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YOUR PATHWAY TO UPSC SUCCESS

WEEKLY CURRENT AFFAIRS

3RD NOV TO 8TH NOVEMBER

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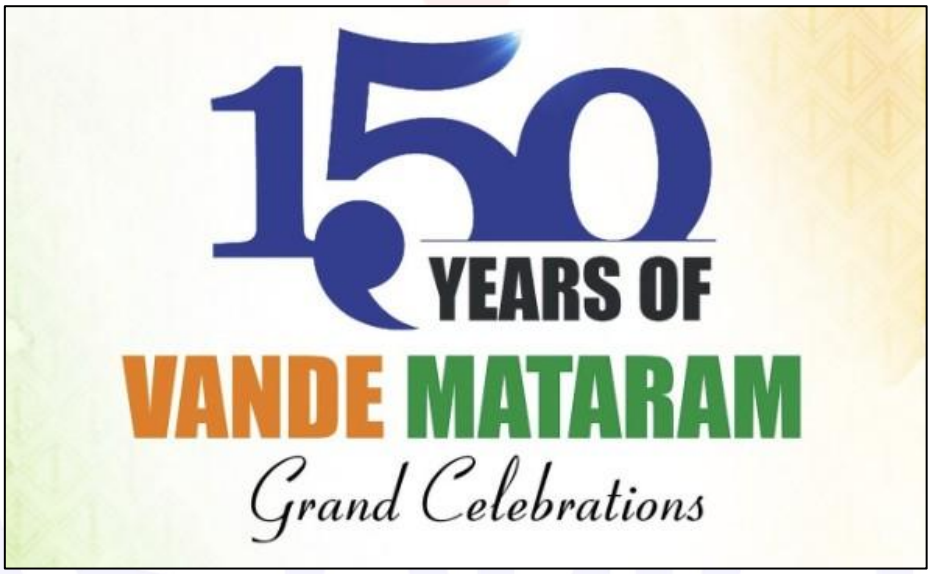
01 150 YEARS OF VANDE MATARAM (1875–2025): A SYMBOL OF INDIA'S NATIONAL AWAKENING

INTRODUCTION

- **Vande Mataram**, meaning *"I bow to thee, Mother"*, is a patriotic song that became the **soul of India's freedom movement**.
- **Composed by:** *Bankim Chandra Chatterjee* in **1875** (some sources say 1872) and published in **1882** in his novel **Anandamath**.
- **Year 2025 marks 150 years** of the song's composition — celebrating a century and a half of India's national awakening.



HISTORICAL BACKGROUND

- Bankim Chandra Chatterjee was a **Bengali novelist and civil servant** under the British Raj.
- During British rule, when patriotism was seen as rebellion, Bankim sought to **awaken national consciousness** through culture and literature.
- The idea of *"Bharat Mata"* or **Mother India** — as a divine figure — was first symbolically expressed through *Vande Mataram*.

COMPOSITION AND PUBLICATION

- **Language:** A mix of **Sanskrit and Bengali**.
- **First written:** Around **1875**; later included in his novel *Anandamath* (1882).
- The novel depicted **Sannyasis (monk warriors)** rising against foreign oppression, symbolizing India's struggle for freedom.

- The song originally had **six stanzas**, but only the **first two** were later adopted officially due to religious inclusivity concerns.

TRANSLATION AND POPULARIZATION

- **First sung:** In a political context at the **Indian National Congress (INC) Session, 1896**, by **Rabindranath Tagore**.
- **English translation:** By **Sri Aurobindo Ghosh**, titled *"Mother, I Bow to Thee."*
- *Vande Mataram* quickly became the **anthem of national unity**, sung in protests, rallies, and revolutionary gatherings.

ROLE IN INDIA'S FREEDOM MOVEMENT

- Became a **war cry for revolutionaries** and **a chant of resistance**:
  - During **Swadeshi Movement (1905–1911)** against Bengal Partition, people shouted *"Vande Mataram!"* in processions.
  - Used by **Anushilan Samiti**, **Jugantar Party**, and other freedom groups.
  - Revolutionaries like **Bhagat Singh, Aurobindo Ghosh, and Lala Lajpat Rai** invoked it as a spiritual symbol of Bharat Mata.
- The British government often **banned the song** in schools, offices, and rallies — seeing it as **seditious**.

CONSTITUTIONAL AND NATIONAL STATUS

- During **Constituent Assembly debates (1948)**, the issue arose whether *Vande Mataram* or *Jana Gana Mana* should be India's national anthem.
- **Decision:**
  - *Jana Gana Mana* adopted as **National Anthem**.
  - The **first two stanzas** of *Vande Mataram* were recognized as **National Song** of India.
- **Constitutional Recognition:** While not explicitly mentioned in the Constitution, it holds **equal respect** by convention and government resolutions.

MEANING AND SYMBOLISM

- **Motherland as Goddess Durga:** Symbolizes India's natural beauty and divine strength.
- **"Sujalam, Suphalam, Malayaja Sheetalam"** – "Richly watered, richly fruited, cooled by southern breezes" — symbolizes India's prosperity and diversity.

- Represents **unity in diversity** and **emotional nationalism**, beyond regional and linguistic divisions.

MUSICAL LEGACY

- The song has been **set to music** by multiple composers:
  - **Jadunath Bhattacharya** (original version, 1896)
  - **Rabindranath Tagore's** version (for INC session)
  - **A.R. Rahman's "Vande Mataram" (1997)** — revived national pride on 50 years of Independence.
- Sung in **numerous Indian languages**, symbolizing pan-Indian unity.

CONTROVERSIES AND RELIGIOUS SENSITIVITIES

- Some Muslim leaders in early 20th century objected to parts of the song equating the motherland with **Hindu goddess Durga**.
- The **Congress Working Committee (1937)** decided to **use only the first two stanzas**, which describe the land — not the deity — to maintain inclusivity.
- Despite differences, *Vande Mataram* remains a **national cultural heritage**, transcending religious identity.

VANDE MATARAM AND MODERN INDIA

- **Official Observance:** Government of India has directed that the song may be sung in schools and institutions with respect.
- **Cultural Symbol:** Used in films, national events, and military parades.
- **Educational Relevance:** Taught as a part of India's freedom struggle in history and civics textbooks.

- **Inspiration:** Continues to inspire patriotism in youth and remains a **reminder of India's unity and freedom.**

GLOBAL RECOGNITION

- *Vande Mataram* has been performed in **UNESCO events, international diaspora gatherings**, and even translated into **multiple world languages**.
- Represents India's **civilizational ethos and spirit of independence** to the world.

COMMEMORATING 150 YEARS (2025)

POSSIBLE NATIONAL INITIATIVES:

- Government and cultural institutions may:
  - Launch **special postal stamps and coins**.
  - Organize **national recitation campaigns** across schools.
  - Conduct **documentaries, exhibitions, and musical tributes** on Bankim Chandra's life.
  - Celebrate **"Vande Mataram Week"** highlighting India's cultural unity.
  - Promote awareness of the song's **original Sanskrit-Bengali verses**.

LITERARY AND PHILOSOPHICAL SIGNIFICANCE

- Bankim's message: *True devotion to God is incomplete without devotion to the motherland.*
- Blends **Bhakti (devotion)** with **Deshbhakti (patriotism)**.
- Symbol of **Cultural Nationalism** — using culture, art, and literature as instruments of resistance.

COMPARISON WITH JANA GANA MANA

Aspect	Vande Mataram	Jana Gana Mana
Written by	Bankim Chandra Chatterjee	Rabindranath Tagore
Year	1875	1911
Language	Sanskrit-Bengali	Sanskritized Bengali
Theme	Glorification of Mother India	Unity under divine guidance

Status	National Song	National Anthem
Length used officially	First 2 stanzas	Full stanza

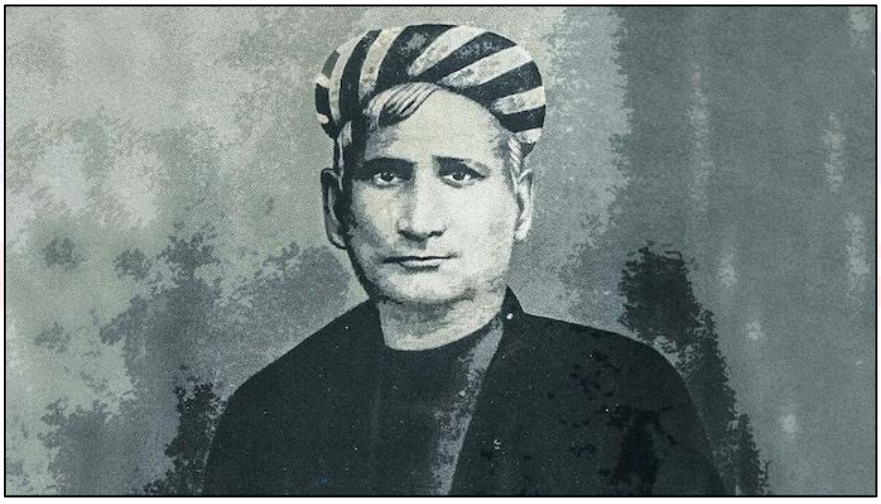
RELEVANCE TODAY

- Promotes **national pride, unity, and respect for India's heritage**.
- Serves as a **reminder to preserve India's pluralism** while cherishing its cultural identity.
- Reflects the **core constitutional values** — liberty, equality, and fraternity — through the idea of a united motherland.
- Encourages youth to **honor sacrifices of freedom fighters** who chanted "Vande Mataram" as their final cry.

CONCLUSION

"Vande Mataram is not merely a song — it is India's heartbeat."

- Even after **150 years**, its words continue to echo the spirit of **freedom, devotion, and unity**.
- As India celebrates this milestone in **2025**, *Vande Mataram* reminds us that the **true worship of the motherland lies in protecting her dignity, diversity, and democracy*.*



KEY FACTS:

- **Composed:** 1875 by Bankim Chandra Chatterjee
- **Published:** 1882 in *Anandamath*
- **First Sung:** 1896 INC session, Calcutta

- **Translated by:** Sri Aurobindo
- **Official Status:** National Song (1948)
- **Language:** Sanskrit-Bengali mix
- **Theme:** Motherland as divine, unity and devotion
- **150th Anniversary:** 2025

MCQS

Question:	Consider the following statements regarding Vande Mataram: 1. It was first published in the novel Anandamath in 1882. 2. It was first sung by Rabindranath Tagore in 1896 at the Indian National Congress session. 3. The Constituent Assembly officially adopted the first two stanzas of Vande Mataram as the National Anthem. 4. The song was composed by Bankim Chandra Chatterjee originally in Sanskrit. Which of the above statements is/are correct?
Option A	1 and 2 only
Option B	1, 2 and 4 only
Option C	1, 2 and 3 only
Option D	2 and 3 only
Answer:	Answer: (a) **Explanation:** 1. Correct – Vande Mataram was included in Anandamath (1882). 2. Correct – First sung by Rabindranath Tagore in 1896 at the Calcutta session of INC. 3. Incorrect – The Constituent Assembly recognized the first two stanzas as the National Song, not the Anthem. 4. Incorrect – It was written in a mix of Sanskrit and Bengali, not purely Sanskrit.

Question:	With reference to the song Vande Mataram, consider the following pairs:

	<table><tr><td>Person</td><td>Contribution</td></tr><tr><td>1. Sri Aurobindo Ghosh</td><td>Translated Vande Mataram into English</td></tr><tr><td>2. Rabindranath Tagore</td><td>Composed the first musical rendition for INC session</td></tr><tr><td>3. Bankim Chandra Chatterjee</td><td>Wrote Anandamath where the song appeared</td></tr></table> Which of the pairs given above is/are correctly matched?
Option A	1 and 2 only
Option B	2 and 3 only
Option C	1, 2 and 3
Option D	1 and 3 only
Answer:	Answer: (c) Explanation: All three statements are correct — Bankim wrote it, Aurobindo translated it, and Tagore first sang it at the INC session in 1896.

Question:	The song Vande Mataram became a key symbol during which of the following movements?
Option A	Non-Cooperation Movement
Option B	Civil Disobedience Movement
Option C	Swadeshi Movement
Option D	Quit India Movement
Answer:	Answer: (c) Explanation: The Vande Mataram slogan became the rallying cry of the Swadeshi Movement (1905–1911) against the Partition of Bengal.

Question:	Which of the following correctly describes the meaning of the phrase Vande Mataram?
Option A	Victory to the Nation
Option B	I bow to thee, Mother
Option C	Long live the King

Option D	Hail to the Leader
Answer:	Answer: (b) Explanation: Vande Mataram literally means “I bow to thee, Mother” — symbolizing reverence to the Motherland.

Question:	In the context of the freedom struggle, which of the following revolutionary organizations used “Vande Mataram” as their war cry? 1. Anushilan Samiti 2. Jugantar Party 3. Hindustan Socialist Republican Association (HSRA) 4. Indian National Army (INA) Select the correct answer using the code given below:
Option A	1 and 2 only
Option B	2 and 3 only
Option C	1, 2 and 3 only
Option D	1, 2, 3 and 4
Answer:	**Answer: (c)** **Explanation:** Vande Mataram was widely used by Bengal-based revolutionary groups like Anushilan Samiti and Jugantar Party, later adopted by HSRA members such as Bhagat Singh. The INA’s slogan was “Jai Hind”, not Vande Mataram.

02 EXERCISE 'POORVI PRACHAND PRAHAR

India to hold tri-service exercise 'Poorvi Prachand Prahar in Mechuka, Arunachal Pradesh.

OVERVIEW

- **Name: Poorvi Prachand Prahar** (Hindi: "Eastern Powerful Strike/Assault").
- **Type:** Tri-service (Army + Air Force + Navy) **multi-domain exercise**.
- **Location:** Mechuka (Shi-Yomi district), Arunachal Pradesh — rugged, high-altitude terrain near the Line of Actual Control with China.
- **Scheduled Dates:** Around 11–15 November 2025.
- **Key Objective:** Validate and refine joint war-fighting capabilities—interoperability, command & control, high-altitude readiness, multi-domain operations (land, air, maritime).

STRATEGIC RATIONALE

- **Eastern Theatre Emphasis**: While much focus is on western front (Ladakh, Pakistan), this exercise underscores that the eastern sector (Arunachal, Sikkim) is equally significant in India-China dynamics.
- **Jointness & Modernisation**: Shift from service-specific operations to integrated warfare. The exercise is part of the larger transition towards theatre commands, network-centric operations, unmanned/robotic platforms.
- **Deterrence & Signalling**: By conducting it near the LAC, India sends a message of readiness and capability—both domestically and to potential adversary(s).

- **High-Altitude Warfare Capability**: Operating in Mechuka's terrain tests logistics, acclimatisation, rapid deployment and mountain warfare skills—crucial given Himalayan border challenges.

KEY FEATURES & INNOVATIONS

- **New Formations & Units**: The exercise will mark maiden deployment of newly raised units such as the Bhairav Battalion, the Ashni Platoon and the Divyastra Artillery Batteries under "Save & Raise" model (no extra cost to exchequer).
- **Technology Integration**: Use of unmanned aerial/ground platforms (UAVs, loitering munitions), precision weapon systems, networked operations centres (common operating picture, real-time data sharing).
- **Multi-Domain Integration**: Operations across land + air + maritime, in a high-altitude frontier zone—challenging logistics, command & control, mobility.
- **Revised Doctrine/TTPs**: Testing new tactics, techniques and procedures suited for mountain warfare and modern threats (electronic warfare, ISR, rapid deployment).
- **Forward Deployment & Readiness**: The choice of forward terrain near LAC focuses on readiness, shorter reaction times, resilient supply chains.

LOCATION & TERRAIN ADVANTAGES

- Mechuka offers difficult terrain: high altitude, steep gradients, alpine weather, logistic challenges—ideal to test Indian forces' capability for mountain warfare.
- Proximity to LAC makes it strategically relevant: ensures realistic scenarios for India-China border dynamics.
- Testing in such terrain helps validate mountain logistics, mobility of troops and equipment, airlift/aerial resupply, high-altitude firefights and special forces operations.

IMPLICATIONS & BENEFITS

POSITIVE OUTCOMES:

- Improved **interoperability** and joint operational capability among three services.
- Enhanced readiness and agility in high-altitude/frontline zones; ability to project and sustain forces under difficult terrain/logistics.
- Validation of modern war-fighting tools: unmanned systems, precision weapons, network-enabled C2.

- Strategic message of deterrence: adversaries see India's readiness in eastern sector.
- Lessons learned: Informs doctrine, procurement, training and infrastructure improving for frontier operations.

CHALLENGES & CAVEATS:

- Terrain & environment still impose logistical burdens; achieving seamless integration in real war remains difficult.
- Jointness/theatre commands in India are still evolving; exercises accelerate it, but institutional reforms required.
- Simulation vs real war: Real adversary, fog of war, logistics breakdowns, political constraints—exercises cannot replicate all.
- Focus on one front should not reduce attention to other critical fronts (western, northern).
- Technology adoption needs scale, maintenance, training—not just demonstration.

03 NATIONAL BEEKEEPING AND HONEY MISSION

The National Beekeeping & Honey Mission (NBHM) launched in 2021 by the Government of India which is driving the ambitious "Sweet Revolution".

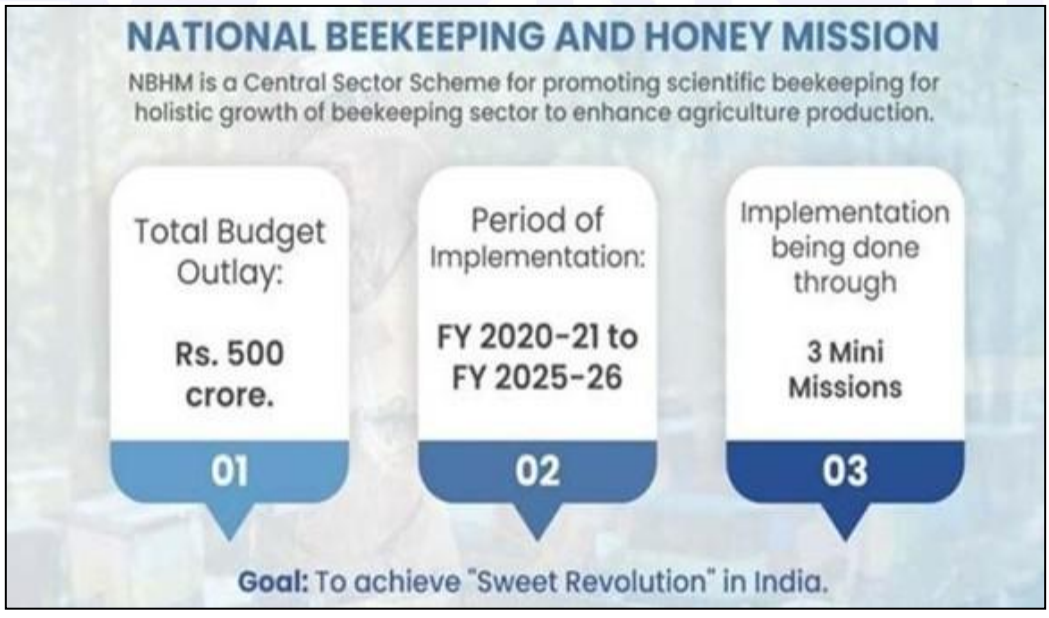
BACKGROUND & LAUNCH

- The NBHM is a **Central Sector Scheme** of the Government of India under the National Bee Board (NBB), functioning under the Ministry of Agriculture & Farmers Welfare (MoA&FW).
- Approved in 2020 (FY 2020-21) with the aim of overall promotion & development of scientific beekeeping and production of quality honey and other beehive products.
- Initial budget outlay: ₹500 crore for three years (FY 2020-21 to FY 2022-23). Later, the mission was extended to FY 2025-26.
- NBHM is also part of India's push for "Sweet Revolution" — elevating honey/beehive products as a livelihood and export avenue.

OBJECTIVES

KEY OBJECTIVES OF NBHM:

- Promote holistic growth of the beekeeping industry for income & employment generation in both farm and non-farm households.
- Enhance agriculture/horticulture production by improving pollination through scientific beekeeping.



- Develop infrastructure for beekeeping: Integrated Beekeeping Development Centres (IBDCs), Centres of Excellence, honey processing plants, testing/disease diagnostic labs, custom hiring centres.
- Promote research & technology generation region-wise for different agro-climatic and socio-economic conditions in beekeeping.
- Empower women and youth through beekeeping enterprises, promote FPOs/Cooperatives of beekeepers.

STRUCTURE & IMPLEMENTATION

Mini Missions: The scheme is implemented through three sub-missions (or Mini Missions) under NBHM.

- **Mini Mission-I**: Focus on production & productivity improvement. e.g., increasing bee colonies, supporting beekeepers, enhancing pollination services.
- **Mini Mission-II**: Focus on post-harvest infrastructure & value addition collection, processing, storage, marketing, branding of honey and bee-products.
- **Mini Mission-III**: Research & Technology-generation region-specific technologies, quality control, labs, diagnostics.

IMPLEMENTING AGENCIES & COORDINATION:

- The National Bee Board (NBB) spearheads the mission.
- Other agencies: State Departments of Agriculture/Horticulture, ICAR/SAUs, dairy/cooperatives (like NDDB), MSME, TRIFED, KVIC, SRLM/NRLM (for SHGs) etc.
- Funding Pattern: As a Central Sector scheme, 100% funded by Central Government for its activities unless state participation is sought.

KEY FEATURES & COMPONENTS

- **Scientific Beekeeping**: Encouraging use of modern beehives, bee-breeding (nucleus stock), disease control, proper management of colonies.
- **Pollination Support**: Recognising bees as pollinators which boost crop yields (linking agriculture/horticulture and beekeeping).
- **Infrastructure Development**: Setting up honey processing units, cold storage, honey testing labs (world-class labs + mini labs) for quality assurance.
- **Traceability & Quality Control**: For example, the “Madhukranti” portal for online registration, traceability of honey/beehive products.

- **Value-added Products**: Beyond honey focusing on beeswax, pollen, propolis, royal jelly, bee venom etc to enhance beekeeper incomes.
- **Empowerment and Institutionalisation**: Formation of FPOs of beekeepers, SHGs, co-operatives, collective marketing.

ACHIEVEMENTS & PROGRESS

- **Honey Production:** India's natural honey production has risen (≈1.4 lakh MT in 2024) under NBHM efforts.
- **Exports:** India exported ~1.07 lakh MT of natural honey worth around USD 177.55 million in FY 2023-24, making India the **second-largest exporter of honey globally** (up from 9th in 2020).
- **Infrastructure:** By March 2025, approval/sanction of 6 world-class honey-testing labs, 47 mini labs, 6 disease diagnostic labs, 26 honey processing units, etc.
- **Institutional Reach:** As of Oct 2025, the "Madhukranti" portal registered 14,859 beekeepers, 269 societies, 150 firms & 206 companies.
- **FPOs/Collectives:** 100 FPOs of beekeepers/honey producers allotted under NBHM; 97 formed by March 2025.

RANKING:

- India is the **second largest exporter** of honey, after China, as of 2024.
- Major Indian states producing honey include **Uttar Pradesh (17%), West Bengal (16%), Punjab (14%), Bihar (12%) and Rajasthan (9%).**
- Major export destinations included the **USA, UAE, Saudi Arabia, Qatar and Libya**.

