fresh epigraphic evidence regarding Vijayanagara administration and religious patronage.

Cultural Heritage

Highlights the continued importance of ancient temples during the medieval period.

Understanding Temple Economy

Reveals how land grants and taxes supported religious institutions.

Preservation of Regional History

Strengthens understanding of South India's political, cultural, and religious heritage.

Way Forward

Conservation of Inscriptions

Ensure proper preservation and documentation of newly discovered epigraphs.

Further Archaeological Research

Conduct systematic surveys in the Seshachalam region.

Promote Heritage Awareness

Increase public awareness of Vijayanagara-era cultural heritage.

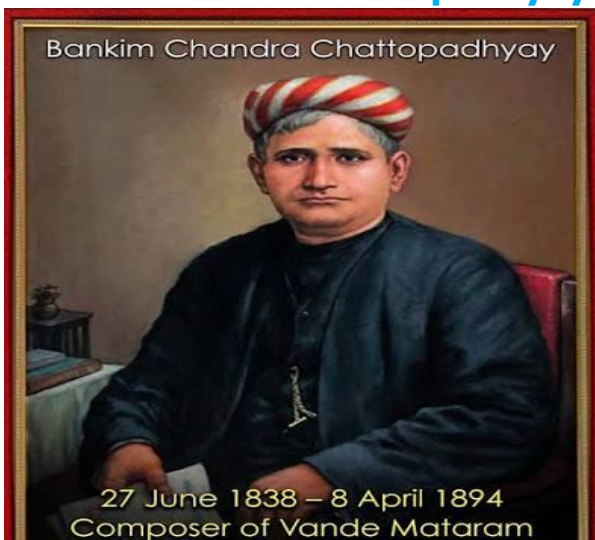
Digital Archiving

Create digital records and translations for future research and preservation.

Strengthen Heritage Tourism

Integrate such discoveries into broader cultural tourism initiatives in Andhra Pradesh.

Bankim Chandra Chattopadhyay



Why in News?

Prime Minister **Narendra Modi** paid tribute to **Bankim Chandra Chattopadhyay** on his birth anniversary, observed on **27 June**.

He is regarded as one of the most influential literary figures of modern India and played a significant role in shaping Indian nationalism.

About Bankim Chandra Chattopadhyay

Early Life

Born on **27 June 1838** in **Naihati** in the then Bengal Presidency.

Among the first graduates of the **University of Calcutta**.

Joined the colonial administration and served as: Deputy Magistrate.

Deputy Collector.

Served in government service from **1858 onwards**.

Bankim Chandra and the Bengal Renaissance

About the Bengal Renaissance

A socio-cultural and intellectual reform movement that emerged in Bengal during the 19th century.

Encouraged modern education, social reforms, literature, and nationalism.

Contribution

Considered the **Father of the Modern Bengali Novel**.

Played a pivotal role in the literary and cultural awakening of Bengal.

Helped shape modern Bengali prose and nationalist thought.

Major Literary Contributions

Anandamath (1882)

About

A landmark historical novel inspired by the **Sannyasi Rebellion**.

Depicts ascetic warriors fighting against oppression.

Significance

Became a powerful symbol of nationalism.

Inspired generations of freedom fighters.

Faced restrictions under British rule because of its patriotic message.

Vande Mataram

About

Composed in the 1870s in Sanskritised Bengali.

First published in **Bangadarshan** in 1875.

Later incorporated into **Anandamath**.

Historical Importance

Sung by **Rabindranath Tagore** at the **1896 session of the Indian National Congress**.

Became the rallying cry of the **Swadeshi Movement**.

National Song of India

The first two stanzas were adopted as the **National Song of India** by the Constituent Assembly in **1950**.

Recent Development

In 2026, the **Ministry of Home Affairs** directed that **Vande Mataram** should be played or sung before the National Anthem whenever both are part of an official event.

Other Important Literary Works

Durgeshnandini (1865)

Considered the first major modern Bengali romance novel.

Kapalkundala (1866)

One of his most celebrated literary works.

Vishabriksha (1873)

Explored social and family issues.

Devi Chaudhurani (1884)

Focused on resistance, empowerment, and patriotism.

Krishna Charitra

A philosophical and literary interpretation of the life of Lord Krishna.

Rajmohan's Wife (1864)

Widely regarded as the **first Indian novel written in English**.

Contribution to Journalism

Bangadarshan (1872)

About

A monthly literary magazine founded by Bankim Chandra.

Objectives

Promote Bengali literature.

Encourage cultural awakening.

Strengthen nationalist consciousness.

Legacy

Later revived by **Rabindranath Tagore**.

Role in the Indian National Movement

Cultural Nationalism

Promoted pride in India's cultural heritage.

Encouraged national consciousness through literature.

Concept of Bharat Mata

Popularized the idea of **Bharat Mata (Mother India)** as a symbol of the nation.

Patriotism

Presented **deshbhakti (patriotism)** as the highest civic virtue.

Inspired freedom fighters and nationalist leaders.

Influence on Freedom Movement

His writings became an intellectual foundation for India's struggle against colonial rule.

Legacy

Sahitya Samrat

Revered as "**Sahitya Samrat**" (**Emperor of Literature**) for his extraordinary literary contributions.

Impact on Indian Literature

Laid the foundation of modern Bengali fiction.

Influenced generations of Indian writers and thinkers.

National Inspiration

His literary works became symbols of patriotism and national awakening.

Death

Passed away on **8 April 1894**.

Significance

Father of the Modern Bengali Novel

Revolutionized Bengali literature and prose writing.

Architect of Cultural Nationalism

Connected literature with the emerging nationalist movement.

Creator of Vande Mataram

Gifted India one of its most powerful patriotic songs.

Influence on Freedom Struggle

Inspired generations of Indians to fight for independence.

Way Forward

Preserve Literary Heritage

Promote the study of Bankim Chandra's works in educational institutions.

Promote National Values

Use his writings to foster patriotism and cultural awareness.

Encourage Indian Language Literature

Strengthen appreciation of regional literary traditions.

Digitisation and Translation

Make his works accessible to wider audiences through translations and digital archives.

Conclusion

Bankim Chandra Chattopadhyay was a pioneering novelist, journalist, poet, and nationalist thinker whose literary works played a crucial role in India's cultural awakening and freedom movement. Through masterpieces such as **Anandamath** and **Vande Mataram**, he left an enduring legacy that continues to inspire India's national consciousness and literary tradition.

Rakhigarhi Human Skeleton Study



Why in News?

Human skeletal remains recovered from **Rakhigarhi**, one of the largest sites of the Harappan Civilization, have been formally transferred from the **Archaeological Survey of India** to the **Anthropological Survey of India** for advanced scientific analysis.

The study is expected to provide new insights into the ancestry, lifestyle, health, and migration patterns of the Harappan people.

Transfer of Skeletal Remains

Memorandum of Understanding (MoU)

The transfer was carried out under a recently signed MoU between ASI and AnSI.

Materials Transferred

Three complete human skeletons.
Associated skeletal fragments.

Research Destination

The remains have been shifted to the Anthropological Survey of India's laboratory in **Kolkata**.

About Rakhigarhi

Location

Situated in **Haryana**.

Importance

Considered one of the largest known urban settlements of the **Harappan Civilization**.

Area

Spread across approximately **550 hectares**.

Other Names of the Civilization

Indus Valley Civilization.

Indus-Saraswati Civilization.

Harappan Civilization

Time Period

Approximately **2600 BCE – 1900 BCE** (Mature Harappan Phase).

Major Features

Planned urban settlements.
Grid-pattern streets.
Advanced drainage systems.
Standardized weights and measures.
Extensive trade networks.
Craft specialization.

Archaeological Findings at Rakhigarhi

Urban Planning

Well-planned settlements with sophisticated drainage systems.

Economic Activities

Evidence of craft production centres.
Long-distance trade networks.

Continuous Habitation

Occupation from:
Early Harappan Phase.
Mature Harappan Phase.

Burial Practices

Presence of organized burial grounds providing valuable anthropological evidence.

Mound Number 7: Burial Site

Significance

Identified as a major burial area within Rakhigarhi.