NATIONAL BEE BOARD (NBB)

- The National Bee Board was registered as a society under the **Societies Registration Act, 1860** on July 19, 2000, and reconstituted under the Chairmanship of the Secretary (A&C) in **June 2006.**
- The primary objective of NBB is to promote **scientific beekeeping**, enhance **crop productivity** through **pollination**, and increase **honey production to boost the income of beekeepers** and **farmers**.
- It has been designated as the **Nodal Agency** for the overall development and promotion of scientific beekeeping in the country.

04 PRADHAN MANTRI KAUSHAL VIKAS YOJANA (PMKVY)

The Ministry of Skill Development and Entrepreneurship (MSDE) recently blacklisted 178 Training Partners (TPs) and Training Centres (TCs) for **large-scale irregularities under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY).**

BACKGROUND & LAUNCH

- PMKVY was launched by the Government of India in 2015 under the Ministry of Skill Development and Entrepreneurship (MSDE) as part of the broader "Skill India Mission".
- The scheme was designed to align with the need: India faced a large skill-gap, with estimates of needing tens of millions of skilled workers across sectors.
- The scheme is outcome-based: skill training + certification + monetary reward (for trained candidates) + placement assistance.
- Implementation by: National Skill Development Corporation (NSDC) along with Sector Skill Councils (SSCs), Training Partners (TPs), assessment agencies.

OBJECTIVES

KEY OBJECTIVES OF PMKVY:

- Encourage and mobilise youth to take up industry-relevant skill training in order to become **employable**.
- Increase capability and productivity of the existing workforce, and align skill training with actual requirements of the industry.

- Promote standardisation of the certification process, create a National Skills Registry (NSR) and integrate recognition of prior learning.
- Provide training to unemployed youth, school/college dropouts, and also certify those with prior informal skills (through Recogniton of Prior Learning – RPL).

PHASES / VERSIONS & KEY FEATURES

PMKVY HAS EVOLVED THROUGH SEVERAL PHASES:

- **PMKVY 1.0** (2015–16 pilot) – initial rollout.
- **PMKVY 2.0** (2016–20) – expanded scope, larger funds, more sectors.
- **PMKVY 3.0** (2020–22) – incorporated adjustments post-COVID, emphasised reskilling/upskilling.
- **PMKVY 4.0** (2022–26) – next generation: more flexibility in training, digitalisation, focus on new age skills (AI, IoT, green economy) and rural outreach.

KEY FEATURES

- Training aligned to the National Skills Qualification Framework (NSQF).
- Short-Term Training (STT) component: for youth, dropouts, based on job-roles.
- Recognition of Prior Learning (RPL) component: assess existing skills of informal workforce for certification.
- Special Projects: training for marginalised groups, remote/left-wing extremism areas, women, etc.
- Training through accredited Training Centres (TCs), monitored via digital systems.

IMPLEMENTATION & INSTITUTIONAL MECHANISMS

- Scheme is centrally funded; training / certification / monetary awards are covered by government under Common Norms.
- Selection of Training Partners (TPs), Training Centres (TCs), Assessment Agencies (AAs). The roles of TPs and AAs are kept separate to maintain transparency.
- Biometric attendance, Aadhaar-linked, monitoring tools, geo-tagging of centres.
- Fund flows: Government → Training Provider/beneficiary (monetary award).
- State/UT participation: While centrally managed, states coordinate via their Skill Missions. Some phases implement via Centrally Sponsored State-Managed (CSSM) mode.

ACHIEVEMENTS & FACTS

- According to latest data, over **1.63 crore youth** trained since 2015.
- The scheme is being revamped for future: focus on new age skills (AI, IoT, green jobs) under PMKVY 4.0.
- Training centres & partners: As of recent data: thousands of centres across India.

CHALLENGES & CRITIQUE

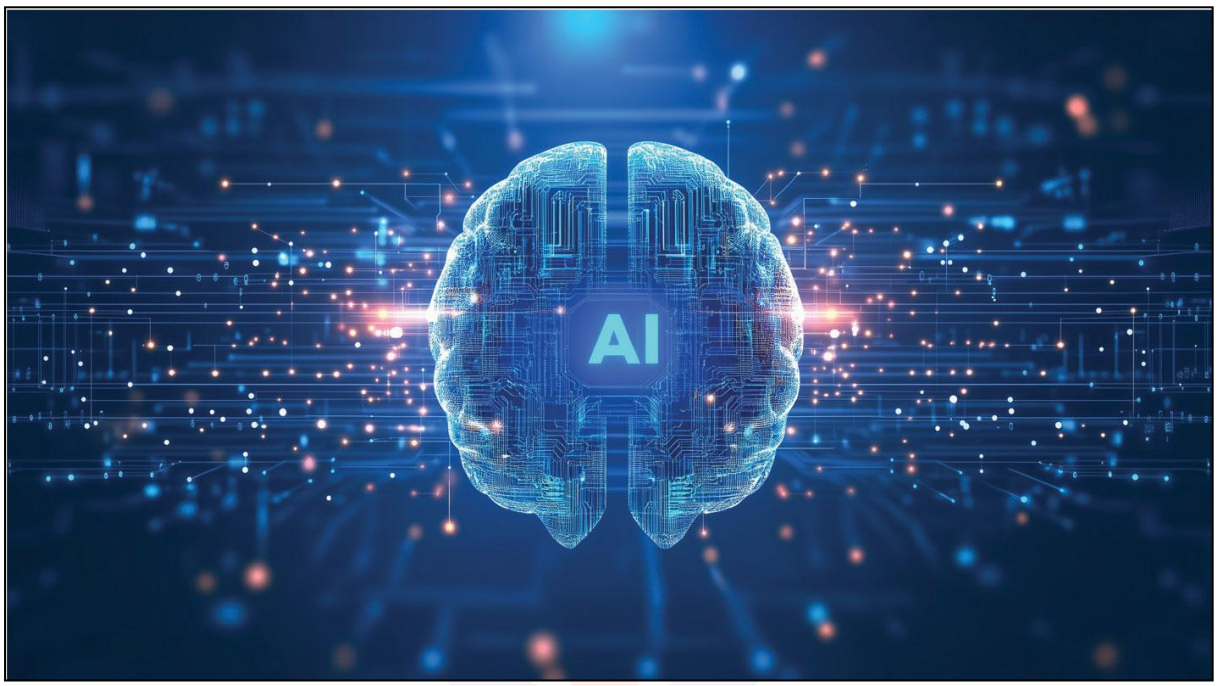
- **Implementation issues:** Some centres inflated enrolment/attendance, misuse of funds, poor placement outcomes.
- **Skill-industry mismatch:** Training sometimes not aligned with actual job demand in sectors/localities.
- **Placement percentages:** While many trained, conversion into meaningful jobs and sustainable employment remains a bottleneck (see news data: less than 15 % placed in some reports)
- **Infrastructure and access:** Remote rural areas, marginalised populations ensuring equitable access is a challenge.
- **Monitoring & transparency:** Need for stronger oversight, real-time tracking, expiry of certifications, outcome tracking.

SIGNIFICANCE FOR INDIA'S DEVELOPMENT

- **Supports India's demographic dividend**: Large youth population needs skills to be employable and productive.
- Aligns with "Make in India", "Digital India", "Green Growth" agendas skilling workforce for future industry.
- Boosts livelihood opportunities, entrepreneurship, self-employment especially among youth, women and marginalised groups.
- Reduces skill gap which impedes growth of industry and economy; supports transition to higher productivity.
- **Integration with other schemes:** Apprenticeship (PM-NAPS), FPOs, MSMEs, start-ups for holistic ecosystem.

05 INDIA'S NEW AI GOVERNANCE GUIDELINES

The Ministry of Electronics and Information Technology (MeitY) released the **India AI Governance Guidelines.**



BACKGROUND & RELEASE

- On **5 November 2025**, MeitY formally launched the India AI Governance Guidelines under the IndiaAI Mission.
- The development of these guidelines followed extensive consultations: a Subcommittee under an Advisory Group chaired by the Ajay Kumar Sood (Principal Scientific Adviser) analysed gaps, and public consultation was also sought.
- The aim: to create a national framework for safe, inclusive, responsible deployment of Artificial Intelligence (AI) across sectors — balancing innovation, risk-mitigation and ethical accountability.

KEY FEATURES & STRUCTURE

A) GUIDING PRINCIPLES ("SEVEN SUTRAS")

The standards are built around seven core principles:

- Trust (in AI systems)
- People-First (human-centric design, human oversight)
- Innovation over Restraint

- Fairness & Equity
- Accountability
- Understandable by Design
- Safety, Resilience & Sustainability

B) SIX PILLARS OF GOVERNANCE

The governance framework is organised around six pillars:

- Infrastructure (e.g., compute/data access)
- Capacity Building (skills, awareness)
- Policy & Regulation (flexible, adaptive)
- Risk Mitigation (risk frameworks, safety)
- Accountability (liability models, transparency)
- Institutions (governance architecture)

C) INSTITUTIONAL / OVERSIGHT ARCHITECTURE

The guidelines propose setting up or leveraging:

- An **AI Governance Group (AIGG)** for cross-ministerial coordination.
- A **Technology & Policy Expert Committee (TPEC)** for expert input.
- An **AI Safety Institute (AISI)** to focus on risk assessment, standards, safety research.
- Sectoral regulators (e.g., finance, health) to enforce domain-specific controls.

D) PHASED ROAD-MAP / ACTION PLAN

The framework lays out short-, medium- and long-term timelines:

- **Short term**: Establish institutions, build risk-taxonomy, initiate capacity building.
- **Medium term**: Incident reporting, regulatory sandboxes, integration with Digital Public Infrastructure (DPI).
- **Long term**: Drafting sectoral rules, strengthening accountability mechanisms, evolving liability regimes.

E) REGULATORY APPROACH & LEGAL FRAMEWORK

- The guidelines adopt a "light-touch" regulation philosophy: relying wherever possible on existing laws and frameworks rather than immediate creation of a new all-encompassing AI law.
- Emphasis on flexibility, innovation-first, human-centric design and graded accountability rather than heavy-handed enforcement.

SIGNIFICANCE & STRATEGIC CONTEXT

- **National strategy for AI governance**: These guidelines represent India's first comprehensive national roadmap for AI governance, signaling India's intention to shape its AI ecosystem in a way that balances growth and rights.
- **Global positioning**: India is navigating between models such as the European Union's AI Act (more prescriptive) and the United States' market-led model. The middle path may give India flexibility while ensuring safety, potentially serving as a model for the Global South.

- **Alignment with India's digital ecosystem**: Integration of AI governance with India's Digital Public Infrastructure (DPI), emphasizing data, compute, skilling, inclusion — important given India's digital ambitions.
- **Relevance for sectors**: With AI poised to impact agriculture, health, governance, economy, etc., the guidelines provide the governance overlay needed for responsible deployment.
- **Trust, ethics & inclusion**: The guiding principles emphasize fairness, human oversight, transparency — aspects critical in India's diverse social context, plurality of languages and equity concerns.

CHALLENGES, GAPS & CONSIDERATIONS

- **Voluntary vs mandatory**: Many of the guidelines' mechanisms (incident reporting, transparency reports) remain voluntary in nature — the effectiveness will depend on adoption & enforcement.
- **Implementation capability**: Creation of institutions (AISI, TPEC, AIGG) is one thing; ensuring they have capacity, resources and authority is another.
- **Sectoral coordination**: AI governance spans multiple sectors (finance, health, telecom, defence) which are regulated by different agencies — achieving coherence is complex.
- **Risk classification & high-stakes AI**: Differentiating high-risk vs low-risk applications, clear liability frameworks remain to be fully articulated.
- **Data, compute & digital divide**: Ensuring infrastructure access, skilling in remote/rural India, inclusive design remains challenging.
- **Global alignment vs India-specific context**: While global best practices are referenced, India needs context-specific frameworks (e.g., multi-lingual, low literacy, large informal sector) — the guidelines speak to this but implementation will test it.
- **Speed of innovation vs regulation**: The balance between promoting innovation (especially for start-ups, indigenous models) and mitigating harm is delicate.

06 AMUL RANKED WORLD'S NUMBER 1 COOPERATIVE, IFFCO SECOND

Amul's parent company, **Gujarat Cooperative Milk Marketing Federation Ltd**, is ranked as the **top co-operative in the world** in the **ICA World Cooperative Monitor 2025 rankings.**

KEY FACTS

- The ranking was published as part of the International Cooperative Alliance (ICA) / European Research Institute on Cooperative and Social Enterprises (EURICSE) *World Cooperative Monitor 2025* report.
- In this ranking:
    - Amul (GCMMF) has been ranked **#1 globally** among cooperatives based on the ratio of turnover to GDP per capita.
    - IFFCO has been ranked **#2 globally** in the same metric.
- The announcement was made at the ICA CM50 Conference in Doha, Qatar.
- The metric used is primarily "turnover relative to GDP per capita" of the country where the cooperative operates.

WHAT ARE COOPERATIVES?

- A cooperative (or co-op) is an **organization or business** that is **owned and operated by a group of individuals** who share a common interest, goal, or need.
- These **individuals**, **known as members**, participate in the cooperative's activities and **decision-making process**, typically on a one-member, one-vote basis, regardless of the amount of capital or resources each member contributes.
- The main purpose of a cooperative is **to meet the economic, social, or cultural needs of its members,** rather than to maximize profits for external shareholders.
- The **UN SDGs recognize cooperatives as crucial drivers of sustainable development**, particularly in reducing inequality, promoting decent work, and alleviating poverty.

BENEFITS OF COOPERATIVES

- **Democratic Control:** Members have a voice in decision-making.
- **Economic Participation:** Profits are distributed based on usage or contribution, not capital invested.
- **Community Focus:** Co-ops often aim to benefit local communities by keeping resources and profits within the group.
- **Better Services/Prices**: By pooling resources, cooperatives often offer better services or prices than for-profit businesses.

97TH CONSTITUTIONAL AMENDMENT ACT 2011

- It established the right to form cooperative societies as a fundamental right (Article 19).
- It included a new Directive Principle of State Policy on the Promotion of Cooperative Societies (Article 43-B).
- It added a new Part IX-B to the Constitution titled "The Co-operative Societies" (Articles 243-ZH to 243-ZT).
- It authorizes the Parliament to establish relevant laws in the case of multi-state cooperative societies (MSCS) and state legislatures in the case of other cooperative societies.

CHALLENGES FACED:

- **Weak Governance:** There are issues of poor management, corruption, and political interference, leading to inefficiency and lack of transparency.
- **Limited Access to Credit:** Many cooperatives struggle with access to financing, which hinders their ability to expand or improve their operations.
- **Competition from Private Sector:** Cooperatives often face stiff competition from large private enterprises and multinational corporations, especially in sectors like retail and agriculture.
- **Technological Gaps:** Many cooperatives, especially in rural areas, lack access to modern technology or are slow to adopt new systems that could improve efficiency.

LEGAL FRAMEWORK AND SUPPORT FOR COOPERATIVES:

In India, cooperatives are governed by the **Cooperative Societies Act,** which is implemented at both the state and national levels.

- **The Multi-State Cooperative Societies Act (2002):** This law regulates cooperatives that operate in more than one state.
- **The National Cooperative Policy (2002):** Aimed at creating an enabling environment for the cooperative movement, it focuses on improving governance, member participation, and financial sustainability.
- **The Ministry of Cooperation:** Established in 2021, this ministry focuses on supporting the growth of cooperatives in India, including reforming their governance and providing financial support.

WAY AHEAD

- Cooperatives in India have proven to be an essential tool for economic empowerment, especially for marginalized groups, and contribute significantly to rural development.
- With the right support and reforms, cooperatives can continue to contribute to inclusive growth and social development in India.

07 INDIA'S LARGEST GEOTHERMAL ENERGY TECHNOLOGY PILOT PROJECT

Recently, **Energy Efficiency Services Limited (EESL)** has announced plans to establish **India's largest geothermal energy technology** pilot project in **Araku Valley and Visakhapatnam in Andhra Pradesh.**

WHAT IS ENERGY EFFICIENCY SERVICES LIMITED (EESL)?

- It is a joint venture of four public sector undertakings (PSUs) like NTPC Limited, Power Finance Corporation (PFC), Rural Electrification Corporation (REC) and Power Grid Corporation of India under the Union Ministry of Power.
- It was established to lead large-scale energy efficiency projects across India, acting as a 'Super ESCO' (Energy Service Company).

OTHER KEY INITIATIVES BY EESL:

- **UJALA:** Distribution of LED bulbs and appliances;
- **Smart Metering:** Deployment of advanced metering infrastructure;
- **National Efficient Cooking Programme (NECP):** Promoting induction cookers to reduce cooking costs;
- **Energy Efficient Fans Programme (EEFP):** Distribution of BLDC fans nationwide.

ARAKU VALLEY

- It is located in the Alluri Sitharama Raju (ASR) district of Andhra Pradesh in Eastern Ghats.
- Galikonda Hill is located in it.

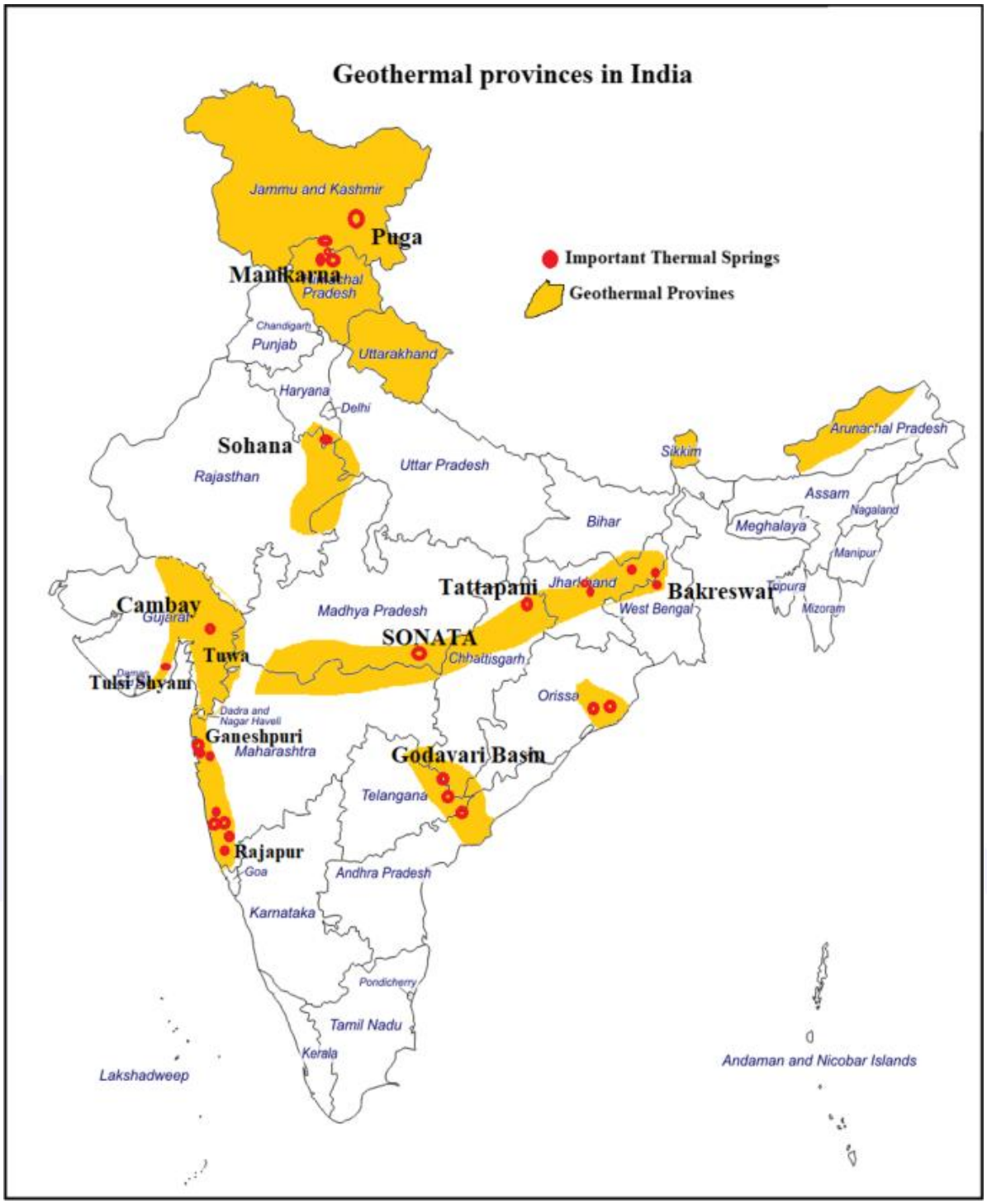
GEOTHERMAL ENERGY (GEO = EARTH, THERMAL=HEAT)

- It is the heat stored **within the Earth's crust,** and comes from the **natural heat of the Earth** primarily **due to the decay** of the naturally **radioactive isotopes** of uranium, thorium and potassium.
- On average, the **temperature of the Earth increases with depth**, about **25–30°C/km** above the surface ambient temperature (geothermal gradient).
- The heat is transferred from the interior towards the surface **mostly by conduction.**
- **Types:**
    - **High-enthalpy Resources:** Often associated with volcanic regions, geysers and hot springs are **primarily used for electricity generation.**
- **Low to Medium-enthalpy Resources:** Such as hot rocks and shallow ground layers, are better suited for **direct-use applications** and **geothermal heat pumps.**
- Geothermal plants offer **high-capacity utilization (>80%)**, reliable baseload supply, and **no recurring fuel costs**, making them economically viable in the long term.
    - These are **capital-intensive and site-specific**, requiring high upfront investment in exploration, drilling, and infrastructure.
- **Global Geo-Thermal Capacity (15.4 GW):** United States, followed by Indonesia, the Philippines, Turkey, and New Zealand.

GEOTHERMAL POTENTIAL SITES IN INDIA

- The **Geological Survey of India (GSI),** since 1973, has **identified 381 hot springs** with surface temperatures ranging from 35°C to 89°C.
- It can be utilized effectively, with advancements in **Enhanced Geothermal Systems (EGS)** and **Advanced Geothermal Systems (AGS).**
- **India** falls **within a medium to low heat enthalpy zone (100–180°C),** spread across **10 geothermal provinces.**

- **'Geothermal Atlas of India, 2022'** estimated the potential of about 10,600 MW of geothermal power in India.



08 BALIYATRA FESTIVAL

The President extends greetings on the occasion of the historic 'Baliyatra' festival to the people of Odisha.

WHAT IS BALIYATRA

- Baliyatra (also spelt Bali Jatra) means literally "Voyage to Bali".
- It is an annual festival held in the city of Cuttack, Odisha, along the banks of the river Mahanadi (near Gadagadia Ghat/Barabati Fort) commemorating the ancient maritime voyages of the Odia mariners (Sadhabas) who sailed from Kalinga to distant lands like Bali, Java, Sumatra, Borneo, Sri Lanka.
- The festival begins on the full-moon day of the Hindu month of Kartika (Kartika Purnima) and usually continues for about a week (sometimes more).
- It is both a cultural festival and a large open-trade fair one of Asia's largest open trade fairs.