Human Remains Recovered

A total of **56 human skeletons** have been excavated.

Notable Discovery

Remains of a woman dated to approximately **4,600 years ago**.

DNA Evidence and Ancestry Studies

Ancient DNA Analysis

Genetic studies were conducted on the Rakhigarhi female skeleton.

Key Finding

Absence of the **Steppe Pastoralist genetic component**.

Importance

Contributes to ongoing academic debates regarding:

Indo-Aryan migration.

Population movements into the Indian subcontinent.

Origins of ancient South Asian populations.

Scientific Methods to be Used

1. Ancient DNA Analysis

Purpose

Study genetic ancestry and population history.

Expected Outcomes

Understanding lineage and migration patterns.

2. Stable Isotope Analysis

Purpose

Reconstruct dietary habits.

Study mobility and migration.

Importance

Provides information about food consumption and environmental conditions.

3. Osteological Assessment

Purpose

Examination of bones and skeletal structures.

Importance

Determines:

Age.

Sex.

Physical characteristics.

Growth patterns.

4. Palaeopathological Investigation

Purpose

Study ancient diseases and health conditions.

Importance

Reveals:

Nutritional deficiencies.

Infections.

Physical stress indicators.

5. Environmental Reconstruction

Purpose

Reconstruct ancient climatic and ecological conditions.

Importance

Helps understand human adaptation to environmental changes.

Collaborating Institutions

National Institutions

Birbal Sahni Institute of Palaeosciences

Banaras Hindu University

International Institution

University College London

Significance of the Study

Understanding Harappan Ancestry

Provides evidence regarding genetic origins and population relationships.

Migration Patterns

Helps trace ancient human mobility and demographic changes.

Diet and Lifestyle

Reveals food habits and subsistence strategies.

Health and Disease

Provides information on disease burden and overall health status.

Social Structure

May offer clues regarding social status and burial customs.

Human-Environment Interaction

Explains how Harappan communities adapted to environmental changes.

Why is the Study Important?

Undeciphered Harappan Script

The Harappan script remains undeciphered.

Skeletal and genetic evidence therefore becomes a crucial source of information about Harappan society.

Filling Historical Gaps

Scientific analysis can provide insights unavailable through inscriptions or written records.

Interdisciplinary Research

Combines archaeology, genetics, anthropology, environmental science, and history.

Challenges

DNA Preservation

Ancient DNA is often degraded due to climatic conditions.

Limited Sample Size

Genetic conclusions may be constrained by available specimens.

Interpretation of Results

Migration and ancestry debates remain complex and multidisciplinary.

Conservation Concerns

Proper handling and preservation of ancient remains are essential.

Way Forward

Advanced Scientific Research

Expand genomic and archaeological studies across Harappan sites.

Interdisciplinary Collaboration

Strengthen cooperation between archaeologists, geneticists, and anthropologists.

Conservation of Heritage

Ensure scientific preservation of skeletal remains and excavation sites.

Broader Comparative Studies

Compare findings with other Harappan and ancient South Asian sites.

Public Dissemination

Share research findings to enhance understanding of India's ancient civilizational heritage.



EDITORIALS

Crux of The Hindu & Indian Express

History, Art & Culture

Masroor Rock-Cut Temples



Why in News?

The **Masroor Rock-Cut Temples** of Himachal Pradesh have recently gained attention for their unique architecture and heritage value.

They are often called the "**Ellora of Himachal Pradesh**" and the "**Himalayan Pyramid**".

About

An **8th-century rock-cut Hindu temple complex** located in **Kangra Valley** on the banks of the **Beas River** in Himachal Pradesh.

Consists of **15 monolithic rock-cut temples** carved from a single rock.

Dedicated to **Lord Shiva, Lord Rama, Goddess Sita, and Lord Lakshmana**.

Historical Background

Believed to have been built around the **8th century CE**.

Shows strong influence of **Gupta-style architecture**.

No clear mention of the temple exists in ancient scriptures or historical records.

First reported by **Henry Shuttleworth (1913)**.

Surveyed by **Archaeological Survey of India (ASI)** officer **Harold Hargreaves (1915)**.

Architectural Features

Built in the **North Indian Nagara style** of temple architecture.