HISTORICAL & CULTURAL BACKGROUND

- During ancient times, the region of Kalinga (present day Odisha) had a flourishing maritime trade network with Southeast Asian islands. The Sadhabas would set sail on Kartika Purnima because it was considered an auspicious day for the voyage.
- The ritual of "Boita Bandana" is part of the festival: early morning on Kartika Purnima, people make miniature boats from banana tree bark, paper, cork etc., put lamps in them and float them on the river to symbolise the departure of mariners.
- Over time the festival grew from a ritual of remembrance to a full-blown cultural and trade fair, combining traditional heritage with commerce, entertainment and tourism.

LOCATION, TIME & CURRENT FORM

- **Location**: Cuttack, Odisha primarily along the banks of the Mahanadi at Gadagadia Ghat/Barabati.
- **Time/Duration**: Starts on Kartika Purnima (in November) and extends for about 7–9 days; for example, in 2025 scheduled from 5 to 12 November (with possible extension).
- **Events & Features**:
    - Huge fair ground with thousands of stalls selling handicrafts, textiles, food, consumer goods etc.
    - Cultural programmes: music, dance, lights, fireworks.
    - Traditional rituals: Boita Bandana, float of lamps.
    - Trade & commerce dimension: the fair is used by many traders and artisans to reach large footfall. For instance, in 2024-25 business worth ₹250 crore+ and 60 lakh visitors recorded.
- **Recent Developments**:
    - In 2025, the theme is "Celebrating Odia Language and Literature" and around 1 lakh books will be distributed among children.
    - In February 2025, the Central Government granted the festival the status of a "National Fair".

SIGNIFICANCE

CULTURAL SIGNIFICANCE

- **Keeps alive the maritime legacy of Odisha:** the ritual of Boita Bandana links ordinary citizens to the history of maritime trade and exploration.
- **Reinforces identity:** through language, literature, folk culture, cuisine and craft traditions. For example, the 2025 theme emphasises Odia language.
- **See link to intangible heritage:** songs associated with the festival, craft traditions, folk art.

ECONOMIC & SOCIAL SIGNIFICANCE

- Adds extremely large commercial value: trade fair with huge business and footfall helps local economy, artisans, traders.
- Provides platform for rural/small artisans, food vendors, handicraft makers to access mass market.

- Tourism significance: draws visitors nationally (and some internationally), adding to the state's economy and brand.
- Social bonding: festival atmosphere, multi-generational participation, community event.

GEOPOLITICAL / HISTORICAL SIGNIFICANCE

- The festival is a symbol of India's maritime orientation centuries ago; this can be tied to current maritime strategy, Blue Economy, India's linkages with Southeast Asia.
- Heritage linkages with Bali, Java, Sumatra etc. serve as reminder of past cultural/trade links.

URBAN DEVELOPMENT & GOVERNANCE SIGNIFICANCE

- **Festival site management:** large footfall, infrastructure, safety, environment management (e.g., in 2025 there are green measures, book distribution).
- Recognition as a national fair increases central focus; can help in funding, infrastructure improvement.

CHALLENGES & ISSUES

- **Large crowd management, safety, logistics:** With millions visiting, strains on infrastructure.
- **Environmental concerns:** Waste management, usage of plastics, pollution of river. For example, the Orissa High Court in 2025 ordered action against plastic use at Baliyatra.
- **Maintaining heritage authenticity vs commercialisation:** The fair becomes highly commercial, risk of losing cultural depth.
- **Access and benefit sharing:** Small artisans and local vendors may be overshadowed by big stalls/traders.
- **Infrastructure for small vendors:** Adequate facilities, amenities, hygiene at food stalls — e.g., in 2025 FSSAI certification made mandatory for food stalls.
- **Maintaining the ritual element:** The origins (maritime voyage, Boita Bandana) may get diluted with modern attractions.

09 UMNGOT RIVER

Meghalaya's Umngot river has turned unusually murky, sparking concerns over pollution from highway construction activities.

ABOUT UMNGOT RIVER

- Umngot River, also called **Dawki or Wah Umngot**, flows through **Dawki in Meghalaya's West Jaintia Hills** and is famed for its crystal-clear, transparent waters that reveal the riverbed below.
- It runs along the India–Bangladesh border, serving both as a natural boundary and a key cross-border trade route.
- The discoloration, typically seen only during monsoons, is being linked to construction activities for the Shillong-Dawki road upgrade.

10 STARLINK SIGNS FIRST DEAL WITH MAHARASHTRA

Maharashtra has become the first Indian state to formally collaborate with Starlink to deliver satellite-based internet connectivity across remote and underserved regions.

ABOUT

- Under the partnership, satellite internet will be **deployed in government institutions, public infrastructure and underserved districts.**
- The move is part of the **state's Digital Maharashtra mission** and aims to strengthen **digital connectivity** in areas with limited network access.

STARLINK

- Starlink, owned by Elon Musk's **SpaceX**, provides internet through a **constellation of low-Earth orbit (LEO) satellites** that beam **signals directly to users on the ground.**
- Unlike traditional broadband that depends on cables or mobile towers, Starlink's system can reach regions **were laying fibre or building towers is difficult** or uneconomical.
- **Significance:**
    - **Satellite internet** can **support essential services** such as online education, telemedicine, digital payments, and e-governance.
    - It can also **maintain communication during disasters** when ground infrastructure fails.

11 VAISHVIK BHARTIYA VAIGYANIK (VAIBHAV)

Minister of State for Science and Technology interacted with **Vaishvik Bhartiya Vaigyanik (VAIBHAV)** fellows from across the world.

BACKGROUND & OVERVIEW

- VAIBHAV stands for "Vaishvik Bhartiya Vaigyanik" (Global Indian Scientists/Researchers). It is an initiative by the Government of India aimed at leveraging the Indian origin scientific diaspora to strengthen the R&D ecosystem in India.
- The first major component was the VAIBHAV Summit: a global virtual summit of overseas and resident Indian scientists and academicians, inaugurated on 2 October 2020 (Gandhi Jayanti).
- Later, the scheme was expanded with a Fellowship Programme under the Department of Science & Technology (DST), to formalise engagement of Indian-origin scientists abroad in Indian research institutions.

OBJECTIVES

The main objectives of VAIBHAV:

- To bring global Indian origin scientists (NRIs/PIOs/OCIs) into active collaboration with Indian Higher Educational Institutions (HEIs), public-funded R&D institutions and universities.
- To facilitate transfers of knowledge, best practices, research culture and frontier science into Indian institutions, thereby enhancing India's "Atmanirbhar" research & innovation ecosystem.
- To create institutional mechanisms, networks and sustained linkages (not just one-time visits) between the diaspora and India's STEMM (Science, Technology, Engineering, Mathematics & Medicine) ecosystem.

KEY COMPONENTS / FEATURES

VAIBHAV SUMMIT (2020):

- Held from 2 October to 31 October 2020, with participants from overseas and India. More than thousands of scientists and academicians participated.
- It was organised across multiple streams/verticals (say 18 knowledge verticals) including quantum technologies, AI/ML, communications, data sciences, aerospace etc.

VAIBHAV FELLOWSHIP PROGRAMME:

- Announced by DST on 15 June 2023 (call for proposals) to connect Indian STEMM diaspora with Indian institutions.
- Eligibility: Outstanding scientists/technologists of Indian origin working abroad. They are expected to collaborate with Indian host institutions for up to 2 months a year, for a maximum of 3 years.
- Fellowship components: A grant (₹4,00,000 per month), international & domestic travel, accommodation, contingencies.
- Knowledge verticals covered: 18 identified areas such as quantum technologies, health & pharma, electronics, agriculture, energy, computer sciences, material sciences.

INSTITUTIONAL MECHANISM:

- The programme is implemented by DST through Indian National Academy of Engineering (INAE) in collaboration (as implementing agency) for the Fellowship component.

- Host Indian institutions choose collaborations; the diaspora scientist aligns with an Indian institution to work on specific research projects.

SIGNIFICANCE

- **Strengthening India's research ecosystem:** By tapping the global Indian diaspora, India can benefit from international networks, advanced labs, research expertise and frontier science.
- **Boosting high-end research & innovation:** With fields like quantum technologies, AI, advanced materials, cutting-edge agriculture etc, the programme aligns with India's ambition to move up the value chain.
- **Contributing to "Atmanirbhar Bharat" in Science & Technology:** The initiative aligns with reducing dependence on external scientific capability, building a robust domestic research base.
- **Global Indian diaspora engagement:** This leverages India's human capital abroad, strengthening scientific ties and return collaborations.
- **Readiness for global challenges:** With pandemics, climate change, etc., such broad collaboration helps India address global & national challenges via science.

12 PROJECT SUNCATCHER

Google launches **Project Suncatcher** to test **AI data centres in space.**

WHAT IS PROJECT SUNCATCHER?

- Project Suncatcher is a research initiative by Google LLC aiming to build **space-based AI compute infrastructure**.
- The idea is to launch constellations of solar-powered satellites carrying AI hardware (such as Google's TPUs – Tensor Processing Units) into low-Earth orbit (LEO) and use near-continuous solar energy to power large-scale machine-learning workloads.
- Google plans in the first phase to launch **two prototype satellites by early 2027**, in partnership with Planet Labs PBC.

HOW DOES IT WORK? (TECHNICAL APPROACH)

- **Orbit & power**: The satellites would be placed in sun-rich orbits (for example dawn-dusk sun-synchronous LEO) where solar panels can be far more efficient (some estimates suggest up to 8 × more productivity compared to Earth-based solar) because of less atmospheric attenuation and more continuous exposure.
- **Computer hardware**: Each satellite would carry Google's custom TPU chips for ML workloads, hardened for space conditions (radiation, thermal extremes). Google reports early radiation-testing of its Trillium-generation TPUs showing promising results.

- **Networking/constellation design**: The satellites are envisioned to form a tight formation (for example an array of ~81 satellites within ~1 km radius) so that they function like a distributed cluster, using free-space optical (laser) inter-satellite links capable of tens of terabits per second.
- **Reduced terrestrial constraints**: By moving compute to orbit, the project aims to sidestep some Earth-bound constraints such as land availability, cooling infrastructure, local power supply, water consumption, and environmental footprint.

13 QS ASIA UNIVERSITY RANKINGS

The QS World University Rankings: Asia 2026 has been released.

WHAT ARE THE QS ASIA UNIVERSITY RANKINGS?

- The QS Asia University Rankings (sometimes called *QS World University Rankings: Asia*) are a regional ranking produced by QS Quacquarelli Symonds that specifically evaluates universities in Asia (Eastern, Southern, South-Eastern, Central Asia).
- Purpose: to give a more "regional lens" on university performance than the global QS World University Rankings, allowing institutions & students in Asia to compare more meaningfully.
- The number of participating institutions is large: for 2026, the 2026 edition included **1,526 universities** from Asia.

METHODOLOGY & KEY INDICATORS

Understanding the indicators is important for analysis and critique. The Asia ranking uses a set of metrics (some overlapping with global QS, some tailored) with different weights. Key metrics include:

- **Academic Reputation** (~30%) — how academics view the institution.
- **Employer Reputation** (~20%) — how employers view graduates.
- **Faculty/Student ratio** (~10%) — smaller class size, more staff per student.
- **Staff with PhD** (~5%) — percentage of academic staff holding PhD.
- **Papers per Faculty** (~5%) — research productivity.
- **Citations per Paper** (~10%) — research impact.
- **Internationalisation metrics** (International Students ratio, International Faculty ratio, Exchange student metrics) – smaller weights (~2.5% each) but increasingly emphasised.

RECENT RESULTS & INDIA'S PERFORMANCE

TOP 10 ASIA (2026):

- The University of Hong Kong (HK)
- Peking University (China)
- National University of Singapore (NUS) (Singapore)
- Nanyang Technological University (NTU) (Singapore)
- Fudan University (China)
- The Hong Kong University of Science and Technology (HK)
- The Chinese University of Hong Kong (HK)
- City University of Hong Kong (HK)
- Tsinghua University (China)
- The Hong Kong Polytechnic University (HK)

INDIA'S CASE:

- For 2026, 294 Indian institutions featured in the ranking.
- Top Indian institution: Indian Institute of Technology Delhi (IIT Delhi) ranked =59th among Asia.
- In earlier years (2024): India had 148 institutions ranked, making India the "most represented" country in that edition.

14 INDIA AND BAHRAIN'S BILATERAL RELATIONS

External Affairs Minister S Jaishankar met Bahrain's Foreign Minister and discussed **cooperation in defence and security.** India and Bahrain have agreed to **combat the threat of terrorism** through **enhanced bilateral and multilateral cooperation**.

SIGNIFICANCE OF BAHRAIN FOR INDIA

STRATEGIC & GEOPOLITICAL IMPORTANCE

- **Gateway to the Gulf Region:**
  - Bahrain is strategically located in the **Persian Gulf**, near the **Strait of Hormuz**, through which ~40% of the world's oil passes.
  - This makes it crucial for India's **energy security** and maritime interests.
- **Maritime Connectivity:**
  - Bahrain acts as a potential **logistics and naval hub** for India's Western maritime outreach under the **Security and Growth for All in the Region (SAGAR)** initiative.
- **Anchor in India's "Look West Policy":**
  - It strengthens India's engagement with the **Gulf Cooperation Council (GCC)** and broader **West Asia**.
- **Counterbalance to China's Influence:**
  - Bahrain's growing interest in India helps offset China's expanding presence in the Gulf via its Belt and Road Initiative (BRI).

ENERGY SECURITY

- Although Bahrain's oil output is modest compared to Saudi Arabia or UAE, it plays a vital role in **oil refining and storage**.
- Indian oil companies and traders use Bahrain as a **transit and trading hub** for Gulf crude imports.
- Cooperation in **renewable energy (solar and green hydrogen)** aligns with India's sustainable energy goals and Bahrain's diversification under "Vision 2030."

ECONOMIC & TRADE SIGNIFICANCE

- **Bahrain = India's key trade partner in the Gulf.**
  - Bilateral trade ≈ **USD 1.64 billion (FY 2024–25)**.
  - India exports machinery, iron/steel, chemicals, textiles; imports aluminium, petroleum products.
- **Investment Hub:**
  Bahrain's liberal investment laws, tax benefits, and proximity to Saudi Arabia make it a **gateway for Indian businesses** entering the Gulf.
- **Financial Technology Cooperation:**
  Bahrain hosts the **Bahrain FinTech Bay**, where Indian fintech and startups can expand.
- **Negotiations in progress:**
  - **Bilateral Investment Treaty (BIT)**

- **Double Taxation Avoidance Agreement (DTAA)**
- **Comprehensive Economic Partnership Agreement (CEPA)**

DIASPORA AND PEOPLE-TO-PEOPLE TIES

- Around **340,000 Indians** live in Bahrain (~25% of its population).
- The diaspora contributes to both **Bahrain's economy** and **India's remittances**.
- Bahraini leadership is known for its **inclusive policies** towards the Indian community, unlike in some other Gulf nations.
- The Indian community acts as a **bridge of goodwill** and soft power, strengthening socio-cultural ties.

SECURITY & DEFENCE COOPERATION

- **Counter-terrorism and Maritime Security:** Both nations cooperate on **anti-terrorism, intelligence sharing**, and **Gulf maritime stability**.
- **Naval Engagement:** Indian naval ships regularly visit Bahrain's ports — enhancing interoperability and joint maritime domain awareness.
- **Defence Diplomacy:** Bahrain supports India's role in ensuring freedom of navigation in the Indian Ocean and the Gulf waters.

CULTURAL AND CIVILIZATIONAL LINKAGES

- Links trace back over **5,000 years** — Indus Valley civilization traded with ancient **Dilmun (modern Bahrain)**.

- Bahrain has a significant **Indian cultural footprint** — temples, schools, and associations.
- Shared membership in the **International Solar Alliance (ISA)** and **India's cultural diplomacy programs** foster deeper engagement.

REGIONAL DIPLOMACY & MULTILATERAL ENGAGEMENT

- Bahrain often supports India in **multilateral forums** like the **UN**, **OIC (Organisation of Islamic Cooperation)**, and **NAM**.
- It plays a moderating role in **India-Gulf** relations — particularly useful amid India's balanced approach between **Iran and the Arab world**.
- As a **GCC member**, Bahrain's cooperation enhances India's access to the entire Gulf bloc.

SCIENCE, TECHNOLOGY, AND SPACE COOPERATION

- 2019: MoU between **ISRO and Bahrain's National Space Science Agency (NSSA)** for space cooperation.
- 2025: Draft MoU between **NSIL (New Space India Ltd.) and Bahrain Space Agency** to deepen technological collaboration.
- Collaboration in **digital economy, IT, and skill development** under "Digital India–Bahrain Connect."

TOURISM AND CONNECTIVITY

- **e-Visa facility (2025)** for Bahraini nationals boosts people-to-people contact.
- Potential for **religious and heritage tourism**, given Bahrain's ancient trade links with India's west coast.

SIGNIFICANCE IN INDIA'S BROADER WEST ASIA STRATEGY

- Bahrain complements India's partnerships with **Saudi Arabia, UAE, and Oman**, ensuring strategic depth in the Gulf.
- It offers a **moderate voice** within the Arab world, supporting **peace and dialogue** in regional conflicts.
- For India's **maritime and energy diplomacy**, Bahrain is a **small but pivotal player**.

15 NITI AAYOG UNVEILS ROADMAP FOR TECH-LED TRANSFORMATION IN AGRICULTURE

NITI Aayog's Frontier Tech Hub unveiled a major roadmap titled "Reimagining Agriculture: A Roadmap for Frontier Technology Led Transformation".

KEY FEATURES OF THE ROADMAP

- **Frontier Technologies:** The roadmap focuses on integrating cutting-edge tools such as climate-resilient seeds, digital twins, precision agriculture, AI (including Agentic AI), and advanced mechanization.
- **Customization for Farmer Segments:** Farmers are categorized as Aspiring, Transitioning, and Advanced, with each group receiving tailored solutions to address their unique needs – from smallholders to commercial cultivators.
- **Pilots to Scale:** Start with high-impact use cases (variable-rate application, disease prediction, micro-irrigation scheduling) and scale through state programs and PPPs.
- **State-examples:** Gujarat is showcased as a leading example: digital crop survey, farmer registry, portal i-Khedut etc.

POTENTIAL CHALLENGES IN ADOPTING FRONTIER TECH

- **Land fragmentation:** With 86% of farmers being small and marginal (in earlier data) it is a structural barrier to adoption of precision farming or large-scale mechanisation.
- **Cost and return:** Frontier tech often comes with high upfront cost — question of affordability, access to finance, risk management.
- **Data ownership and privacy:** With increasing use of data, IoT, digital twins — issues around farmer data rights, cybersecurity, transparency become relevant.
- **State-centre coordination:** Agriculture is a state subject in India; launching a national roadmap is good but implementation will need state adaptation, resources, capacity.

SIGNIFICANCE OF ADOPTING FRONTIER TECH

- Higher yields with lower input intensity, improved profitability, and reduced post-harvest losses through predictive and precision operations.
- Enhanced climate resilience and food system stability, supporting India's bioeconomy and export competitiveness in high-value agri-segments.

16 HEAVY METALS

A recent study, published in Environmental Earth Sciences, reveals alarming levels of **heavy metal contamination** in fish species of Cauvery River, posing serious risks to ecosystems and public health.

DEFINITION

- **Heavy metals** are naturally occurring elements with **high atomic weight and density (>5 g/cm^3)**.
- Even in trace amounts, many heavy metals are **toxic to humans, animals, and plants**.
- Some are **essential micronutrients (e.g., Fe, Zn, Cu)** but become harmful in excess.

EXAMPLES AND CLASSIFICATION

Essential (at low levels)	Toxic (non-essential)
Iron (Fe)	Lead (Pb)
Zinc (Zn)	Mercury (Hg)
Copper (Cu)	Cadmium (Cd)

Manganese (Mn)	Arsenic (As)
Nickel (Ni)	Chromium (Cr^{6+} form)

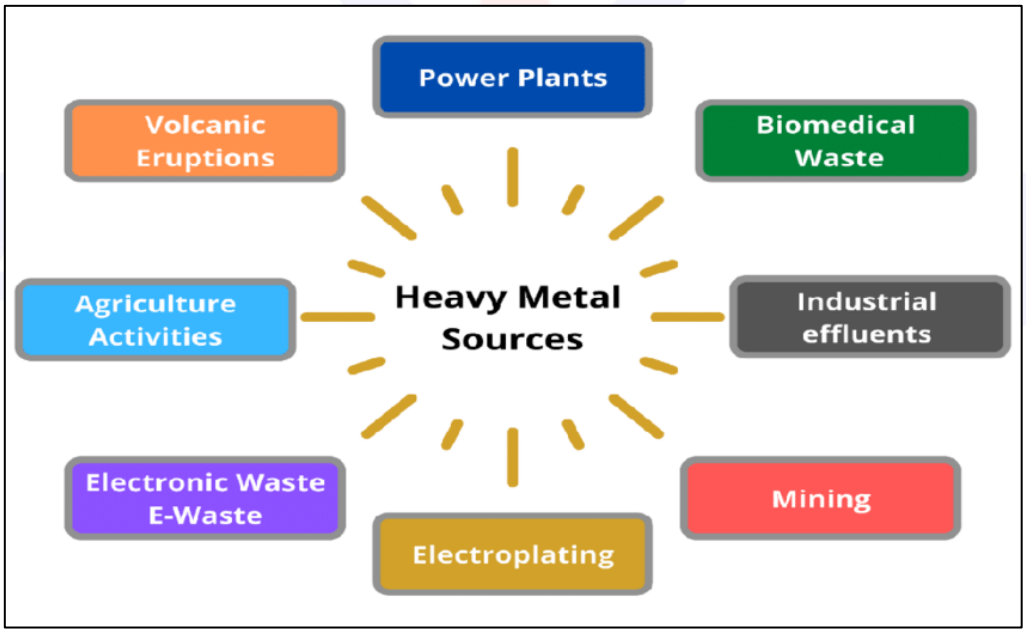
SOURCES OF HEAVY METALS

(A) NATURAL SOURCES

- Weathering of rocks and volcanic activity.
- Forest fires and soil erosion.

(B) ANTHROPOGENIC (HUMAN-MADE) SOURCES

- **Industrial Activities** – metal smelting, electroplating, battery manufacturing, paint and pigment industries.
- **Agriculture** – phosphate fertilizers (Cd), pesticides (As, Hg).
- **Mining** – tailings contaminate soil and water.
- **Waste Disposal** – e-waste, sewage sludge, landfill leachate.
- **Vehicular Emissions** – leaded petrol (historically), brake linings (Cu, Zn).



ENVIRONMENTAL PATHWAYS

Heavy metals enter ecosystems through:

- Air deposition (dust, smoke)
- Water contamination (industrial discharge, leaching)
- Soil accumulation

- Food chain bioaccumulation and biomagnification

Example: Mercury → methylmercury → fish → humans (Minamata disease).