Entire complex is carved out of a **single monolithic rock**.

Follows a **symmetrical square-grid layout**.

Main temple is surrounded by smaller shrines arranged in a **Mandala pattern**.

Features prominent **Shikharas (temple towers)**.

Has a sacred water tank in front of the temple complex.

Unique Features

Unlike most Hindu temples that face east, Masroor Temples face **northeast towards the Dhauladhar Mountains**.

Has **three entrances** facing:

Northeast

Southeast

Northwest

Evidence suggests a **fourth entrance was planned but left incomplete**.

Sculptural Significance

Contains elaborate carvings of **Vedic and Puranic deities**.

Features relief sculptures and friezes depicting stories from Hindu mythology.

Reflects the rich artistic and religious traditions of ancient India.

Damage and Conservation

Large parts of the sculptures and carvings have been damaged over time.

Repeated **earthquakes in the Himalayan region** are believed to be the main cause of destruction.

Several original sculptures and decorative elements have been lost.

Significance

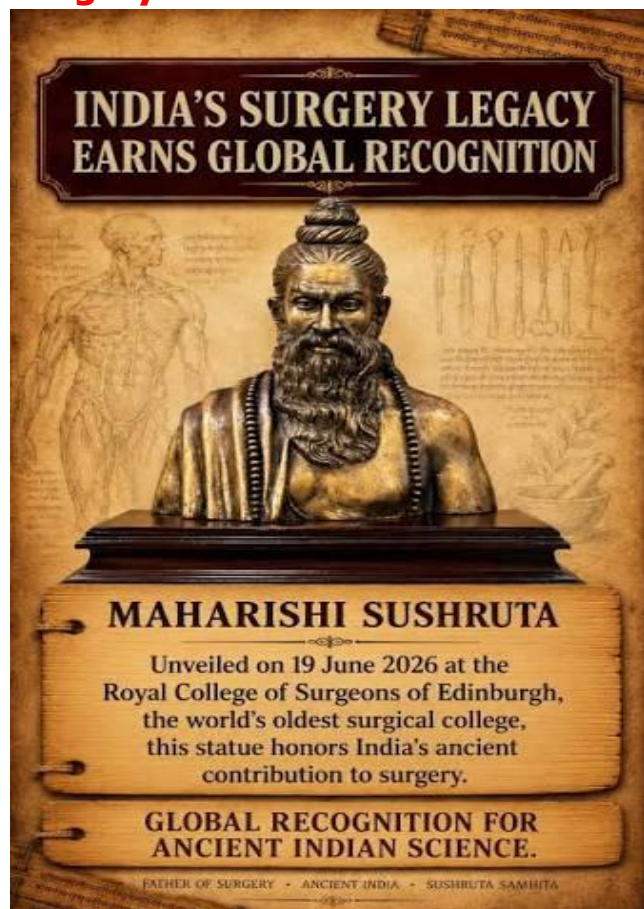
One of India's rare examples of **rock-cut Nagara-style temple architecture**.

Important centre of Hindu religious and cultural heritage.

Represents advanced engineering and artistic excellence of early medieval India.

Holds immense archaeological, historical and tourism value.

Maharishi Sushruta and Global Recognition of Ancient Indian Surgery



Why in News?

The **Royal College of Surgeons of Edinburgh**, one of the world's oldest surgical institutions, unveiled a bronze statue of **Maharishi Sushruta** in Scotland.

The honour recognizes India's pioneering contributions to surgery, medicine, and medical education.

The institution was established in **1505** by **King James IV**.

Statue and Cultural Significance

Craftsmanship

The statue was created at **Swamimalai**.

Crafted using the traditional:

Lost-wax casting method.

Single bronze casting technique.

Significance

Showcases India's rich sculptural heritage.

Highlights global recognition of ancient Indian scientific achievements.

Maharishi Sushruta

About

Sushruta was an ancient Indian physician and surgeon.

Traditionally associated with **Varanasi**.

Generally placed around the **7th–6th century BCE**.

Field

Medicine.

Surgery.

Ayurveda.

Titles

Father of Surgery

Recognized for pioneering surgical techniques and procedures.

Father of Plastic Surgery

Credited with developing early reconstructive and plastic surgery methods, especially rhinoplasty.

Lineage and Tradition

Disciple of Dhanvantari

Traditional accounts describe Sushruta as a disciple of **Dhanvantari**.

Association with Ayurveda

Dhanvantari is revered as the divine physician and is considered the deity of Ayurveda.

Sushruta Samhita

About

Authored by Maharishi Sushruta.

One of the world's earliest and most comprehensive surgical treatises.

Importance

Considered a foundational text of surgery and medical science.

Part of Ayurveda's Great Trilogy

Sushruta Samhita

Charaka Samhita

Astanga Hridaya

Major Surgical Contributions

Rhinoplasty (Nose Reconstruction)

One of the earliest documented techniques for reconstructive surgery.

Cataract Surgery

Procedures for treating eye disorders and cataracts.

Fracture Management

Techniques for bone setting and treatment of injuries.

Caesarean Delivery

Descriptions of obstetric surgical procedures.

Oshtha Sandhan (Lobuloplasty)

Surgical reconstruction of damaged ear lobes and lips.

Karna Sandhan (Otoplasty)

Reconstructive surgery of the ear.

Surgical Achievements

Number of Procedures

Documented and described more than **300 surgical procedures**.

Surgical Instruments

Detailed descriptions of over **100 surgical instruments** made from metal and other materials.

Scientific Principles in Sushruta's Work

1. Anatomy

Anatomical Knowledge

Detailed observations of the human body.

Systematic understanding of organs, tissues, bones, and vessels.

2. Cadaver Dissection

Practical Learning

Advocated dissection of dead bodies for anatomical study.

Considered essential for medical education.

3. Surgical Training

Simulation-Based Learning

Recommended practice on:

Inanimate objects.

Fruits and vegetables.

Dead animals.

before operating on human patients.

4. Hygiene and Cleanliness

Importance

Emphasized cleanliness during surgical procedures.

Recognized the importance of preventing infections.

5. Anaesthesia-Related Practices

Pain Management

Mentioned methods for reducing pain and discomfort during surgeries using herbal preparations and sedatives.

6. Clinical Observation

Diagnosis and Treatment

Emphasized careful examination, observation, and patient-specific treatment approaches.

Significance of Sushruta's Contributions

Foundation of Modern Surgery

Many surgical principles remain relevant in modern medicine.

Early Plastic Surgery

Established techniques that influenced reconstructive surgery globally.

Scientific Medical Education

Promoted practical training and evidence-based learning.

Holistic Healthcare

Combined surgery, medicine, anatomy, and patient care.

Global Recognition

Demonstrates India's ancient leadership in scientific and medical knowledge.

Ayurveda

About

Traditional system of medicine originating in India.

Focuses on preventive healthcare and holistic well-being.

Objectives

Maintain physical, mental, and spiritual balance.

Promote healthy living and disease prevention.

Legacy of Maharishi Sushruta

Medical Pioneer

One of the earliest known surgeons in human history.

Influence on World Medicine

His surgical techniques influenced medical traditions across regions.

Educational Impact

Established principles of surgical education and practical training.

Enduring Relevance

Continues to inspire modern surgeons and medical researchers.

Significance of the Edinburgh Recognition

Global Acknowledgment

Recognizes India's contribution to the history of medicine.

Promotion of Medical Heritage

Brings international attention to ancient Indian scientific achievements.

Cultural Diplomacy

Strengthens appreciation of India's civilizational and intellectual heritage.

Way Forward

Promote Medical Heritage Research

Encourage further study of ancient Indian medical texts.

Integrate Historical Knowledge

Highlight contributions of Indian scholars in medical education.

Preserve Traditional Knowledge

Digitize and conserve ancient manuscripts.

Global Collaboration

Promote international awareness of India's contributions to medicine and surgery.

Conclusion

Maharishi Sushruta remains one of the greatest medical pioneers in human history. Through the **Sushruta Samhita**, his innovations in surgery, anatomy, medical education, and patient care laid the foundations of modern surgical science. The unveiling of his statue at the **Royal College of Surgeons of Edinburgh** is a significant global recognition of India's ancient scientific and medical heritage.