IMPACT ON HUMAN HEALTH

Metal	Major Source	Health Effects
Lead (Pb)	Paint, batteries	Neurotoxicity, anemia, developmental delay in children
Mercury (Hg)	Thermometers, fish	Brain & kidney damage, Minamata disease
Cadmium (Cd)	Batteries, fertilizers	Bone deformities, Itai-Itai disease
Arsenic (As)	Groundwater, pesticides	Skin lesions, cancer, blackfoot disease
Chromium (Cr^{6+})	Tanneries, dyes	Carcinogenic, respiratory disorders

ECOLOGICAL IMPACTS

- **Soil degradation** and reduced fertility.
- **Bioaccumulation** in crops and aquatic life.
- **Biodiversity loss** in contaminated habitats.
- **Disruption of microbial activity** in soil and water.

GLOBAL & INDIAN STANDARDS

GLOBAL

- WHO Guidelines for Drinking Water Quality
    - **Lead:** 0.01 mg/L
    - **Arsenic:** 0.01 mg/L
    - **Mercury:** 0.006 mg/L

INDIA

- **Bureau of Indian Standards (BIS - IS 10500:2012)** specifies permissible limits for drinking water.

- **Central Pollution Control Board (CPCB)** regulates heavy metal emissions and industrial effluents.

MAJOR INDIAN INCIDENTS

Incident	Location	Metal	Impact
Sukinda Chromite Mines	Odisha	Cr^{6+}	Groundwater pollution
Bichhri Village	Rajasthan	Mercury, Chromium	Soil & water contamination
West Bengal Arsenic Crisis	Ganga Delta	Arsenic	Groundwater contamination affecting millions

REMEDIATION AND CONTROL MEASURES

(A) PREVENTION

- Strict regulation of industrial discharge.
- Adoption of **cleaner production technologies**.
- **Ban on toxic materials** (e.g., leaded petrol, mercury thermometers).

(B) TREATMENT TECHNOLOGIES

- **Chemical Precipitation**
- **Ion Exchange & Adsorption (e.g., Activated carbon, Zeolites)**
- **Membrane Filtration**
- **Phytoremediation** – using plants like *Brassica juncea* (Indian mustard) to absorb metals.
- **Bioremediation** – using microbes to detoxify heavy metals.

GOVERNMENT INITIATIVES (INDIA)

- **National Clean Ganga Mission (NCG)** – monitors heavy metals in rivers.
- **National Green Tribunal (NGT)** – strict orders against industrial polluters.
- **Environment (Protection) Act, 1986** – framework for setting emission/discharge standards.
- **Hazardous Waste (Management) Rules, 2016** – regulate disposal and handling.

- **E-Waste (Management) Rules, 2022** – prevent metal leakage into the environment.

INTERNATIONAL TREATIES

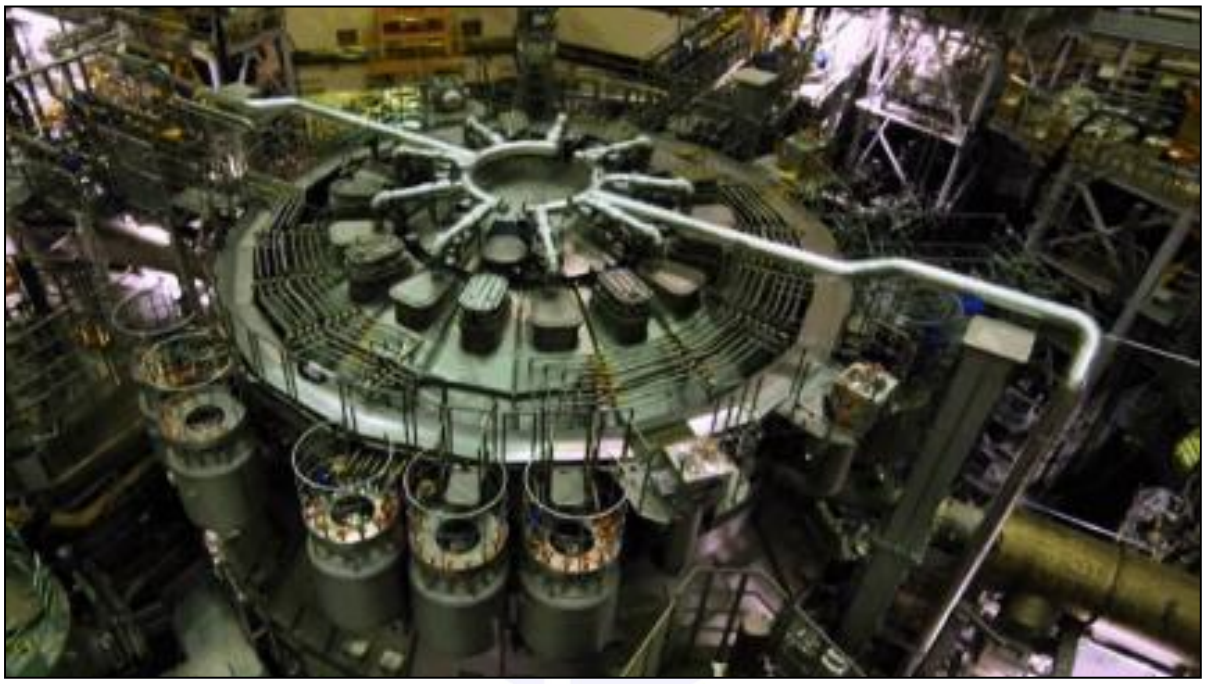
Treaty/Convention	Objective
Minamata Convention on Mercury (2013)	Reduce mercury use and emissions
Basel Convention (1989)	Control of transboundary movement of hazardous wastes
Stockholm Convention (2001)	Persistent Organic Pollutants (often combined with heavy metals)

CURRENT AFFAIRS (2024–25)

- **CPCB 2024 report** flagged rising **cadmium and lead** in Yamuna sediment.
- **E-waste generation** in India has crossed **1.6 million tonnes/year**, releasing Pb, Hg, Cd.
- **ISRO's PRAYOG project** exploring space-grade remediation nanomaterials.
- **"One Water" Mission** under Jal Shakti Ministry focusing on heavy metal-free water by 2030.

17 CHINA'S FIRST-EVER THORIUM FUEL CONVERSION

China has successfully achieved the **first-ever conversion** of **thorium into uranium fuel** within a **Thorium Molten Salt Reactor (TMSR).**



ABOUT

- It is the **first time in the world** that scientists have been able to **acquire experimental data on thorium operations from inside a molten salt reactor.**
- The achievement makes the **2-megawatt liquid-fuelled thorium-based molten salt reactor (TMSR)** the **only operating example of the technology** in the world to have successfully loaded and used thorium fuel.

WHAT IS A MOLTEN SALT REACTOR (MSR)?

- It is a **fourth-generation nuclear reactor** that uses **molten salt as both fuel carrier and coolant,** instead of solid fuel rods and water.
- The reactor operates at **atmospheric pressure and high temperatures** (≈700°C).
- It allows **continuous circulation of liquid fuel,** enabling on-the-fly refuelling.
- **Thorium-to-Uranium Conversion Process:** Thorium-232 absorbs a neutron → becomes Thorium-233 → decays to Protactinium-233 → decays to Uranium-233 (fissile).

- This creates a "**burn while breeding" cycle** – self-sustaining and highly fuel-efficient.
- The **conversion occurs inside the reactor core,** eliminating the need for external fuel fabrication.

INDIA'S THORIUM RESERVES

- India has one of the largest reserves of thorium in the world.
- **Major thorium deposits** are found with large reserves in **Kerala, Odisha, Tamil Nadu, and Andhra Pradesh.**
- Together, **Kerala and Odisha account for over 70%** of India's thorium. India has been developing a **three-stage nuclear program,** with thorium-based reactors being a critical part of the third stage.

CHALLENGES:

- Extracting thorium from ores requires high amounts of energy and creates significant waste.
- While India has large thorium reserves, extracting it for nuclear energy use has faced challenges, including the need for advanced reactor technology and economic viability.

KEY ADVANTAGES OF TMSR

- **Safety:** Operates at atmospheric pressure; molten salts trap radioactive materials; automatic drain system for leak containment.
- **Efficiency:** Continuous fuel circulation allows full fuel utilisation and minimal waste.
- **Low Water Requirement:** No need for cooling water; suitable for inland or arid areas.
- **Reduced Radioactive Waste:** Produces less long-lived nuclear waste than uranium reactors.
- **Fuel Abundance:** Thorium is 3–4 times more abundant than uranium.

PROGRAM DEVELOPMENT AND INDUSTRIAL INTEGRATION

Initiated: 2011 under China's strategic nuclear energy program.
Milestones:

1. 2023: 2 MW liquid-fuelled TMSR achieved first criticality.

2. 2024: Achieved full-power operation.
3. 2024: First thorium-fuelled test conducted.

Goal: To build a 100 MW demonstration plant by 2035 in the Gobi Desert.

Industrial Collaboration: Nearly 100 Chinese institutions involved in design, materials science, and reactor engineering.

Self-Reliance: All core components and supply chain are 100% domestically developed.

STRATEGIC SIGNIFICANCE FOR CHINA

- **Energy Security:** Thorium reserves could potentially supply energy for tens of thousands of years.
    - Enables energy independence from imported uranium.
- **Resource Utilisation:** One mine tailings site in Inner Mongolia is estimated to hold enough of the element to power China entirely for more than 1,000 years.
- **Climate and Carbon Goals:** TMSR supports low-carbon energy systems, complementing solar and wind.
    - High-temperature heat can aid green hydrogen production.
- **Technological Leadership:** China now leads the world in operational thorium MSR technology, positioning itself at the forefront of fourth-generation nuclear innovation.
- **Strategic Sectors:** The country is exploring thorium-powered ships and lunar reactors for future moon bases.

CHALLENGES AND LIMITATIONS

- **Material Durability:** Molten salts are corrosive; reactor materials need to withstand extreme conditions.
- **Radioactive Handling:** Managing protactinium and uranium isotopes safely is complex.
- **Economic Viability:** High initial R&D and infrastructure costs.
- **Regulatory Framework:** Global safety and licensing standards for MSRs are still evolving.

WAY FORWARD

- China aims for commercial-scale TMSR deployment by 2035.
- The success could reshape global nuclear energy by providing a sustainable, low-carbon alternative to fossil fuels and conventional uranium reactors.
- If scalable, thorium MSRs could be pivotal in achieving net-zero targets and ensuring long-term energy security.

18 MALDIVES BECOMES FIRST NATION TO ENFORCE GENERATIONAL TOBACCO BAN

KEY FACTS & FEATURES

- The Maldives has introduced a law, effective **1 November 2025**, banning the purchase, use or sale of tobacco products to anyone born on or after **1 January 2007**.
- The ban applies to **all forms of tobacco** (cigarettes, roll-your-own, smokeless tobacco) and extends to **tourists/visitors** as well.
- Age verification by retailers is required; penalties include up to **MVR 50,000** (≈ US$3,200) fine for selling to someone born on or after the cutoff date.
- The law builds on earlier amendments: e-cigarettes/vapes were banned in the Maldives in late 2024.
- The policy is framed as a "tobacco-free generation" measure to protect public health and align with the WHO Framework Convention on Tobacco Control (FCTC).

WHAT IS GENERATIONAL BAN?

- A generational ban on tobacco refers to a progressive legal prohibition designed to create a tobacco-free generation by banning tobacco sales and usage for all individuals born after a specified date.
- Under such a policy, people born beyond that cut-off year are permanently barred from buying, possessing, or using tobacco products throughout their lives, effectively phasing out tobacco use over time.

STATUS OF TOBACCO CONSUMPTION

- Tobacco-related diseases cause over 7 million deaths annually worldwide, making tobacco one of the leading causes of preventable death globally.
- India is among the largest consumers and producers of tobacco globally.
- Despite global anti-tobacco efforts like the WHO Framework Convention on Tobacco Control (WHO FCTC), 1.3 billion people still use tobacco products worldwide.
- India implements multiple tobacco control measures like bans on public smoking, pictorial health warnings, advertising restrictions, and the COTPA law.

19 ENCEPHALOMYOCARDITIS VIRUS (EMCV)

Delhi zoo's lone African elephant died from the **rare rodent-borne encephalomyocarditis virus (EMCV)** — the first such case reported in any Indian zoo.

INTRODUCTION

- **Full name:** *Encephalomyocarditis virus* (EMCV)
- **Genus:** *Cardiovirus*
- **Family:** *Picornaviridae*
- **Genome:** Single-stranded, positive-sense RNA (~7.8 kb)
- **Structure:** Non-enveloped, icosahedral symmetry (~30 nm diameter)

MEANING:

- "Encephalo-" → brain
- "Myo-" → muscle (especially heart muscle)
- "Carditis" → inflammation of the heart

Thus, the virus causes **inflammation of the brain and heart**, mainly in **animals**, but occasionally also affects **humans**.

HISTORICAL BACKGROUND

- First recognized in **the 1940s** in laboratory rodents.
- Later outbreaks reported in **pigs, elephants, primates, and zoo animals** across continents.

- Recent cases (2023–25) have been noted in **India**, **Australia**, and **South-East Asia**, often linked with **wildlife–livestock interface** and **rodent vectors**.

HOSTS AND RESERVOIRS

Category	Examples	Role
Primary reservoir	Rodents (rats, mice, shrews)	Carry the virus asymptomatically, shed in urine/feces
Accidental hosts	Pigs, elephants, primates, lions, tigers, other zoo animals	Develop fatal infections
Humans (rare)	Usually exposed via contaminated environment or animals	Mild flu-like to severe cardiac symptoms possible

TRANSMISSION ROUTE:

- Mainly **fecal–oral**, **aerosolized particles**, or **direct contact** with contaminated feed, water, bedding, or surfaces.
- Not typically **vector-borne** (no mosquito or tick involvement).

GEOGRAPHICAL DISTRIBUTION

- **Worldwide** occurrence — tropical and temperate climates.
- Reported from **Africa, Asia, Europe, North & South America**.
- In India, outbreaks have occurred in **Kerala, Karnataka, and zoo parks (e.g., Nandankanan Zoo, Odisha)** affecting elephants and wild animals.

STRUCTURE AND GENOME

- **Non-enveloped** → stable in the environment (resistant to ether, mild heat, pH changes).
- **RNA genome:**
  - Single open reading frame (ORF) encoding a polyprotein.
  - Cleaved into **structural (VP1–VP4)** and **non-structural (proteases, RNA polymerase)** proteins.
- **Replication:** Occurs in the **cytoplasm** of host cells.

PATHOGENESIS (MECHANISM OF DISEASE)

- **Entry:** Ingested or inhaled → infects epithelial cells of intestines or respiratory tract.
- **Replication:** Virus multiplies in lymph nodes and spreads via the bloodstream (**viremia**).
- **Target organs:**
  - **Heart:** Myocardial cells → necrosis → myocarditis (heart inflammation).
  - **Brain:** Neurons → encephalitis (swelling and neurological symptoms).
  - **Other organs:** Pancreas, liver, and skeletal muscles can also be affected.
- **Characteristic lesion:** Focal myocardial necrosis — hallmark of EMCV.

CLINICAL SYMPTOMS (IN ANIMALS):

(A) PIGS:

- Sudden death in piglets (within 24 hrs.).
- Fever, depression, poor appetite.
- Nervous signs (incoordination, paralysis).
- Heart failure signs — labored breathing, cyanosis.
- Reproductive losses (abortions, stillbirths).

(B) ELEPHANTS / ZOO ANIMALS:

- Sudden collapse and death.
- Hemorrhages in heart, liver, and brain.

(C) RODENTS:

- Usually asymptomatic carriers.

IN HUMANS (VERY RARE):

- Mild febrile illness to severe myocarditis or encephalitis.
- Chest pain, fatigue, or neurological symptoms may appear.

20 NATIONAL COMPANY LAW APPELLATE TRIBUNAL (NCLAT)

The Supreme Court refused to intervene with an order of the National Company Law Appellate Tribunal (NCLAT) which had allowed Aakash Educational Services Ltd, a subsidiary of Byju's, to proceed with its proposed rights issue.

BACKGROUND & ESTABLISHMENT

- NCLAT was constituted under **Section 410 of the Companies Act, 2013** and came into effect from **1 June 2016**.
- It was created as an appellate tribunal to hear appeals against orders passed by the National Company Law Tribunal (NCLT).
- Over time, its jurisdiction was expanded:
    - From 1 December 2016, appeals under the Insolvency and Bankruptcy Code, 2016 (IBC) Section 61 (among others) go to NCLAT.
    - Via amendments (Finance Act 2017 etc.), NCLAT also hears appeals against orders of the Competition Commission of India (CCI) (from 26 May 2017).
    - And from 7 May 2018 it hears appeals against orders of the National Financial Reporting Authority (NFRA).

LEGAL & INSTITUTIONAL FRAMEWORK

- **Parent legislation**: Companies Act, 2013 (Section 410) provides for NCLAT.
- **Bench Locations**:
    - Principal Bench at New Delhi (2nd & 3rd Floor, MTNL Building, CGO Complex, Lodhi Road)
    - Chennai Bench at Chepauk, Ezhilagam Annex
- **Composition**: As per sources, the tribunal consists of a Chairperson and a number of judicial and technical members.
- **Appeals**: Decisions of NCLAT are appealable to the Supreme Court of India under Article 136 (special leave petition) or other applicable routes. (General knowledge)

JURISDICTION & POWERS

- **Appeals from NCLT**: Under the Companies Act-2013, appeals against NCLT orders can go to NCLAT.
- **Insolvency & Bankruptcy Code (IBC)**: Appeals under Section 61 of IBC (corporate insolvency resolution) are heard by NCLAT starting 1 Dec 2016.
- **Competition Commission of India (CCI)**: NCLAT hears appeals against directions/decisions of CCI (after 26 May 2017).
- **NFRA**: Appeals against NFRA orders (auditor oversight) as per amendment (from 7 May 2018).
- **Miscellaneous**: The tribunal functions similarly to a court of fact and law, evaluating evidence, hearing parties, and passing orders.

SIGNIFICANCE

- **Corporate governance & resolution framework**: NCLAT plays a central role in India's corporate structure overseeing appeals in company law, insolvency, competition and audit regulation.
- **Speed and specialization**: It is part of the institutional reform to provide specialized forums rather than burden regular courts.
- **Insolvency resolution**: With the IBC's emphasis on time-bound resolution of stressed assets, NCLAT's role in appellate oversight is crucial for investor confidence and ease of doing business.
- **Competition & audit oversight**: By covering CCI and NFRA appeals, it brings coherence and uniformity in areas of competition law and financial reporting.

- **Legal precedent & jurisprudence**: Its decisions shape corporate law, insolvency jurisprudence and competition law in India — important for practitioners, companies, and policy-makers.

KEY CHALLENGES & CRITIQUES

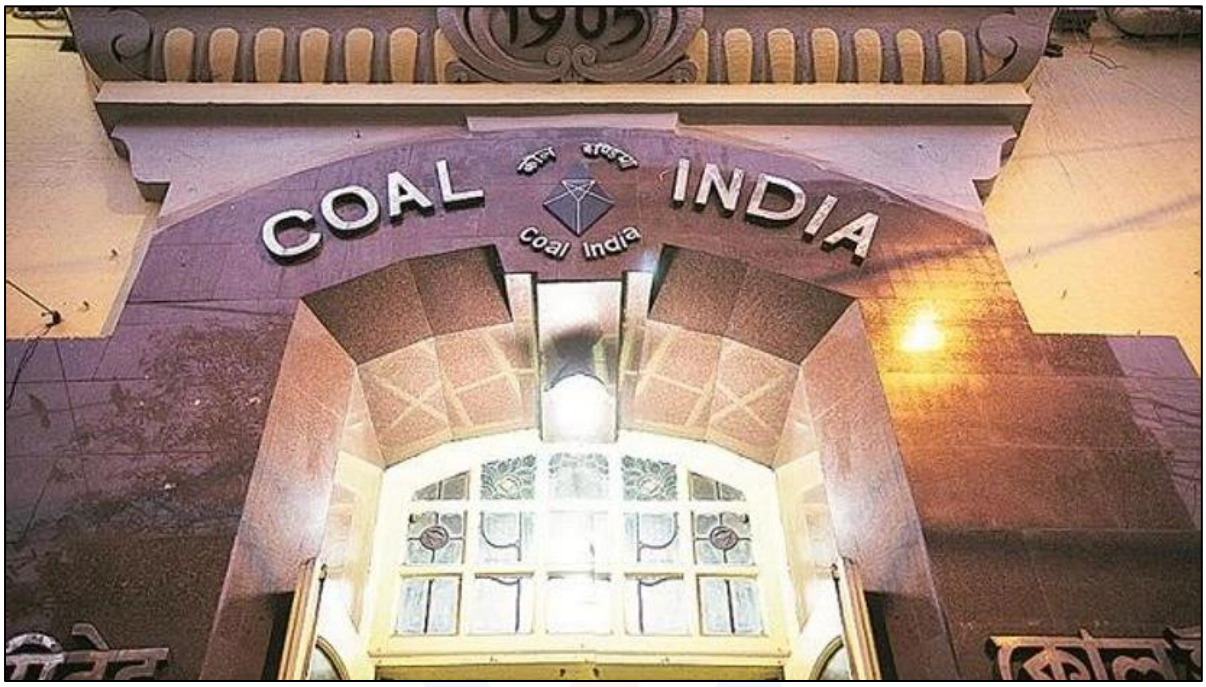
- **Backlog & delays**: Although designed for faster resolution, some reports and commentary highlight delays or pendency in NCLT/NCLAT.
- **Capacity & bench strength**: Adequate number of judicial/technical members, infrastructure, and regional benches remain concerns.
- **Overlapping jurisdictions**: With simultaneous jurisdiction of NCLT, NCLAT, High Courts, the delineation can sometimes be complex.
- **Implementation & follow-up**: Passing orders is one part; enforcement and monitoring remain challenging, especially in insolvency matters.
- **Quality of decisions**: Given the technical nature (corporate, finance, audit), need for high-quality judicial and technical expertise is emphasized.

RECENT DEVELOPMENTS (2024-25)

- In June 2025, NCLAT stayed insolvency proceedings against Reliance Infrastructure.
- In May 2025, NCLAT upheld the insolvency order for Future Ideas Company Limited (part of Future Group) for dues of ₹122.83 crore.
- A debate around NCLAT's role in digital platform/competition contexts: E.g., as in case where WhatsApp argued before NCLAT that CCI lacked jurisdiction for data safety regulation.

21 COAL INDIA LIMITED (CIL)

Coal India Limited (CIL), is marking the completion of 50 years of its establishment.



ABOUT COAL INDIA LIMITED

- CIL is a **Maharatna Public Sector Undertaking** under the **Ministry of Coal.**
- It was **established** in **November 1975.**
- **Headquarters:** Kolkata.
- **Products:** CIL produces coking coal, semi-coking coal, non-coking coal, washed and beneficiated coal, coal fines, and coke.
- CIL has 21 training Institutes and 76 Vocational Training Centres.
- **Strategic Relevance:** It contributes to **80%** of total domestic coal production and 75% of total coal-based generation.

22 NORTH EASTERN SCIENCE & TECHNOLOGY (NEST) CLUSTER

The Union Minister for Communications and Development of North Eastern Region inaugurated the **North Eastern Science & Technology (NEST) Cluster** at IIT Guwahati.