Nadaprabhu Sri Kempe Gowda



Why in News?

The Vice-President of India paid tribute to **Nadaprabhu Sri Kempe Gowda** on his **517th Birth Anniversary (27 June 2026)** in Bengaluru.

He was remembered for his contributions to **urban planning, sustainable development, inclusive governance, social reform, and environmental conservation.**

About Kempe Gowda

Early Life

Born in **1510 CE.**

Belonged to the **Morasu Gowda** lineage.

Emerged as an influential ruler and administrator in southern India.

Political Position

Served as a prominent chieftain under the **Vijayanagara Empire.**

Period

Lived from **1510–1569 CE.**

Foundation of Bengaluru

Permission from Vijayanagara Emperor

Received approval from **Achyuta Deva Raya**, who ruled from **1529–1542.**

Establishment of Bengaluru

Founded **Bengaluru** in **1537 CE.**

Constructed the historic **Bengaluru Fort.**

Established **Bengaluru Pete**, the city's central market area.

Capital Shift

Shifted his administrative capital from **Yelahanka** to Bengaluru.

Laid the foundation for the growth of modern Bengaluru.

Vision for Bengaluru

Inclusive Urban Development

Envisioned a city where:

Farmers.

Traders.

Artisans.

Scholars.

People of different faiths.

could coexist and prosper together.

Mini Bharat

His inclusive approach contributed to Bengaluru's identity as "**Mini Bharat**", reflecting India's cultural diversity.

Urban Planning and Governance

Planned City Development

Designed Bengaluru with organized layouts and marketplaces.

Encouraged economic activity and trade.

Sustainable Development

Promoted long-term urban growth through water management and public infrastructure.

Good Governance

Focused on welfare-oriented administration and community participation.

Progressive Social Reforms

Opposition to Regressive Customs

Took steps to eliminate harmful social practices prevalent during his time.

Bandi Devaru Practice

Prohibited the custom among the **Morasu Vokkaliga** community that involved the amputation of the last two fingers of the left hand of unmarried women.

Significance

Reflected his commitment to social justice and human dignity.

Infrastructure Development

Water Conservation

Built numerous lakes, tanks, and reservoirs.

Objective

Ensure:

Water security.

Agricultural sustainability.

Drought resilience.

Environmental Significance

His water-management initiatives continue to influence Bengaluru's historical landscape.

Patron of Art and Culture

Support for Temples

Constructed and patronized several temples.

Promotion of Learning

Encouraged education, culture, and intellectual activities.

Cultural Development

Contributed to the preservation and flourishing of regional traditions.

Contribution to Public Welfare

Community Development

Strengthened local economies through trade and infrastructure.

Agricultural Support

Improved irrigation and water availability.

Social Harmony

Fostered coexistence among diverse communities.

Legacy

Founder of Bengaluru

Revered as the architect and founder of modern Bengaluru.

Nadaprabhu

Honoured with the title "**Nadaprabhu**", meaning "Leader of the Land".

Statue of Prosperity

A **108-foot bronze statue** of Kempe Gowda has been erected in Bengaluru.

Recognition

Recognized by the **World Book of Records** as the world's tallest bronze statue of a city's founder.

Significance

Urban Planning Pioneer

One of India's earliest visionaries in planned urban development.

Model of Sustainable Governance

Demonstrated the importance of integrating environmental conservation with city planning.

Champion of Social Reform

Challenged harmful customs and promoted social welfare.

Symbol of Inclusive Growth

Advocated a city that welcomed people from diverse backgrounds.

Cultural Legacy

Left a lasting impact on Karnataka's cultural and historical heritage.

Lessons for Modern Urban Development

Sustainable Water Management

Importance of conserving water bodies and urban ecosystems.

Inclusive Cities

Need for equitable and participatory urban growth.

Balanced Development

Integration of economic progress with environmental protection.

Preservation of Heritage

Protecting cultural and historical assets while expanding cities.

Way Forward

Conservation of Historical Sites

Preserve monuments, lakes, and structures associated with Kempe Gowda.