BACKGROUND & LAUNCH

- The NEST Cluster was approved by the Ministry of Development of North Eastern Region (DoNER) on 13 August 2024 as a dedicated innovation ecosystem for the North Eastern Region (NER) of India.
- It was formally inaugurated on 3 November 2025 at Indian Institute of Technology Guwahati (IIT-Guwahati) by the Union Minister for Communications & Development of North Eastern Region.
- The Cluster has an investment of **₹22.98 crore** earmarked specifically for its setting up.

PURPOSE & OBJECTIVES

- The core objective is to create a **science & technology innovation hub** in the North Eastern Region that addresses local challenges through technology and promotes region-specific technological solutions.
- The Cluster aims to transform “local wisdom into global solutions” by leveraging the region’s unique resources, e.g., bamboo, biodiversity, grassroots innovations.

- It also intends to build linkages for youth, industry, entrepreneurship, and skill development in the NER, promoting inclusive growth and leveraging innovation for the "Viksit Purvottar" vision (developed North-East).

KEY FOCUS AREAS / VERTICAL(S)

The NEST Cluster will be organised around **four verticals** or research & innovation thrusts:

- **Innovation Hub on Grassroots Technologies** – harnessing bottom-up innovations from the region.
- **Technology Hub for Artificial Intelligence & Semiconductors** – building advanced tech capacity in the NER.
- **Centre of Excellence (CoE) for Innovation in Bamboo-based Technology, Entrepreneurial Promotion & Skill Development** – given the region's strong bamboo biomass.
- **Innovation Centre on Biodegradable, Eco-friendly Plastics & Solid-Waste Management** – aligning with sustainability and circular economy.

IMPLEMENTATION & INSTITUTIONAL MECHANISM

- IIT Guwahati serves as the host institution for this Cluster.
- Youth engagement initiatives are woven in: for example, under the Cluster's umbrella, programmes like NE-SPARKS will bring 3,200 students from across India to the NER, while 800 NER students will get exposure visits to the Indian Space Research Organisation (ISRO).
- The Cluster also emphasises women empowerment, rural entrepreneurship (for example, rural women trained in biodegradable toy-making were felicitated).

SIGNIFICANCE

- **Regional innovation boost**: The NER has historically lagged in science/tech infrastructure; this Cluster can catalyse bridging that gap.
- **Leveraging regional resources**: Bamboo, biomass, biodiversity, and local innovations can become technology opportunities.
- **Ease of doing research / startups**: By bringing a tech Hub to the NER, the region may attract more research, startups, industry tie-ups rather than purely being a resource or labour zone.
- **Alignment with national S&T policy**: Supporting "Atmanirbhar Bharat" in science and tech, and India's push to decentralise innovation away from only a few metro hubs.

- **Connectivity with Act East policy**: The NER is India's gateway to Southeast Asia; technology innovation there can support regional linkages, cross-border trade, and regional value chains.
- **Sustainability angle**: With biodegradable plastics and bamboo tech, the Cluster ties with circular economy, climate resilience and ecological balance of the ecologically sensitive NER.

CHALLENGES & CONSIDERATIONS

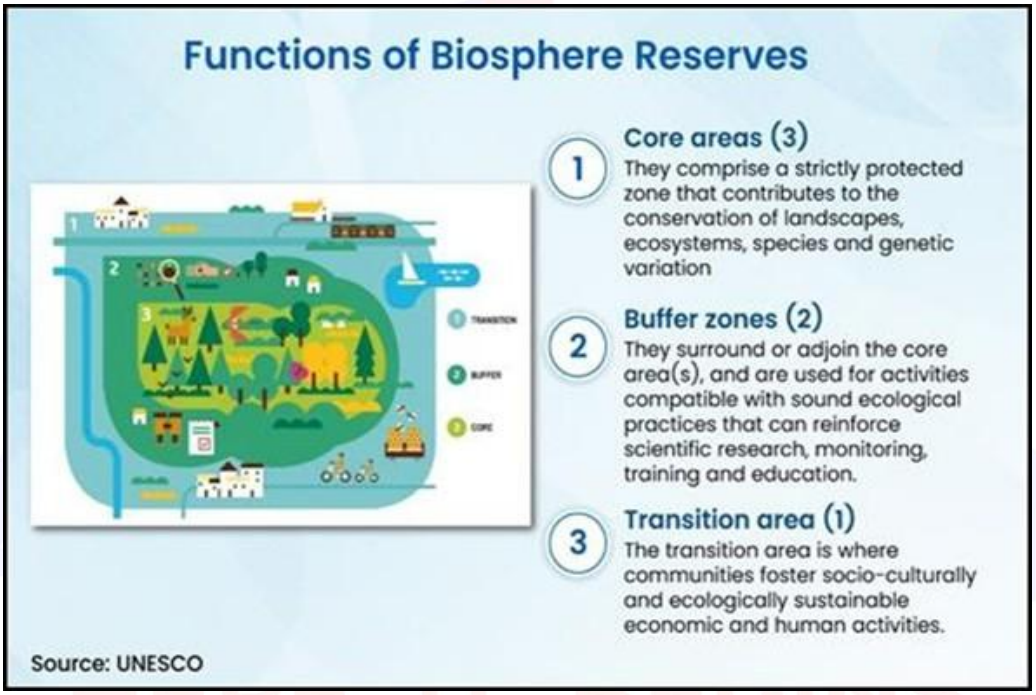
- **Capacity building**: Need for skilled manpower, research labs, advanced infrastructure in the NER region.
- **Sustained funding**: The initial outlay is ₹22.98 crore — long-term sustainability will depend on further support, industry linkages and commercialization of research.
- **Geographical / logistic constraints**: The NER's terrain, connectivity and logistical challenges may slow implementation unless robustly addressed.
- **Industry linkages**: For semiconductors, AI etc, global competition is strong; attracting industry partners to the NER may require incentives.
- **Inclusivity**: Ensuring that grassroots innovations, tribal communities, and smaller local players benefit and are not overshadowed by large institutions.
- **Commercialization & scaling**: R&D is one thing; translating innovations into market-ready products (for example bamboo tech or biodegradable materials) needs ecosystem support (incubation, funding, marketing).

23 INTERNATIONAL DAY FOR BIOSPHERE RESERVES

The **International Day for Biosphere Reserves** was observed on 3rd November.

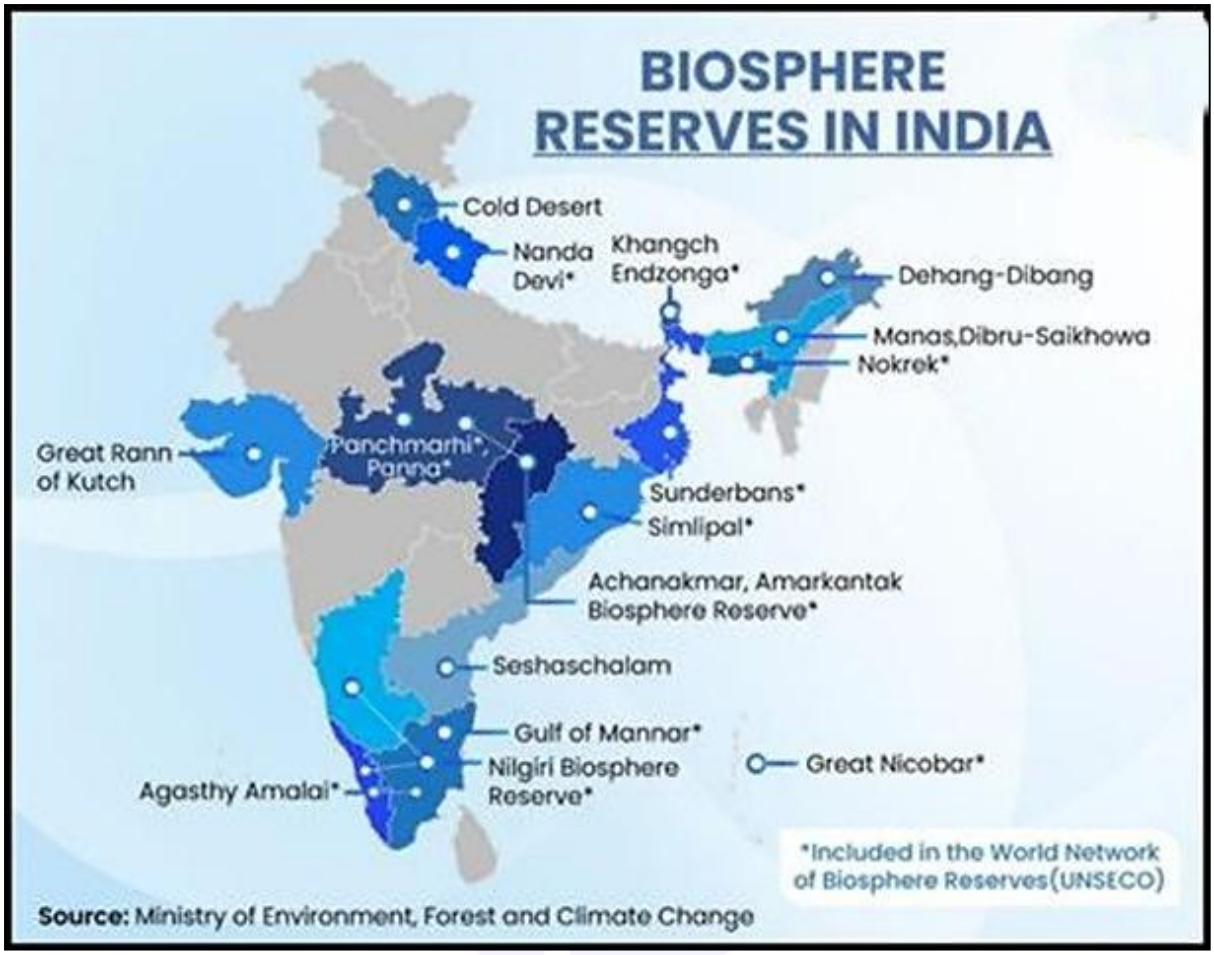
BIOSPHERE RESERVES

- **Biosphere reserves** are areas identified by national governments for conserving biodiversity and promoting sustainable development.
    - It includes terrestrial, marine and coastal ecosystems.
- They are nominated by **national governments and remain under the sovereign jurisdiction** of the states where they are located.



BRS IN INDIA

- India has **18 Biosphere Reserves** covering 91,425 sq. km, with **13 recognized by UNESCO.**
- The programme operates under a **Centrally Sponsored Scheme** with a 60:40 funding pattern, and 90:10 for North Eastern and Himalayan states.
- In 2025, India's **Cold Desert Biosphere Reserve** in **Himachal Pradesh** was included in UNESCO's World Network of Biosphere Reserves.
- National initiatives like Project Tiger, Project Elephant, and Green India Mission complement Biosphere Reserve efforts.



WORLD NETWORK OF BIOSPHERE RESERVES (WNBR)

- The UNESCO World Network of Biosphere Reserves (WNBR) was formed in **1971.**
- It covers internationally designated protected areas, known as biosphere reserves, which are meant to demonstrate a balanced relationship between people and nature.
- They are created under the **Man and the Biosphere Programme (MAB).**

24 TORKHAM BORDER

The Torkham border crossing between Afghanistan and Pakistan has reopened after nearly weeks of closure following deadly border clashes.

LOCATION & GEOGRAPHY

- The Torkham Border Crossing lies between Pakistan and Afghanistan. On the Pakistani side it is in the Khyber District of Khyber Pakhtunkhwa Province (formerly part of FATA).
- On the Afghan side it connects to the Nangarhar Province (via the historic Khyber Pass route, linking Kabul, Jalalabad).
- It lies at the western end of the Khyber Pass—a strategic mountain pass between the two countries.

HISTORICAL & STRATEGIC SIGNIFICANCE

- The route has been used historically for trade and military purposes between South Asia and Central Asia, given its position through the Khyber Pass.
- In modern times, it serves as a critical border crossing for Afghanistan's land-linkage via Pakistan. It is one of the busiest crossing points for goods, trucks, people between the two countries.
- The Pakistani side refers to its crossing infrastructure at Torkham as "Bab-i-Pakistan" (Gate of Pakistan).

ECONOMIC / TRADE IMPORTANCE

- Under the Afghanistan–Pakistan Transit Trade Agreement (APTTA) and other transit-trade frameworks, Torkham is a key gateway for Afghan imports and trade through Pakistan.
- Disruptions at Torkham (closures due to clashes) have had significant economic impact trucks laden with goods get stranded, trade and commerce affected.
- For land-locked Afghanistan, reliance on border crossings like Torkham is vital for access to Pakistani ports and regional connectivity.

SECURITY & TERRITORIAL ISSUES

- The border region is sensitive: issues include militant activity (across the Pakistan-Afghanistan frontier), infiltration, smuggling, contested cooperation between Pakistani and Afghan (including Taliban) authorities.
- Repeated closures have taken place due to construction of border posts, disputes over territory, cross-fire between border forces. Example: the border was closed since 21 Feb 2025 after a dispute and reopened after 27 days.
- Pakistan has also undertaken fencing and border gate construction at Torkham to control the porous frontier.

IMPLICATIONS FOR INDIA

- Though Torkham is between Pakistan and Afghanistan, its stability affects the wider region including India's interests:
    - For India's connectivity and trade routes to Central Asia via Afghanistan, stability of Afghan transit routes matters.
    - For security: instability in the Afghanistan-Pakistan frontier region can have spill-over effects (militancy, supply routes) that concern India.
    - For regional geo-politics: India's "Neighbourhood First" and "Central Asia outreach" policies factor in the security and trade dynamics of adjacent nations and routes like Torkham.
- Given India's interest in Afghanistan's access and transit, any blockage or dispute at such crossings influences regional trade, supply of goods, humanitarian flows.

CHALLENGES & KEY ISSUES

- **Frequent closures**: The crossing is periodically shut due to security or diplomatic/minor border disputes, affecting trade, movement of people.

- **Infrastructure constraints**: Queues of trucks, logistic delays, and limited alternate routes – combined with border formalities and security checks slow movement.
- **Document & regulation issues**: For example, imposition of visa/passport requirements by Pakistan for Afghan truck drivers triggered trade suspension at Torkham.
- **Porous border & control**: Despite fencing efforts, smuggling of arms, militants' movement, illegal migration remains concerns.
- **Geopolitical contention**: The border lies on the contested Durand Line (border demarcation between Pakistan and Afghanistan), and disputes over posts or territory often trigger tensions.

RECENT DEVELOPMENTS

- In March 2025, after 25-27 days of closure due to a border dispute, the Torkham crossing reopened for cargo vehicles following a Pakistani-Afghan jirga (tribal council) agreement.
- In October/November 2025 also there were closures and partial reopening, especially relating to Afghan repatriation and border tensions.

25 ISRO'S LVM3 ROCKET LAUNCHES GSAT-7R

The Indian Space Research Organisation (ISRO) successfully launched the Indian Navy's advanced communication satellite GSAT-7R (CMS-03) from the Satish Dhawan S Satish Dhawanpace Centre in Sriharikota.

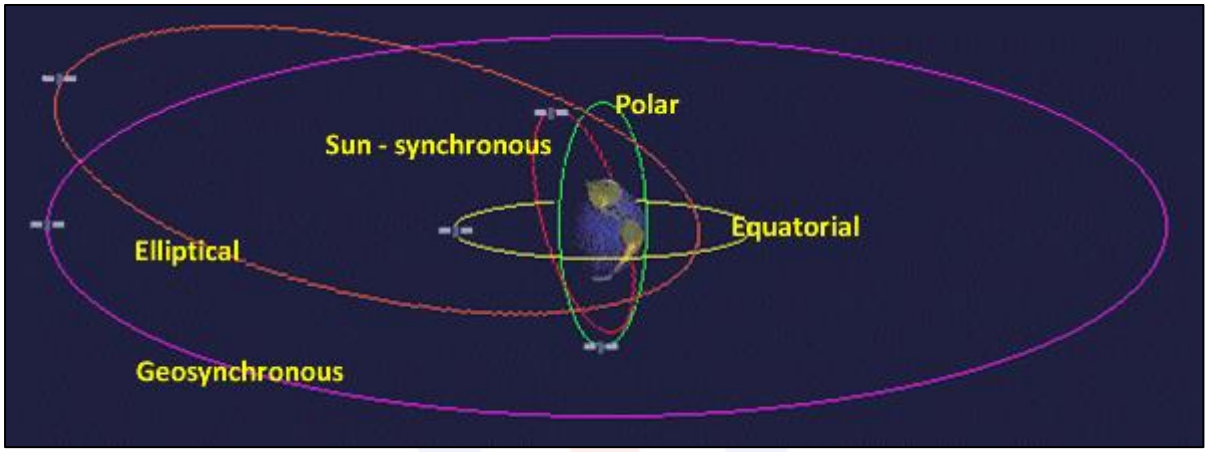
GSAT-7R SATELLITE

- Gsat-7R an **indigenously** developed satellite, weighing approximately **4,400 kg,** is India's **heaviest communication satellite** to be launched from the country to date.
    - It is designed to replace Gsat-7 (Rukmini), which was launched in 2013 and is primarily dedicated to the Indian Navy.
- ISRO launched the rocket aboard its most powerful launch vehicle, the **LVM3**, on its **M5 mission.**
    - The satellite had been successfully inserted into a **geosynchronous transfer orbit (GTO).**

GEOSYNCHRONOUS TRANSFER ORBIT

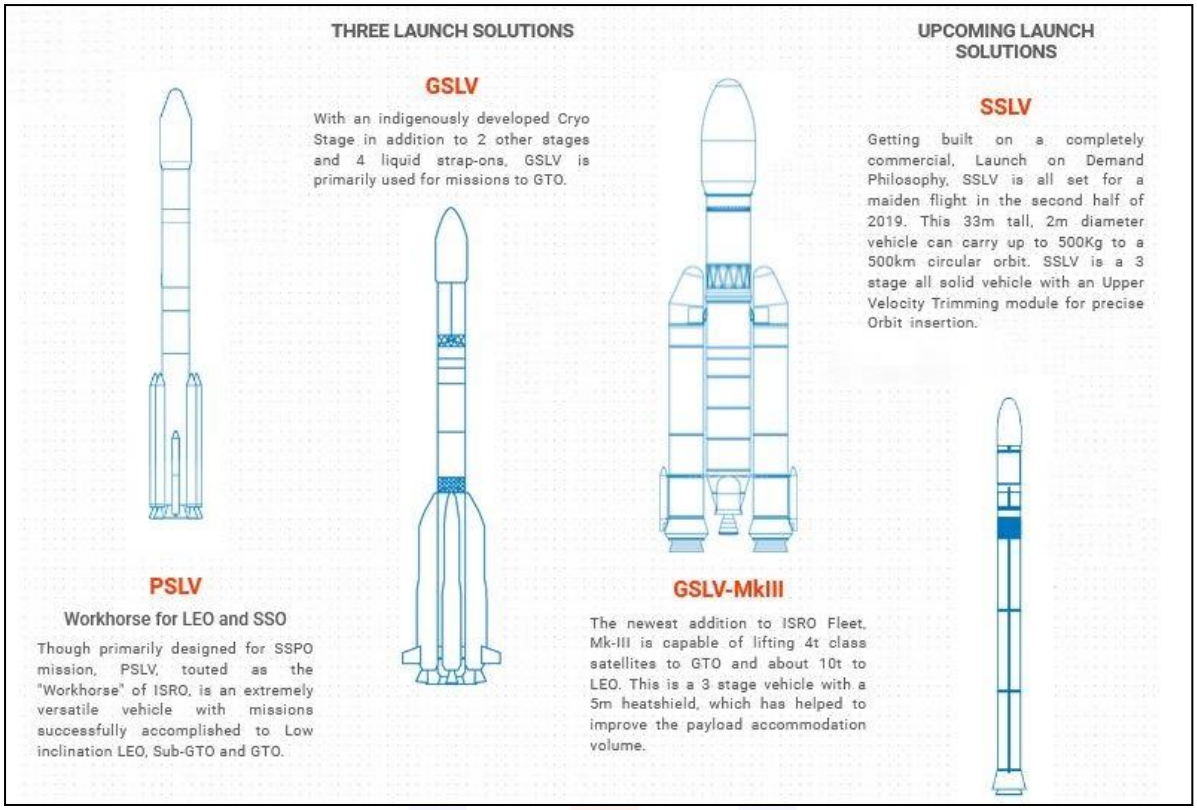
- The GTO allows satellites to be positioned into geostationary orbits, where they can maintain a fixed position relative to the Earth's surface.
- This is crucial for communication and weather satellites that need to monitor specific areas continuously.

- The satellite carries advanced payloads in multiple frequency bands, UHF, S-band, C-band and Ku-band, and includes several indigenous technologies such as a 1,200-litre propulsion tank and collapsible antenna systems.
- Its payload includes transponders capable of supporting voice, data, and video links over multiple communication bands.
- **Significance:** With state-of-the-art indigenous components, the GSAT-7R will provide robust and secure telecommunication coverage across the Indian Ocean Region.



REASONS FOR HEAVY MASS OF COMMUNICATION SATELLITES

- **Wide Coverage and Multi-band Capability:** To serve the entire Indian mainland, communication satellites require broad-area coverage and support for multiple frequency bands.
    - This multi-band design demands large deployable antennas, high-power amplifiers, waveguides, and digital processors, all of which contribute to greater mass.
- **High Power Demand and Large Solar Arrays:** Modern communication satellites are high-power platforms, consuming several kilowatts of electricity.
    - To sustain this for **12–15 years,** satellites carry large solar panels and batteries to provide continuous energy during Earth's shadow (eclipse) periods.
- **Redundancy for Long Service Life:** To ensure reliability, satellites include redundant systems, duplicate computers, radios, power units, and control systems.
    - This redundancy allows continued operation even if primary systems fail.
    - While critical for mission longevity, redundancy significantly increases the overall launch mass.


THREE LAUNCH SOLUTIONS
UPCOMING LAUNCH SOLUTIONS
GSLV
With an indigenously developed Cryo Stage in addition to 2 other stages and 4 liquid strap-ons, GSLV is primarily used for missions to GTO.
SSLV
Getting built on a completely commercial, Launch on Demand Philosophy, SSLV is all set for a maiden flight in the second half of 2019. This 33m tall, 2m diameter vehicle can carry up to 500Kg to a 500km circular orbit. SSLV is a 3 stage all solid vehicle with an Upper Velocity Trimming module for precise Orbit insertion.
PSLV
Workhorse for LEO and SSO
Though primarily designed for SSPO mission, PSLV, touted as the "Workhorse" of ISRO, is an extremely versatile vehicle with missions successfully accomplished to Low inclination LEO, Sub-GTO and GTO.
GSLV-MkIII
The newest addition to ISRO Fleet, Mk-III is capable of lifting 4t class satellites to GTO and about 10t to LEO. This is a 3 stage vehicle with a 5m heatshield, which has helped to improve the payload accommodation volume.

26 LUCKNOW DESIGNATED A UNESCO CREATIVE CITY OF GASTRONOMY

UNESCO designated Lucknow as a **Creative City of Gastronomy**, recognizing its rich and diverse culinary heritage, particularly its **famed Awadhi cuisine**.This makes Lucknow the **second Indian city after Hyderabad (2019)** to earn this honor in the gastronomy category of the UNESCO Creative Cities Network (UCCN).