Revival of Traditional Water Systems

Restore historic tanks and reservoirs for urban sustainability.

Promote Inclusive Urban Planning

Adopt development models inspired by Kempe Gowda's vision.

Public Awareness

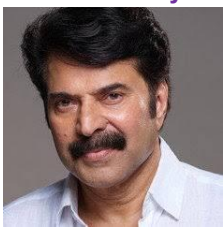
Increase awareness about his contributions through education and cultural initiatives.

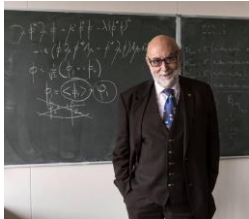
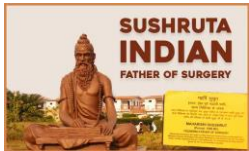
Conclusion

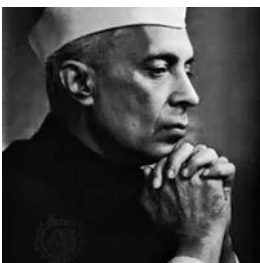
Nadaprabhu Sri Kempe Gowda was a visionary ruler, urban planner, social reformer, and environmental steward whose contributions laid the foundation of modern **Bengaluru**. His emphasis on **inclusive governance, sustainable development, social justice, and water conservation** continues to offer valuable lessons for contemporary urban planning and nation-building.

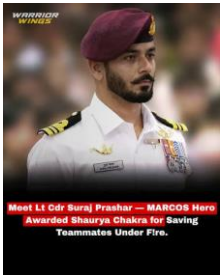
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PERSONS IN NEWS

Person	In the News	Date
Narendra Modi 	Received Seychelles' highest environmental honour, Guardian of the Blue Horizon , during his state visit to Seychelles.	28 June 2026
Droupadi Murmu 	Conferred 131 Padma Awards 2026 in two Civil Investiture Ceremonies at Rashtrapati Bhavan.	25 May & 23 June 2026
Dharmendra 	Awarded Padma Vibhushan posthumously.	25 May 2026
Hema Malini 	Accepted the Padma Vibhushan on behalf of Dharmendra.	25 May 2026
Mammootty 	Received the Padma Bhushan .	23 June 2026
Alka Yagnik 	Received the Padma Bhushan .	23 June 2026

Dattatreyyudu Nori 	Received the Padma Bhushan .	23 June 2026
Vijay Amritraj 	Received the Padma Bhushan .	23 June 2026
François Englert 	2013 Nobel Prize in Physics laureate passed away at the age of 93.	June 2026
Maharshi Sushruta 	A 90-kg bronze statue was unveiled at the Royal College of Surgeons of Edinburgh, Scotland.	19 June 2026
Jainendra K. Jain 	Won the 2025 Wolf Prize in Physics for the discovery of composite fermions.	18 June 2026
Isaac Herzog 	Presented the Wolf Prize to Jainendra K. Jain in Jerusalem.	18 June 2026
Narendra Modi	Received Slovakia's highest state honour, the Order of the White Double Cross (First Class) .	15 June 2026

Peter Pellegrini 	Presented Slovakia's highest state decoration to Narendra Modi.	15 June 2026
Sudarsan Pattnaik 	Became the first Indian to win the Russia Grand Sand Master Cup 2026 .	12–13 June 2026
Narendra Modi 	Became India's longest-serving continuously elected Prime Minister (4,399 days).	10 June 2026
Jawaharlal Nehru 	His record as the longest-serving elected Prime Minister was surpassed by Narendra Modi.	10 June 2026
Indira Gandhi 	Previously held the record for longest uninterrupted tenure before Modi surpassed it in 2025.	Mentioned

Suraj Prashar 	Lieutenant Commander awarded the Shaurya Chakra for bravery during Operation Chuntawadi.	8 June 2026
Droupadi Murmu	Presented gallantry awards, including Kirti Chakra, Vir Chakra and Shaurya Chakra, at the Defence Investiture Ceremony.	8 June 2026
Prasanth Balakrishnan Nair 	Received the Kirti Chakra during the Defence Investiture Ceremony 2026.	8 June 2026



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Rank

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