UNESCO CREATIVE CITY OF GASTRONOMY

- The UNESCO Creative City of Gastronomy designation celebrates cities with rich **culinary traditions** and innovative food cultures that contribute meaningfully to sustainable urban development.
- This recognition is part of the **UNESCO Creative Cities Network (UCCN)**, which promotes cooperation among cities that **prioritize creativity in areas like music, literature, design, and gastronomy.**

DO YOU KNOW?

The UNESCO Creative Cities Network (UCCN) was established in 2004 to promote cooperation among cities that have identified creativity as a strategic factor for sustainable urban development.

REASONS FOR LUCKNOW'S RECOGNITION

- UNESCO acknowledged Lucknow's contributions to creative industries and its culinary innovation, including iconic dishes like kebabs and biryani.
- With this, Lucknow joins a global network of 408 cities across 100+ countries celebrated for excellence in fields like design, music, literature, and now, architecture.

27 ICMR PUSHES FOR INDIGENOUS MONOCLONAL ANTIBODIES AGAINST NIPAH VIRUS

The Indian Council of Medical Research (ICMR) has invited Expressions of Interest (EoI) from eligible organisations and manufacturers for the development and production of **monoclonal antibodies (mAbs) against Nipah viral disease.**

ICMR (INDIAN COUNCIL OF MEDICAL RESEARCH)

- India's apex biomedical research body under the Ministry of Health & Family Welfare.
- Responsible for formulation, coordination and promotion of biomedical research, especially public-health priorities.
- In context: ICMR is coordinating R&D, outbreak response, diagnostics and now therapeutics for Nipah virus in India.

MONOCLONAL ANTIBODIES (MABS)

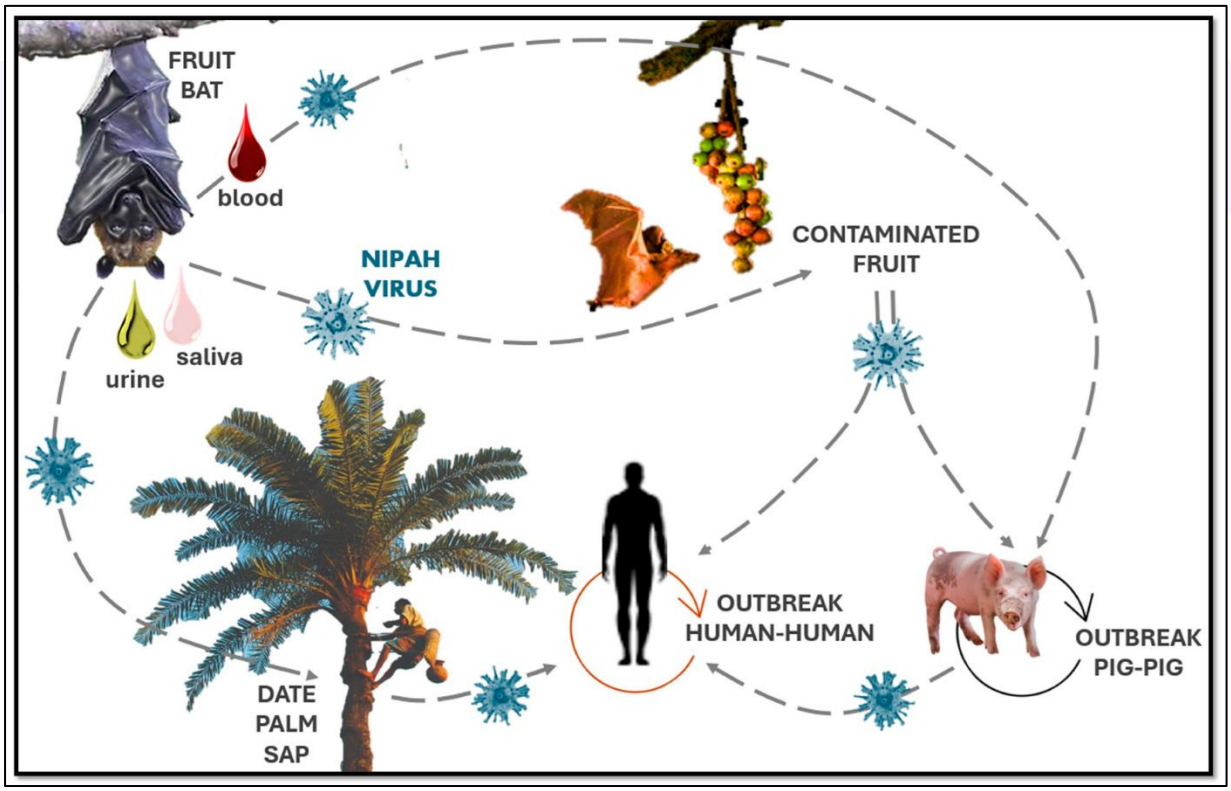
- These are **laboratory-made proteins** that mimic the antibodies produced by the immune system. They are "monoclonal" because they are derived from a single clone of immune cells, so they are identical and target a specific antigen.
- Mechanism: They bind to a specific part (epitope) of a pathogen (virus, bacterium) and neutralise it or mark it for destruction. In viral infections they can block viral entry, replication or pathogenic effects.
- In the Nipah-context: The target is the virus's glycoprotein (G) that binds to human receptors (ephrin-B2/B3) so mAbs aim to prevent that binding and entry.
- Why important: For NiV, there's **no licensed vaccine or specific antiviral** yet, so mAbs are a promising counter-measure.

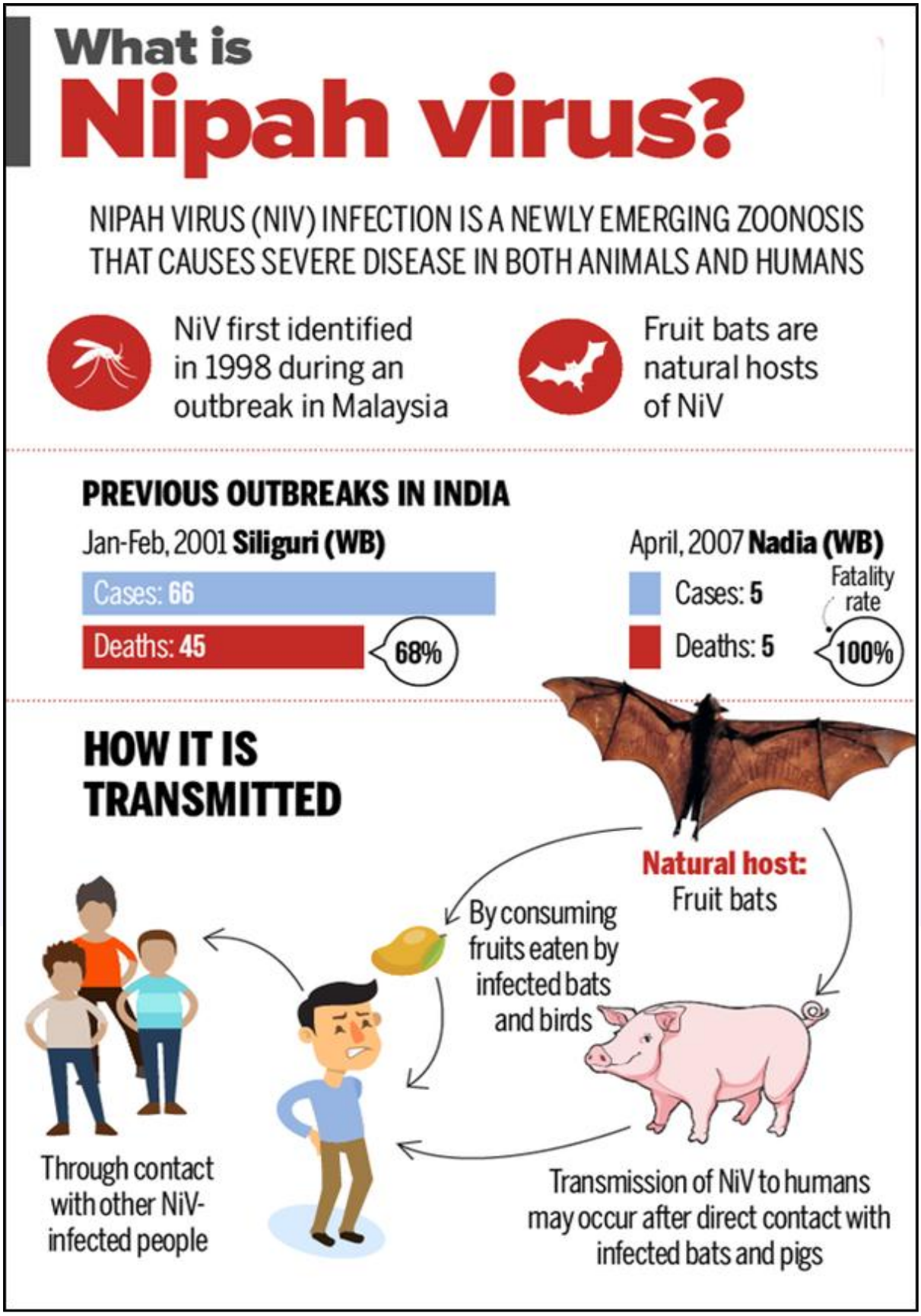
INDIGENOUS / INDIGENOUS MANUFACTURING

- 'Indigenous' means developed, produced or manufactured within India.
- In this context: Rather than relying on imported doses (e.g., from Australia) for Nipah mAbs, India is aiming to **develop and manufacture domestically** to ensure timely availability and self-reliance.
- Advantages: Faster deployment during outbreaks, cost-effectiveness, adaptation to local viral strains, supply chain security.

NIPAH VIRUS (NIV) & NIPAH VIRUS INFECTION

- NiV is a zoonotic virus (i.e., transmitted from animals to humans) belonging to the genus *Henipavirus*.
- It has a **very high case-fatality rate** (40-70 % or even higher) in human outbreaks.
- Transmission: Fruit bats (Pteropus species) are natural reservoirs; transmission to humans can occur via contaminated food (date-palm sap), direct contact with infected animals/people, human-to-human in some cases.
- Public-health challenge: Because of intermittent outbreaks (India: Kerala, West Bengal), high mortality, limited therapeutic options, develops quickly, capacity-for supportive care only.




What is
Nipah virus?
NIPAH VIRUS (NIV) INFECTION IS A NEWLY EMERGING ZOONOSIS THAT CAUSES SEVERE DISEASE IN BOTH ANIMALS AND HUMANS
NiV first identified in 1998 during an outbreak in Malaysia
Fruit bats are natural hosts of NiV
PREVIOUS OUTBREAKS IN INDIA
Jan-Feb, 2001 Siliguri (WB)
Cases: 66
Deaths: 45
68%
April, 2007 Nadia (WB)
Cases: 5
Deaths: 5
Fatality rate
100%
HOW IT IS TRANSMITTED
Natural host: Fruit bats
By consuming fruits eaten by infected bats and birds
Through contact with other NiV-infected people
Transmission of NiV to humans may occur after direct contact with infected bats and pigs

28 RUSSIA'S 'DOOMSDAY MISSILE'

Russia has launched its **newest nuclear submarine 'Khabarovsk'** designed to carry the underwater nuclear drone **'doomsday missile'.**

KEY CHARACTERISTICS OF DOOMSDAY MISSILES

- **Nuclear capability**: These missiles are capable of carrying nuclear warheads, often multiple warheads (MIRVs) or very high-yield warheads.
- **Intercontinental/Unlimited Reach**: Many such missiles claim or have the potential for global reach, able to strike continents far from their launch point.
- **High survivability / deterrent value**: Designed to penetrate or evade missile defence systems through high speed, stealth, unconventional propulsion (e.g., nuclear-powered) or underwater deployment. For example the Russian "Burevestnik" nuclear-powered cruise missile is said to "circumnavigate" defence systems.
- **Collateral / existential threat**: Their use would have massive destructive, long-term environmental and humanitarian consequences hence the "doomsday" moniker. For example, the Russian "Poseidon" underwater drone (sometimes called a missile) is claimed to be capable of triggering radioactive tsunamis.

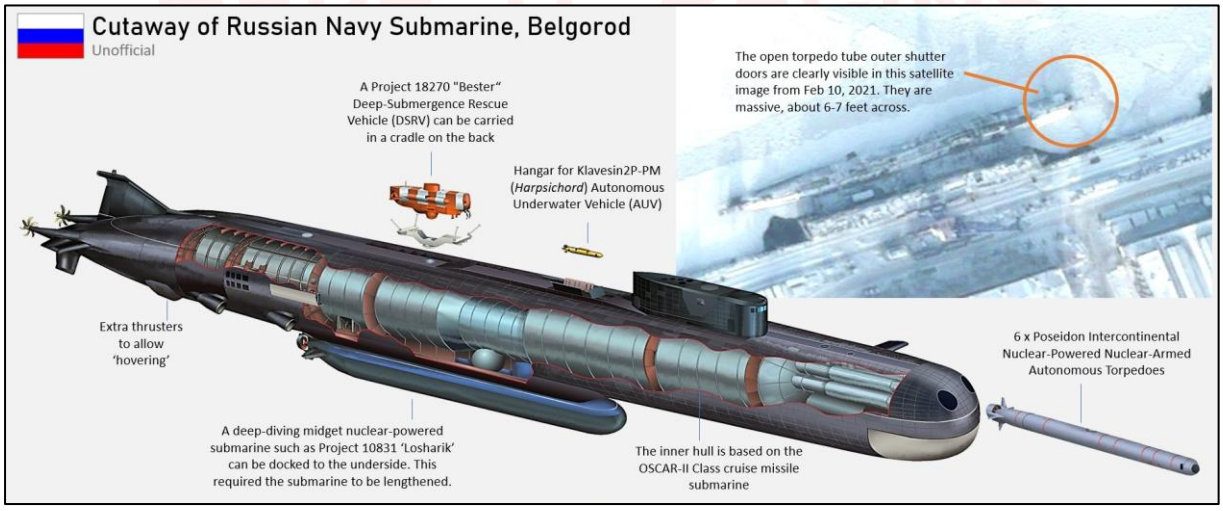
RECENT NOTABLE SYSTEMS LABELED AS DOOMSDAY MISSILES

- **RS-28 Sarmat ("Satan II")** – Russia's heavy ICBM claimed to carry many warheads and very large range.

- **Burevestnik (NATO code: "SSC-X-9 Skyfall")** – Nuclear-powered cruise missile under development in Russia; claimed range unlimited.
- **Poseidon ("Status-6")** – Russian nuclear-powered autonomous underwater drone/torpedo, sometimes called a doomsday missile/drone system.
- **LGM-35 Sentinel** (USA) – While not usually labeled "doomsday," the US upcoming ICBM replacement system underscores the continuing relevance of nuclear missile deterrence.

CHALLENGES & STRATEGIC IMPLICATIONS

- **Arms race acceleration**: When one country deploys a novel "doomsday" weapon, others may respond similarly, raising global instability.
- **Arms-control erosion**: Many treaties were designed for older missile types; new systems challenge existing verification and limits (e.g., nuclear-powered missiles/drones).
- **Environmental / humanitarian risks**: Some systems claim capability to create "radioactive tsunamis" or huge contamination zones—not just instantaneous destruction.
- **Security dilemmas**: Countries may feel compelled to launch pre-emptively if they believe such a weapon may be used against them, thus reducing crisis stability.
- **Relevance for India**: India, with its 'No First Use' nuclear posture, monitors such developments for their implications on regional deterrence, second strike survivability, underwater weapons, and missile defences.
- **Legal & ethical issues**: Use of weapons that cause indiscriminate, long-term pollution may violate international humanitarian law.



29 AUDITORY FUSION

Sometimes two sounds reach your ears so quickly one after the other that the brain joins them together and hears them as a single sound. This is called **auditory fusion.**

FUSION THRESHOLD:

- It's the **smallest time gap** needed between **two sounds for you to tell them apart.**
- For very short sounds like clicks, people usually need a gap of **2–3 milliseconds.**
- For more complex sounds like tones, words, or drum beats, the gap must be **longer — about 5–10 milliseconds or more.**
- The threshold can change depending on how loud the sounds are, or how different they are in pitch or tone.

WHY IT MATTERS:

- In echoey places, like big halls or churches, the original sound and its echo can reach your ears within a few milliseconds.
- If they come too close together, your brain fuses them, and you hear one clear sound instead of many.
- This helps you understand where the sound is coming from — a process known as the **precedence effect (the brain uses the first sound to guess direction).**
- **Fusion vs Masking:**
    - **Fusion:** The brain joins two close sounds into one.
    - **Masking:** One loud or similar sound hides the other so you can't hear it clearly.

APPLICATIONS:

- Audio engineers use this idea in music, speech processing, and sound compression.
- Architects use it when designing concert halls and theaters to make sounds clear and pleasant.

30 EMPLOYEE ENROLLMENT SCHEME 2025

The Centre launched the **Employee Enrollment Scheme 2025,** aimed at voluntarily enrolling employees under the Employees' Provident Fund Organization (EPFO).

ABOUT

- It was launched by the **Union Minister of Labour** during the **73rd foundation day of the EPFO.**
- It has been made effective from **November 1**, and aims at **encouraging employers to voluntarily declare and enroll eligible employees.**
- Employers can enrol workers who joined their organizations between **July 1, 2017 and October 31, 2025,** but were not registered under the Employees' Provident Fund (EPF) for any reason.
- Employers **will not have to pay the employee's share of the PF contribution** if it was not deducted earlier.
    - They will only need to pay their own share along with a **nominal penalty of Rs 100.**

SIGNIFICANCE

- The Scheme provides a chance for employers to regularize their work force **without fear of heavy penalties or legal action.**
- By paying only their own share of the contribution and a small fee, they can **ensure compliance with labour laws.**
- For employees, this scheme gives **them access to social security, retirement savings, and other EPF benefits**.

Employees' Provident Fund Organisation (EPFO)

- EPFO is a **statutory body** under the **Ministry of Labour and Employment.**
- It administers the **Employees' Provident Fund and Miscellaneous Provisions Act, 1952.**
- **Objectives:** To ensure financial security and social welfare of employee's post-retirement.
    - To promote voluntary savings among employees.
    - To regulate and supervise provident fund, pension, and insurance schemes.

31 ROWMARI-DONDUWA WETLAND COMPLEX

Experts from academic institutions and conservation groups are collaborating to propose the **Rowmari and Donduwa wetlands in Assam for Ramsar site designation.**

ROWMARI-DONDUWA WETLAND COMPLEX

- The Rowmari-Donduwa wetland complex is within the **Laokhowa Wildlife Sanctuary**, which is a part of the **Kaziranga Tiger Reserve.**
    - Laokhowa and the adjoining **Burhachapori Wildlife Sanctuaries** function as connectivity corridors for wild animals migrating between the Kaziranga Tiger Reserve and **Orang National Park** (Kaziranga-Orang landscape).
- It hosts around **120 species** of resident and migratory birds annually, including globally threatened species such as, the **knob-billed duck, black-necked stork, and the ferruginous pochard.**
- This complex has recorded more birds than the only two Ramsar sites in the northeast, **Assam's Deepor Beel and Manipur's Loktak Lake.**

What is the Ramsar Convention?

A Ramsar site is a **wetland designated** as one of **international importance** under the Ramsar Convention.

The Ramsar Convention is one of the oldest **inter-governmental accords** signed by member countries to preserve the ecological character of their wetlands of international importance.

It was signed on **February 2, 1971** in **Ramsar, Iran** and came into force in 1975.

India became a signatory to the **Ramsar Convention in 1982.**

32 CENTRE SAYS RIGHT TO VOTE DIFFERENT FROM FREEDOM OF VOTING

The Centre has argued in the Supreme Court that the '**right to vote' in an election is different from the 'freedom of voting'.** It stated that while the right to vote is a mere **statutory right**, the freedom of voting is a part of the **fundamental right** to freedom of speech and expression.

CONTEXT

- The Election Commission of India (ECI) and the Government of India have submitted before the Supreme Court of India that the "right to vote" and "freedom of voting" are legally distinct.
- This arises from a petition by Vidhi Centre for Legal Policy and Association for Democratic Reforms (ADR) challenging provisions under the Representation of the People Act, 1951 (RPA) and rules which allow **uncontested elections** where if the number of validly nominated candidates is equal to the number of seats, no polling is held and candidates are declared elected.
- Specifically, Section 53(2) RPA, 1951 and Rule 11 + Forms 21/21B of the Conduct of Elections Rules, 1961 are under challenge on the ground of denying voters the right to register dissent (via the "None of the Above" or NOTA option) when no poll is conducted.

PETITIONERS' ARGUMENTS

- **Violation of voters' freedom of expression:** By declaring a candidate elected without polling, citizens are **denied their right to express dissent** through None of the Above (NOTA).

- **NOTA as a democratic tool:** NOTA enables voters to register dissatisfaction with all contesting candidates; removing the opportunity to vote suppresses that expression.

CENTRE'S RESPONSE

- Citing the PUCL vs Union of India (2003) judgment, the Centre said that the **freedom of expression arisesonly** when a poll takes place. Without a poll, there's no occasion to exercise this freedom.
    - Hence, freedom of voting is an incidence of a poll.
    - If no election is held (as in uncontested cases), voters cannot claim the right to vote or NOTA.
- The Centre also clarified that **NOTA is not a candidate under Section 79(b) of the RPA, 1951**. It is merely an option or expression, not a contesting entity.
    - Elections cannot remain undecided; **declaring a winner ensures certainty.**

LEGAL-CONCEPTS & DISTINCTIONS

- **Right to Vote**: The Government's position is that this is a statutory right i.e., it arises under the statutes (RPA, 1951; Representation of the People Act, 1950) and is subject to limitations set by law (e.g., election laws).
- **Freedom of Voting**: They argue that the act of actually casting a vote is part of the fundamental right of freedom of speech and expression under Article 19(1)(a) of the Constitution, as the act of choosing a candidate (or NOTA) is a mode of expression.
- Polling as pre-condition: The Centre contends that "freedom of voting" only arises when a **poll** is held (i.e., when there are more candidates than seats). If no poll happens (uncontested election), the freedom of voting doesn't arise.
- Legal precedents: The judgment in People's Union for Civil Liberties v. Union of India (PUCL, 2003) had observed that while the right to vote may not be per se a fundamental right, the act of casting vote is an expression of preference and falls within free speech.

WHY THIS IS SIGNIFICANT?

- **Democratic expression**: If voters are deprived of a poll, they lose the opportunity to express dissent or preference (especially via NOTA). That raises questions about meaningful participation.

- **Statutory vs fundamental right**: The distinction is important — if the "right to vote" is statutory, it can be more easily regulated or limited by law; if "freedom of voting" is fundamental, then stricter judicial scrutiny would apply.
- **Electoral design & reforms**: The case could influence how uncontested elections are treated, whether the NOTA option is considered a competing candidate, and whether electoral laws need amendment to protect expression in democracy.
- **Judicial clarification**: The Supreme Court's eventual ruling will clarify the scope of rights of voters – not just to cast ballot, but to express choice or dissent.

KEY ISSUES & CRITIQUES

- **Democratic legitimacy**: Uncontested elections may save administrative cost, but do they undermine voter choice and democratic participation?
- **NOTA's status**: The government's position is that NOTA is not a "candidate" under Section 79(b) of RPA, hence cannot trigger a poll or affect outcome. Critics argue this may dilute voter agency.
- **Rare occurrences vs principle**: The government notes that uncontested elections are rare (only 9 since 1951) to argue limited practical impact.
- **Need for electoral reform**: Whether special rules should apply to ensure voters' expressive rights even when contest is absent (e.g., mandatory poll or alternative mechanisms) is being debated.

TYPES OF RIGHTS

- **Natural rights** are inherent and inalienable rights that are **bestowed by nature on individuals.**
    - Right to life and liberty are considered to be natural rights.
    - Indian courts may decide that a natural right is embodied in a fundamental right, but they do not directly enforce any natural right. For instance, the Right to life under Article 21 is seen as a reflection of the natural right to live with dignity.
    - The state is prohibited from making laws that violate these rights.
- **Constitutional rights** are contained in the Constitution but outside of **Part III.**
    - These rights include the right to property, free trade, and no taxation without the authority of law.
    - They are enforceable in a High Court under Article 226 or as per the legal process in the laws that operationalise them.

- **Statutory or legal rights** are provided and amended by ordinary laws of Parliament or State legislature.
    - Examples include right to work under the MGNREG Act; rights of scheduled tribes under the Forest Rights Act; right to subsidised food grains under the National Food Security Act etc.
    - These are enforceable as per the legal process in the laws that provide these rights.

STATUS OF RIGHT TO VOTE

- **Article 326** of the Constitution grants every citizen the right to vote, without any discrimination.
- The laws enacted by Parliament in this regard are the **Representation of the People Act, 1950 (RP Act, 1950) and the Representation of the People Act, 1951 (RP Act, 1951).**
- The legal status of the right to vote has been a **subject matter of debate in various cases in India.**
    - In the N.P.Ponnuswami case (1952) Supreme Court held that the right to vote is a **statutory right** and subject to limitations imposed by it.
    - In the PUCL case (2003), Justice P.V. Reddy observed that the right to vote, if **not a fundamental right, is certainly a 'constitutional right.'**
    - In the Anoop Baranwal case (2023), the majority opinion reiterated the judgment in the Kuldip Nayar case, that the **right to vote is only a statutory right.**
- Hence, the **current legal status of the right to vote is that it is a statutory right**.

33 CONTEMPT OF COURT IN INDIA

The recent controversy over alleged remarks against the Chief Justice of India and the Supreme Court has sparked concerns about undermining the court's authority and obstructing the administration of justice, prompting calls for contempt proceedings.

INTRODUCTION

- **Contempt of Court** refers to **any act which lowers the authority of the judiciary**, **interferes with its functioning**, or **obstructs the administration of justice**.
- It ensures that **judicial institutions retain public confidence** and function independently without external interference.
- **Objective:** To maintain **dignity, authority, and impartiality** of the courts and ensure **rule of law**.

CONSTITUTIONAL BASIS

- **Article 129** → Supreme Court is a "Court of Record" and has the power to punish for its contempt.
- **Article 215** → High Courts are "Courts of Record" and have similar powers to punish for their contempt.
- These articles are part of the **basic structure** as they uphold the **independence of the judiciary**.

STATUTORY FRAMEWORK

- **Contempt of Courts Act, 1971** (in force from 1972) defines, limits, and regulates the powers of courts to punish for contempt.
- The Act codifies the law relating to contempt which was earlier based on English Common Law.

TYPES OF CONTEMPT (SECTION 2 OF THE 1971 ACT)

(A) CIVIL CONTEMPT

- **Definition:** Wilful disobedience to any judgment, decree, direction, order, writ or other process of a court, or wilful breach of an undertaking given to a court.
- **Example:** A government officer deliberately not implementing a court order.

(B) CRIMINAL CONTEMPT

- **Definition:** Publication (by words, spoken or written, or by signs, or by visible representation) or doing any act which:
    1. **Scandalizes** or tends to scandalize, or lowers or tends to lower, the authority of any court;
    2. **Prejudices** or interferes with the due course of any judicial proceeding; or
    3. **Interferes** or tends to interfere with, or obstructs or tends to obstruct, the administration of justice.
- **Example:** Accusing a judge of bias without proof, or publishing material that may influence a case under trial.

EXCEPTIONS & DEFENSES (SECTION 5 TO 8)

The 1971 Act provides several **defenses** and **limitations** to protect freedom of speech:

- **Fair and accurate reporting** of judicial proceedings (Section 4)
- **Fair criticism** of judicial acts (Section 5)
- **Truth as a defense** (added by 2006 Amendment) – if it is in the **public interest** and made **in good faith**
- **Innocent publication** or **distribution** of matter not knowing it is pending before the court (Sections 3 & 7)

PUNISHMENT (SECTION 12)

- **Simple imprisonment** up to **6 months** and/or **fine up to ₹2,000**.
- The person may be **discharged or punishment remitted** if he makes a satisfactory **apology** to the court.

- Only the **Supreme Court and High Courts** can punish for contempt — **subordinate courts** can only make a reference to the High Court.

PROCEDURE

- The court may initiate contempt proceedings:
  - **Suo motu**, or
  - On a **motion made by the Advocate General**, or
  - On **permission of the court** where the consent of the Advocate General is granted.
- The accused person has the **right to be heard** and defend himself.

IMPORTANT SUPREME COURT JUDGMENTS

Case	Year	Key Observation
E.M.S. Namboodiripad v. T.N. Nambiar	1970	Criticism of judges motivated by political ideology is contempt.
S. Mulgaokar Case	1978	SC advised restraint; contempt power must be exercised **sparingly**.
P.N. Duda v. P. Shiv Shankar	1988	Fair criticism of judicial system is allowed; motive matters.
Arundhati Roy Case	2002	Punished for contempt for scandalizing the judiciary.
Prashant Bhushan Case	2020	Found guilty for tweets undermining public confidence in the judiciary.
Re: Arundhati Roy (2002)	2002	Asserted that fair criticism is fine, but imputing motives is contempt.

CONTEMPT VS FREEDOM OF SPEECH (ARTICLE 19(1)(A))

- **Freedom of Speech** is a **Fundamental Right**, but under **Article 19(2)** it can be **reasonably restricted** in the interest of "contempt of court."
- Hence, the Contempt of Courts Act acts as a **reasonable restriction** on free speech.

- The **challenge** is balancing **judicial dignity** with **public criticism and transparency**.

2006 AMENDMENT ACT

- Added **"truth" as a valid defense** (if made in public interest and good faith).
- Aimed to **prevent misuse** of contempt powers against legitimate criticism.
- Reduced the **scope of criminal contempt** and encouraged **judicial accountability**.

COMPARISON WITH OTHER DEMOCRACIES

- **UK**: Abolished "scandalizing the court" as a ground for contempt (2013).
- **USA**: Very high threshold — criticism is allowed unless it poses "clear and present danger" to justice.
- India still retains **broad powers**, leading to debate about its compatibility with free expression.

CRITICISMS

- **Vague and subjective definitions** — terms like "scandalizing" are not precisely defined.
- **Potential misuse** — to silence critics or suppress legitimate debate.
- **Judges act as complainants, prosecutors, and adjudicators** — conflict of interest.
- **Not in tune with modern democratic values** (e.g., UK's reform).
- **Lack of codified safeguards** for journalists, activists, and scholars.

NEED FOR REFORM

- **Define "scandalizing" narrowly** or remove it.
- **Empower a neutral body** to examine contempt petitions before courts take them up.
- **Encourage transparency** and **public debate** for judicial accountability.
- Promote **judicial restraint** in using contempt powers.

34 UNIFORM PENALTY FOR VIOLATIONS OF VAN ADHINIYAM, 1980

The **Forest Advisory Committee (FAC)** of the Union Environment Ministry has recommended standardising penal provisions under the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980**, particularly concerning violations involving forest land diversion without prior central approval.

WHAT IS VAN ADHINIYAM, 1980?

- It was originally enacted as the **Forest Conservation Act, 1980** and it was renamed **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980** under legislative updates.
- It governs the diversion of forest land for non-forest purposes, such as infrastructure, mining, or agriculture.
- It mandates central government approval for any such diversion and aims to prevent deforestation and protect ecological balance.

LATEST RECOMMENDATIONS OF FOREST ADVISORY COMMITTEE (FAC)

- It proposed that **penal compensatory afforestation (CA)** be uniformly levied on an area equal to the forest land violated, in addition to existing penalties under the 2023 Rules.
- While penal CA restoration beyond mandatory afforestation was earlier applied inconsistently, the FAC now urges its rationalisation alongside the penal Net

Present Value (NPV), introduced following Supreme Court directions in 2017 and formalised in 2023 guidelines.

- The NPV is a **financial measure of the quantified ecological and environmental services** that are lost due to diversion of forest land.
    - Penal NPV acts as an additional monetary disincentive, ensuring violators compensate for the environmental loss beyond the mandatory NPV already charged for lawful diversions.

Do you know?

Penal compensatory afforestation refers to restoration efforts which are ordered in addition to the legally mandated compensatory afforestation for non-forestry use of forest land for infrastructure projects, industries.

WHY WAS THIS NEEDED?

- Different states and agencies imposed varying penalties for similar violations, **leading to confusion and perceived unfairness.**
- Absence of a uniform framework made enforcement uneven and diluted the deterrent effect.
- Ensuring violators contribute meaningfully to restoration through afforestation and financial penalties.

IMPLICATIONS

- It enhances India's credibility in global climate and biodiversity forums.
- It supports community-based forest management by reinforcing legal safeguards.
- It encourages corporate accountability in land-use planning and environmental impact mitigation.

35 KARNATAKA'S MENSTRUAL LEAVE POLICY

Karnataka has become the **first State** in the country to approve 12 days **of paid menstrual leave per year** (one day per month) for all women employees, covering both government and private sectors.

ARGUMENTS IN FAVOUR

- **Promotes Gender-Sensitive Workplaces:** Recognises biological realities of women and promotes inclusivity and empathy in the workplace.
    - Moves beyond gender-neutral policies to gender-responsive labour reforms.
- **Acknowledgement of Menstrual Health:** Encourages open discussion and destigmatisation of menstrual health.
- **Improves Productivity and Well-being:** Allows women to rest during periods of pain or discomfort, leading to better overall performance and morale.
- **Health and Human Rights Perspective:** Upholds women's right to health, dignity, and bodily autonomy.
- **Empowers Working Women:** Particularly beneficial for women in physically demanding jobs or without flexible work conditions.
- **Global Alignment:** Reflects global best practices — countries like Japan, South Korea, Indonesia, Taiwan, and Spain have similar policies.

ARGUMENTS AGAINST

- **Risk of Workplace Discrimination:** Employers may become reluctant to hire or promote women, viewing them as less productive or more costly.
    - Could unintentionally reinforce gender bias rather than eliminate it.
- **Implementation Challenges in the Private Sector:** Ensuring compliance and monitoring across diverse industries could be difficult.
- **Insufficient Scope and Uniformity:** One day per month may be inadequate for many women who experience severe menstrual disorders.
    - Lack of a national framework may create policy inconsistency across states and sectors.
- **Period Shaming:** It would exacerbate period shaming in a country where a large number of people consider menstruation to be 'impure'.
- **Social Sensitivity Issues:** Women might prefer to keep their **health-related matters private,** and introducing a specific leave category for menstruation could infringe on **personal privacy.**

WAY AHEAD

- Women are fighting hard for equality in their workplaces and leadership positions and **menstruation leave could be held against them**.
- Recognising the **diverse nature** of menstrual experiences is essential.
    - Some argue for flexible work hours, work-from-home options, or better menstrual hygiene facilities at workplaces instead of fixed leave days.
- Tailoring support and being accommodative on a **case-by-case basis** promotes inclusivity, while also addressing the individual needs of those navigating their difficult menstrual cycle.

36 WHY THE NOMINATION PROCESS NEEDS REFORM?

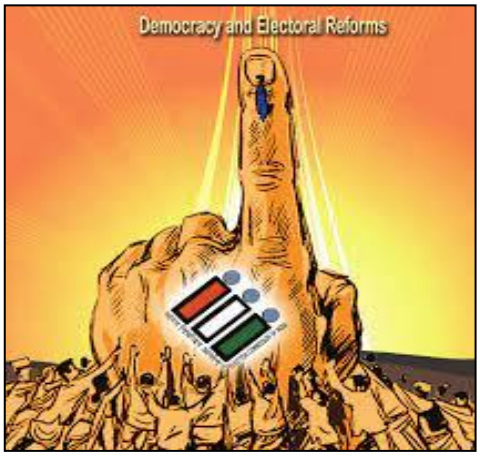
There is a need for reforms in the **nomination process in India's electoral system** that has become increasingly exclusionary, vulnerable, and convoluted to procedural misuse.

ABOUT THE NOMINATION PROCESS IN INDIA'S ELECTORAL SYSTEM

- The nomination process is the **gateway to electoral participation**, governed by constitutional provisions and detailed procedures laid out by the **Election Commission of India (ECI).** It involves:
    - **Eligibility Criteria:** Candidates need to meet age and voter registration requirements as per the **Representation of the People Act, 1951 (RPA).**
    - **Filing Nomination Papers:** Candidates submit **Form 2A *(for Lok Sabha)*** or **Form 2B *(for State Assemblies),*** along with affidavits declaring criminal records, assets, liabilities, and educational qualifications.
    - **Scrutiny and Withdrawal:** Nomination papers are **scrutinized by the Returning Officer (RO)**, and candidates may withdraw by a specified deadline.
    - **Digital Integration:** The **ENCORE portal** allows online submission of nomination forms and affidavits, enhancing transparency and accessibility.
- Candidates need to be registered voters and **at least 25 years old** to contest Lok Sabha or Vidhan Sabha elections.

LAPSES & CONCERNS IN CURRENT NOMINATION SYSTEM

- **Procedural Complexity vs. Substantive Justice:** The process of verifying **qualifications made under RPA, 1951** has become overly procedural.
    - The **Returning Officers (RO)** may reject a nomination deemed invalid after a *summary inquiry*, under **Sections 33–36 of RPA, 1951**, and the **Conduct of Elections Rules, 1961.**



    - RO is unchecked until after the election due to **Article 329(b)**, allowing technicalities to triumph over fairness.

- **Procedural Traps:** Candidates often fall to paperwork errors rather than constitutional disqualifications. Common procedural pitfalls include:
    - **Oath Trap:** Invalid oaths taken too early, too late, or before the wrong authority.
    - **Treasury Trap:** Wrong payment mode or late submission of security deposits.
    - **Notarisation Trap:** Missing notarised affidavits (Form 26).
    - **Certificate Trap:** Delays in obtaining no-dues certificates from various departments.
- **Constitutional Barriers: Article 329 of the Constitution** bars courts from intervening in electoral matters until after the elections are concluded.
    - It means that even wrongful rejection of nominations cannot be challenged immediately through writ petitions, and candidates need to wait until after the election to file an election petition.
- **Judicial Complexities:** Judicial interventions, though aimed at transparency, have added new grounds for disqualification.
    - The **Supreme Court's 2013 Resurgence India judgment** ruled that incomplete affidavits are invalid, but false declarations are not.
- **Filtration Approach:** India's **RO Handbook** attempts through a checklist system without having legal value.
    - An RO can still reject a previously 'defect-free' nomination at scrutiny, **breeding arbitrariness and undermines trust.**
- **Disproportionate Impact on Marginalized Candidates:** Lack of legal literacy, limited access to professional assistance, and fear of procedural rejection discourage participation.

WHAT REFORMS ARE NEEDED?

- **Restoring Fairness: Returning Officers (RO)** need to be legally required to:
    - Issue **written notices** specifying exact defects and relevant provisions.
    - Allow a **48-hour correction window**.
    - Provide **reasoned rejection orders** detailing evidence and justification.
- **Adopting Digital-by-Default Framework:** The **Election Commission of India (ECI)** can build a digital-by-default framework to simplify nominations:

- Online verification of voter ID, age, and constituency.
- Digital submission of oaths and affidavits.
- Electronic payment options (UPI, RTGS, cards).
- Public dashboard tracking every stage of nomination, including reasons for rejection.

- **Strengthening Democracy:** When a nomination is rejected unfairly, two rights are violated, i.e. the **candidate's right to contest**, and the **voter's right to choose**.
  - India needs a nomination system that is citizen-centric, transparent, and inclusive, and the process needs to move from *rule by law* to *rule of democracy*—**from filtration to facilitation.**
- **Best Practices:** Other democracies take a facilitative approach:
  - **UK** officials help candidates correct errors before deadlines.
  - **Canada** allows 48 hours to fix deficiencies.
  - **Germany** and **Australia** require written notice and provide appeal opportunities.

37 COMPTROLLER AND AUDITOR GENERAL (CAG)

Comptroller and Auditor General (CAG) of India has granted in-principle approval for setting up two new specialised cadres within the **Indian Audit and Accounts Department (IA&AD).**

INTRODUCTION

- The **Comptroller and Auditor General (CAG)** of India is the **guardian of public finances** and acts as the **watchdog of public expenditure**.
- CAG ensures that money spent by the government has been properly authorized by Parliament and used for the intended purpose.
- Described by Dr. **B.R. Ambedkar** as the **"most important officer under the Constitution."**

CONSTITUTIONAL PROVISIONS

Article	Provision
Article 148	Establishment and appointment of the CAG.
Article 149	Duties and powers of the CAG (Parliament may define them by law).
Article 150	Accounts of the Union and States to be kept in a form prescribed by the President on CAG's advice.
Article 151	CAG reports to the President (Union) and Governors (States) who lay them before Parliament/State Legislature.

APPOINTMENT AND TENURE

- **Appointed by:** The **President of India**.
- **Term: 6 years** or until the age of **65 years**, whichever is earlier.
- **Removal:** In the same manner as a **Supreme Court Judge** (on grounds of *proved misbehaviour or incapacity* via special majority in Parliament).
- This ensures **security of tenure** and **independence** from the executive.

CONDITIONS OF SERVICE AND INDEPENDENCE

- **Salary, allowances, and pension** are charged on the **Consolidated Fund of India (CFI)** — not subject to Parliament's vote.
- **Service conditions** cannot be altered to CAG's disadvantage after appointment.
- CAG is **not eligible for further office** under the Government of India or State after retirement (to prevent post-retirement influence).
- These safeguards ensure **institutional autonomy**.

DUTIES AND POWERS

(Defined under CAG's (Duties, Powers and Conditions of Service) Act, 1971)

(A) AUDIT OF ACCOUNTS

- **Union and State Governments**: Audit of receipts and expenditure from CFI, Consolidated Fund of States, and Union Territories.
- **Government Companies**: As per **Companies Act, 2013**, CAG audits public sector undertakings (PSUs) and appoints their statutory auditors.
- **Autonomous Bodies**: Audit of bodies and authorities substantially financed by government grants.
- **Defense and Railways**: Special audit functions covering sensitive expenditures.
- **Panchayati Raj and Urban Local Bodies**: Performance and financial audits under State Acts.

(B) COMPTROLLER FUNCTION

- Earlier, CAG acted as a *comptroller* by authorizing withdrawals from the Consolidated Fund before expenditure.
- Now, this function is performed by the **Controller General of Accounts (CGA)** under the Ministry of Finance — but CAG retains oversight through audit.

(C) AUDIT TYPES

Type	Description
Compliance Audit	Checks legality and regularity of expenditure (e.g., rules followed or not).
Financial Audit	Examines financial statements for accuracy.

Performance Audit	Evaluates efficiency, effectiveness, and economy of government programs.

REPORTS OF THE CAG

- CAG submits reports to:
  - **President of India** → for Union Government.
  - **Governor of State** → for State Government.
- These reports are laid before **Parliament/State Legislature** and examined by the **Public Accounts Committee (PAC)** or **Committee on Public Undertakings (COPU)**.

TYPES OF REPORTS:

- **Audit Report on Appropriation Accounts** – Whether grants have been properly used.
- **Audit Report on Finance Accounts** – Authenticity of government financial statements.
- **Audit Report on Public Sector Undertakings** – Financial and performance analysis of PSUs.

ROLE OF CAG IN ENSURING ACCOUNTABILITY

- **Legislative Accountability:** Reports help Parliament ensure that executive spending aligns with legislative intent.
- **Financial Accountability:** Prevents waste and misuse of public funds.
- **Administrative Accountability:** Audits implementation of schemes, programs, and outcomes.
- **Transparency & Good Governance:** Enhances citizen trust in financial management.
- **Public Sector Reforms:** Highlights inefficiencies and corruption (e.g., 2G Spectrum case).

LANDMARK CASES AND REPORTS

Case/Report	Year	Significance
Subramanian Swamy v. Union of India (2G Spectrum Case)	2012	CAG's audit exposed irregularities in spectrum allocation; upheld CAG's role in promoting accountability.

Coal Block Allocation Case	2014	CAG report revealed massive losses due to non-transparent allocation.
Natural Gas Pricing Case	2015	SC recognized CAG's right to audit private entities involved in PPPs using public resources.
Vineet Narain Case	1997	Emphasized independent institutions like CAG for maintaining checks and balances.

CAG AND INTERNATIONAL STANDARDS

- CAG is a member of **INTOSAI** (International Organization of Supreme Audit Institutions).
- Adopts **Performance and Environmental Audits** in line with global standards.
- Recently, CAG India chaired the **UN Board of Auditors** and has audited organizations like the **UN Headquarters, WHO, and FAO**.

LIMITATIONS OF THE CAG

- **No enforcement power** – CAG can only report; cannot penalize.
- **Delay in examination** – PAC reviews take years, reducing impact.
- **Dependence on executive data** – Government agencies control access to records.
- **Lack of resources & manpower** – Affects audit depth, especially of local bodies.
- **Perception of politicization** – Major reports (e.g., 2G, Coal) sometimes labeled politically motivated.

REFORMS SUGGESTED

- **Strengthen follow-up mechanisms** on CAG findings.
- **Enhance CAG's access to PPP and private entities** using public funds.
- **Establish time-bound PAC reviews** and action-taken reports.
- **Modernize auditing methods** using AI, data analytics, and real-time audit.
- **Parliamentary discussion on CAG reports** should be mandatory for accountability.

38 ABRAHAM ACCORDS

US President confirmed **Kazakhstan** has formally joined the **Abraham Accords.**

BACKGROUND AND CONTEXT

The **Abraham Accords** are a series of **normalization agreements** signed in **2020** between **Israel** and several **Arab states** — marking a major geopolitical shift in the **Middle East**.

Named after the **prophet Abraham**, who is revered in Judaism, Christianity, and Islam, the accords symbolize a historic reconciliation among **Abrahamic faith nations**.

KEY DATES AND SIGNATORIES

Date	Agreement	Parties Involved
August 13, 2020	Abraham Accord announced	**Israel – United Arab Emirates (UAE)**
September 15, 2020	Formal signing ceremony at the **White House**, USA	**Israel, UAE, Bahrain**
October 23, 2020	Normalization agreement announced	**Israel – Sudan**
December 10, 2020	Agreement announced	**Israel – Morocco**

Mediated and facilitated by the **United States** (under President **Donald Trump** administration).

OBJECTIVES OF THE ABRAHAM ACCORDS

- **Normalization of Relations**: Establish diplomatic, economic, and cultural ties between Israel and Arab nations.
- **Regional Stability**: Counter common threats — notably **Iran's regional influence** and extremism.
- **Economic Cooperation**: Promote technology, trade, tourism, healthcare, and energy partnerships.
- **Peaceful Coexistence**: Encourage interfaith dialogue and cultural exchange between Jews, Muslims, and Christians.
- **Strategic Realignment**: Strengthen U.S.-backed alliances and create a **new power axis** in the Middle East.

MAIN PROVISIONS

- **Full diplomatic relations**: Embassies and ambassadors to be exchanged.
- **Direct flights** between capitals.
- **Economic and trade agreements**: Including investment, fintech, agriculture, defense, and technology.
- **Cooperation in science, energy, and innovation** sectors.
- **Tourism and cultural exchange** programs.

- **Suspension of Israel's annexation plans** in parts of the West Bank (as declared initially by Israel).

STRATEGIC SIGNIFICANCE

(A) FOR ISRAEL

- Breaks its regional isolation.
- Opens trade and investment opportunities with Arab states.
- Strengthens position against Iran.

(B) FOR ARAB STATES (UAE, BAHRAIN, MOROCCO, SUDAN)

- Access to **Israeli technology** (cybersecurity, agriculture, defense, AI).
- Boosts defense cooperation with the U.S. and Israel.
- Diversifies economy (especially post–oil era).
- Balances Iran's and Turkey's regional influence.

(C) FOR THE UNITED STATES

- Strengthens U.S. role as a peacemaker in the Middle East.
- Consolidates anti-Iran coalition.
- Creates a pro-U.S. bloc for future regional diplomacy.

IMPACT ON PALESTINE

- **Mixed reactions**:
    - Arab states previously upheld the **"Arab Peace Initiative" (2002)** — normalizing ties with Israel only after it withdrew from occupied territories and recognized Palestine.
    - The Abraham Accords **bypassed this**, leading to **Palestinian anger** and **loss of Arab solidarity**.
- However, supporters argue that **engagement with Israel** could **indirectly help** in reviving the peace process.

INDIA'S PERSPECTIVE

(A) STRATEGIC IMPORTANCE

- India maintains strong ties with **Israel** (defense, tech, agriculture) and **Gulf countries** (energy, diaspora, trade).

- The accords create a **more stable regional environment**, beneficial for India's West Asia policy.

(B) ECONOMIC AND DIASPORA BENEFITS

- Easier connectivity between Israel and the UAE/Bahrain — countries with large Indian diaspora.
- Boosts trade, tourism, and technology collaboration.

(C) INDIA–ISRAEL–UAE–U.S. QUAD (I2U2)

- The Abraham Accords laid the groundwork for **I2U2**, focusing on food security, clean energy, and infrastructure — strengthening India's multilateral engagement.

CHALLENGES AND CRITICISMS

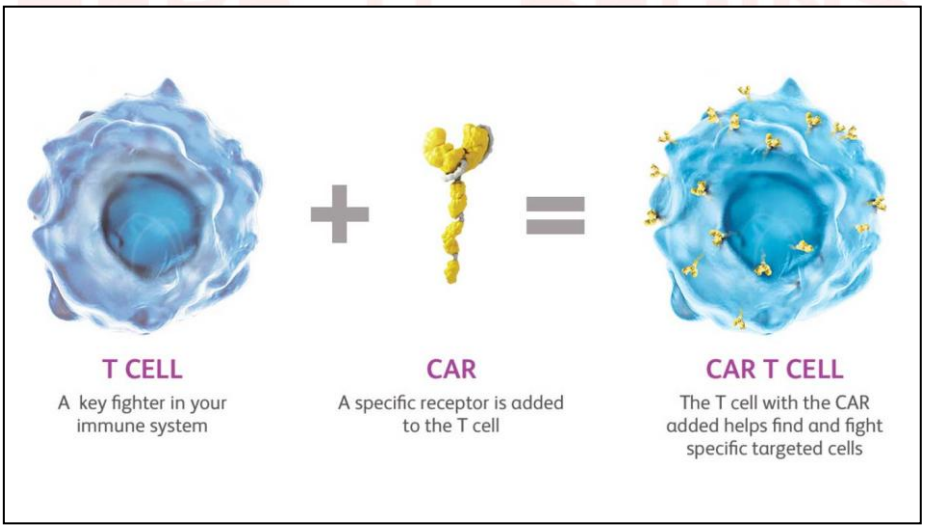
- **Palestinian issue unresolved** — may fuel extremism or internal dissent.
- **Iran's opposition** — views the accords as a hostile coalition.
- **Public opinion** in Arab nations remains divided.
- **Durability of peace** depends on regional conflicts (e.g., Gaza, Lebanon).

39 INDIA UNVEILS ITS FIRST INDIGENOUS CAR-T CELL THERAPY

Prime Minister Narendra Modi launched **NexCAR19 for cancer care.**

WHAT IS CAR-T CELL THERAPY?

- CAR stands for *Chimeric Antigen Receptor*. In this therapy, a patient's own T-cells (a type of white blood cell) are extracted, genetically engineered in a lab to express a receptor (CAR) that recognises a specific antigen on cancer cells, expanded and reinfused into the patient to attack the cancer cells.
- It is a form of **cell and gene therapy**, mostly used for certain types of blood cancers (e.g., B-cell leukaemia, lymphoma) where conventional therapies have failed.
- The treatment is highly personalised, complex, and previously very expensive (globally sometimes US $300,000+ or several crores INR) and involves risks like Cytokine Release Syndrome (CRS) and neurotoxicity.



INDIA'S MILESTONE: INDIGENOUS CAR-T THERAPY

- An Indian company, ImmunoACT (incubated at Indian Institute of Technology Bombay and partnered with Tata Memorial Centre) developed the product **NexCAR19** (also named actalycabtagene autoleucel) — a CD19-targeted CAR-T therapy for relapsed/refractory B-cell lymphomas and leukaemia.
- In **October 2023**, the Central Drugs Standard Control Organisation (CDSCO) approved this therapy for use in India.
- In April 2024, the therapy was formally launched by the President of India at IIT Bombay as India's first home-grown gene/cell therapy.
- Notable facts:
    - The Indian version aims to cost **much lower** than Western alternatives (Indian reports say ~₹30-40 lakh per patient compared to several crores abroad).
    - Early clinical trial data: In a Phase I/II trial (~60 patients) the overall response rate (ORR) was around ~70%.
    - The first reported patient using this therapy in India has been declared cancer-free.

SIGNIFICANCE OF THIS DEVELOPMENT

- **Health innovation & self-reliance (Atmanirbhar Bharat)**: Demonstrates that India can develop cutting-edge cell/gene therapies domestically rather than depend entirely on imports.
- **Access & affordability**: By developing locally, the cost barrier can be lowered, making such advanced therapies accessible to more Indian patients.

- **Cancer care landscape in India**: With an estimated ~1.6 million new cancer cases in India in 2023, and significant burden of blood cancers, having indigenous advanced therapies strengthens the treatment ecosystem.
- **Scientific & biotech ecosystem boost**: Encourages industry-academia partnerships (IIT, Tata Memorial, biotech start-ups) and enhances India's position in global cell/gene therapy research.
- **Global positioning**: India joins a small list of countries capable of producing CAR-T therapies, which is a high-tech domain.

KEY COMPONENTS & HOW IT WORKS (SIMPLIFIED)

- **Leucapheresis**: T-cells are collected from the patient's blood.
- **Genetic Engineering**: T-cells are genetically modified (via a viral vector) to express a chimeric antigen receptor specific to a tumour antigen (e.g., CD19 on B-cells).
- **Expansion**: Modified T-cells are multiplied in laboratory.
- **Pre-conditioning**: Patient undergoes chemotherapy to reduce existing immune cells and prepare for infusion.
- **Infusion**: The engineered T-cells are infused back into patient.
- **Action**: The CAR-T cells recognise cancer cells expressing target antigen, bind to them, activate, proliferate and kill them.
- **Monitoring & management**: The patient is monitored for side-effects, especially cytokine release syndrome (CRS) and neurotoxicity.

CHALLENGES & CONSIDERATIONS

- **Safety risks**: CRS and neurotoxicity remain significant. Requires specialised infrastructure and monitoring.
- **Manufacturing complexity**: Autologous (patient-specific) therapy demands high-quality labs, cold chain, gene-modification facilities — expensive and logistically challenging.
- **Cost & scalability**: Even though Indian version is cheaper, cost is still substantial; scaling to many patients and ensuring equitable access remain obstacles.
- **Eligibility & scope**: Currently approved for certain B-cell leukaemias/lymphomas; efficacy for solid tumours is still limited globally.

- **Regulatory & ethical aspects**: Gene therapies involve complex regulation, long term follow-up, data on durability of remission.
- **Health-system readiness**: Requires specialised centres, trained personnel; equitable access beyond metros is a challenge.
- **Sustainability & local manufacturing ecosystem**: Ensuring continuous supply, affordability, and local capacity is key.

IMPLICATIONS FOR INDIA'S HEALTH POLICY & INNOVATION STRATEGY

- Integrates with India's **National Health Policy** focus on newer therapies and making high-end care accessible.
- Reinforces "Make in India" and biotechnology vision, elevating biotech start-up ecosystem.
- Aligns with government efforts (via Biotechnology Industry Research Assistance Council (BIRAC), DBT, DST) to support cell/gene therapy research.
- Opens avenues for medical tourism (India offering advanced therapies at lower cost).
- Raises need for healthcare financing reforms: insurance/coverage for advanced therapies, inclusion in public health programs.
- Points to need for strengthening regulatory frameworks for cell & gene therapies in India.

40 KHANGCHENDZONGA NATIONAL PARK RATED "GOOD" BY IUCN

The International Union for Conservation of Nature (IUCN) recently rated Khangchendzonga National Park as "good" in its latest global review of natural World Heritage sites.

WHAT IS THIS NEWS ABOUT?

- The International Union for Conservation of Nature (IUCN) has rated Khangchendzonga National Park (Sikkim, India) as **"Good"** in its latest *World Heritage Outlook* assessment.
- It is reportedly **the only Indian natural/mixed UNESCO World Heritage site** to receive the "Good" conservation status in this round of assessments.
- The park is recognised under UNESCO as a **Mixed World Heritage Site** (natural + cultural) since 2016.

KEY FACTS ABOUT THE PARK

- **Location:** State of Sikkim, India.
- **Area:** ~1,784 sq km (or 178,400 ha) in earlier citation.
- **Altitudinal range:** From ~1,220 m to 8,586 m (Mt. Khangchendzonga) — vertical sweep of ~7 km.
- **Biodiversity:** Home to glaciers (~280 as per one report) and glacial lakes, diverse fauna including snow leopard, red panda, etc.

- **Cultural significance:** Sacred to the indigenous Lepcha people (they call it Mayel Lyang), and important in Tibetan Buddhist tradition as a "beyul" (hidden sacred valley).

WHAT DOES THE "GOOD" RATING SIGNIFY?

- IUCN's *World Heritage Outlook* rates natural and mixed heritage sites on their current conservation status and future outlook, using categories like "Good", "Good with some concerns", "Significant concerns", etc.
- A "Good" rating indicates that the site's **Outstanding Universal Value (OUV)** is currently well-protected, the management systems are effective, and major threats are under control (though not absent).
- In India's context: while many sites are flagged with "some concerns" or "significant concerns", Khangchendzonga stands out for achieving the top category.

WHY DID KHANGCHENDZONGA ACHIEVE THIS STATUS?

CONTRIBUTING FACTORS

- **Effective management & remoteness**: Its remote Himalayan location reduces heavy human impact, which helps conservation.
- **Community-based conservation**: Involvement of local communities (Lepcha, others) in monitoring, sacred-land traditions, eco-development strategies.
- **Strong legal protection**: As a national park + part of a biosphere reserve, under the Wildlife (Protection) Act and state forestry department oversight.
- **Integrated natural & cultural value**: The site is not just biodiversity-rich but also culturally important — this synergy adds weight to its conservation status.

IMPLICATIONS & SIGNIFICANCE FOR INDIA

- It underscores India's capacity to manage and conserve high-value natural heritage effectively.
- Sets a **benchmark** for other World Heritage Sites in India (e.g., Western Ghats, Sundarbans) which are under "concern" status.
- **For policy:** Encourages continuation and scaling of best practices (community engagement, sacred-land respect, zoning, buffer management) in other protected areas.
- For international image: Reinforces India's commitment under global biodiversity frameworks (e.g., Convention on Biological Diversity, UNESCO heritage) to conserve natural-cultural landscapes.

- For regional development: Highlights the value of conserving such landscapes not just for ecology but also for sustainable tourism, culture, livelihoods of indigenous communities.

CHALLENGES & CONSIDERATIONS

- **Tourism & infrastructure pressure**: Even though the site is well-protected now, increasing tourism and access may pose risks. The IUCN report notes tourism and climate change as ongoing threats.
- **Climate change & glaciers**: Being a high-altitude Himalayan region with glaciers, the site is vulnerable to climate change (glacial retreat, ecosystem shifts) which could affect long-term conservation.
- **Buffer zone & external impacts**: Surrounding land-use changes, human-wildlife conflict, invasive species could become future threats.
- **Replication across India**: Achieving "Good" status is commendable—but other sites with more human pressure may find it harder. The contextual factors (e.g., remoteness of Khangchendzonga) may not be replicable everywhere.

41 INDIA NAVY COMMISSIONS INS IKSHAK

The Indian Navy has **commissioned INS Ikshak**, the third vessel of the **Survey Vessel Large** class, into active service during a ceremony held at the **Naval Base in Kochi**.

ABOUT INS IKSHAK

- **Meaning:** *Ikshak* means **"Guide"** in Sanskrit — symbolizing its role in hydrographic precision.
- **Built by:** Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.
- **Indigenous Content:** Over **80%**, showcasing India's **Aatmanirbhar Bharat** initiative and MSME collaboration.
- **Purpose:**
  - Conducts **coastal and deep-water hydrographic surveys** of ports, harbours, and sea routes.
  - Supports **coastal defence**, **disaster relief**, and **medical missions**.

42 ASIA-PACIFIC ECONOMIC COOPERATION (APEC) SUMMIT 2025

Asia-Pacific Economic Cooperation (APEC) Summit 2025, held in **Gyeongju, South Korea**, concluded with the adoption of the **APEC Leaders' Gyeongju Declaration (2025),** reaffirming regional cooperation, digital transformation, and inclusive economic growth.

WHAT IS APEC?

- APEC is a regional economic forum comprising 21 member economies in the Asia-Pacific, aimed at promoting free trade and economic cooperation.
- The 2025 host economy is the Republic of Korea (South Korea). According to the APEC press release, Korea "kicks off its APEC 2025 host year … in Gyeongju … to set the stage for a year of policy deliberations and cooperation on trade, digital transformation and sustainability."
- The overarching theme for APEC 2025 is **"Building a Sustainable Tomorrow"** with three priorities: **Connect, Innovate, Prosper**.

KEY FACTS & TIMELINE

- The APEC Leaders' Meeting was held in Gyeongju (Korea) from **October 31 to November 1, 2025**, culminating in the "2025 APEC Leaders' Gyeongju Declaration."
- The 2025 Ministerial Meeting took place on October 30, 2025 in Gyeongju, with Ministers of Trade, Foreign Affairs and others present.

- Senior Officials' meetings earlier in the year (e.g., February–March) began the preparatory process.

KEY AGENDA ITEMS & PRIORITIES

Under the theme "Building a Sustainable Tomorrow," the three pillars are elaborated as:

- **Connect**: Strengthening regional economic integration, connectivity of trade, investment, supply chains; support for SMEs; work on Free Trade Area of the Asia-Pacific (FTAAP) agenda.
- **Innovate**: Harnessing digital technologies (especially AI), supporting digital transformation, building resilient, inclusive economies; capacity building and standards for emerging technologies.
- **Prosper**: Ensuring the benefits of growth are inclusive, sustainable, especially given demographic change (aging populations), climate change, supply-chain disruptions.

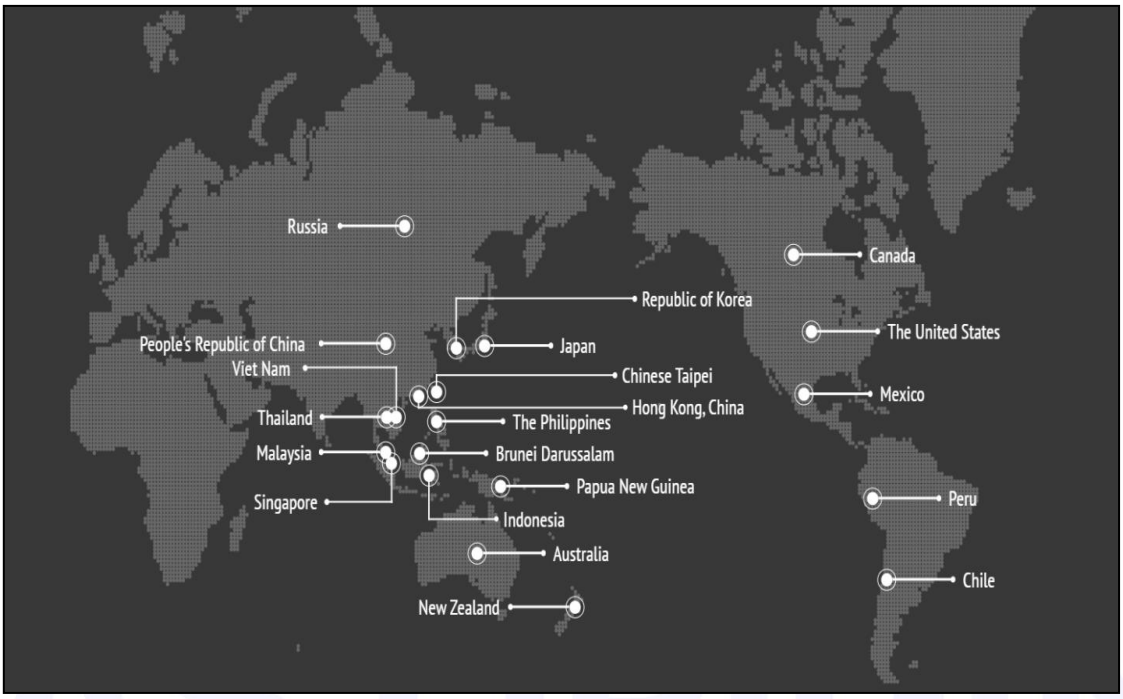
SPECIFIC FOCUS AREAS MENTIONED INCLUDE:

- AI governance and digital economy policy.
- Supply-chain resilience: countering disruptions from geopolitics, pandemic aftermath.
- Demographic change: aging, workforce issues, human capital.

MAJOR OUTCOMES & DECLARATIONS

- **The Gyeongju Declaration (2025):** Leaders reaffirmed their commitment to the APEC Putrajaya Vision 2040 (to create an open, dynamic, resilient Asia-Pacific community) and advanced the three priorities of Connect, Innovate, Prosper.
- **Adoption of frameworks/initiatives:**
    - **Artificial Intelligence Initiative:** common standards for AI testing, inclusive adoption; Korea announced creation of an "Asia-Pacific AI Center".
    - Framework for cooperation on population structure changes/demographic shifts.
- **Trade and investment language:** The Declaration emphasises a trade and investment environment that promotes resilience and benefits for all (a subtle shift from earlier more-explicit "free trade" language).
- **For Korea specifically:** Hosting APEC boosted its diplomatic, tech and economic footprint.

- **Adoption of the Gyeongju Declaration (2025):** The declaration reaffirmed APEC leaders' commitment to inclusive economic growth, recognising the transformative impact of Artificial Intelligence (AI) and demographic shifts on labour markets.
- **It outlined three priorities:**
    - Building the world's most dynamic and interconnected regional economy.
    - Preparing the region for digital and AI transformation
    - Addressing shared challenges and ensuring growth benefits all



- **APEC Artificial Intelligence (AI) Initiative (2026-2030):** The AI initiative seeks to drive inclusive, resilient growth by boosting innovation, cooperation, capacity building, and sustainable, energy-efficient AI development.
- **Framework for Demographic Changes:** Adopted by APEC, it addresses the region's challenges of ageing populations, declining birth rates, and rapid urbanisation.
    - It urges people-centred, intergenerational policies for resilient and inclusive growth, and promotes shared policy responses, social innovation, stronger employment, fiscal resilience, and a "silver economy" for ageing populations.
- **Strengthened Economic and Technological Cooperation:** China–South Korea renewed a currency swap and signed a cybersecurity MoU, US–China talks on the sidelines of the summit signaled easing tensions with plans to restart trade talks and cut select tariffs.

- **Support for Inclusive, Rules-Based Multilateralism:** Leaders reaffirmed the Putrajaya Vision 2040, stressing free and fair trade, predictable investment, and cooperation through multilateralism over fragmentation.
    - Putrajaya Vision 2040 is a long-term strategic plan adopted by the APEC in 2020 to foster an open, dynamic, resilient, and peaceful Asia-Pacific community.

SIGNIFICANCE FOR INDIA AND THE REGION

- **For India's interests**:
    - India is not a full member of APEC, but as an Indo-Pacific actor and part of Asian trade networks, the outcomes (digital economy, supply-chain resilience, AI frameworks) impact India's partnerships and policy directions.
    - The "Connect" agenda reinforces regional trade and investment linkages; India's own drive to boost tech, digital adoption and supply-chain integration stands to gain from regional frameworks.
- **Regional strategic importance**:
    - The Asia-Pacific region remains central to global trade, technology and economic growth. APEC's emphasis on tech/AI innovation responds to shifting global trade and power dynamics.
    - The Summit highlighted the tension between the U.S.-China trade rivalry and the need for regional stability; member economies are signalling greater cooperation despite protectionist pressures.
- **Policy marker**: The inclusion of AI, demographic change, supply-chain resilience as major agenda items indicates APEC's evolution beyond mere trade liberalisation to broader economic and structural issues — relevant for India's policy framing (Digital India, Atmanirbhar Bharat, Make in India, supply-chain diversification).
- **Standard-setting role**: The AI Initiative and the frameworks developed can guide regional and national policies; if India aligns with these, it can gain advantages in tech standards and digital trade.

CHALLENGES, CRITIQUES & ISSUES

- **Geopolitical tensions**: U.S.-China rivalry, protectionist measures, export controls remain a drag on the free-trade ethos of APEC. For example, APEC warned of exports in the region growing only 0.4% due to tariffs.

- **Ambiguity in language**: The shift away from "rules-based multilateral trading system" to more generic "trade and investment environment" may reflect member divergences and weakening consensus.
- **Implementation gap**: As always with multilateral fora, commitments risk being declaratory unless translated into action. The AI frameworks and supply-chain plans need actual follow-through and investment.
- **Inclusivity & digital divide**: The tech-innovation agenda may widen gaps between advanced economies and developing economies (which many APEC members are). Ensuring SMEs and smaller economies benefit remains a task.
- **Regional trade architecture**: The long-term goal of FTAAP remains elusive; slower progress raises questions on trade liberalisation momentum in the region.

IAS ORIGIN

HERE IT BEGINS

Powered by Ecoholics

CONTACT IAS ORIGIN TEAM AT 7880-00-9099