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YOUR PATHWAY TO UPSC SUCCESS

WEEKLY CURRENT AFFAIRS

25TH AUG TO 3RD SEPT

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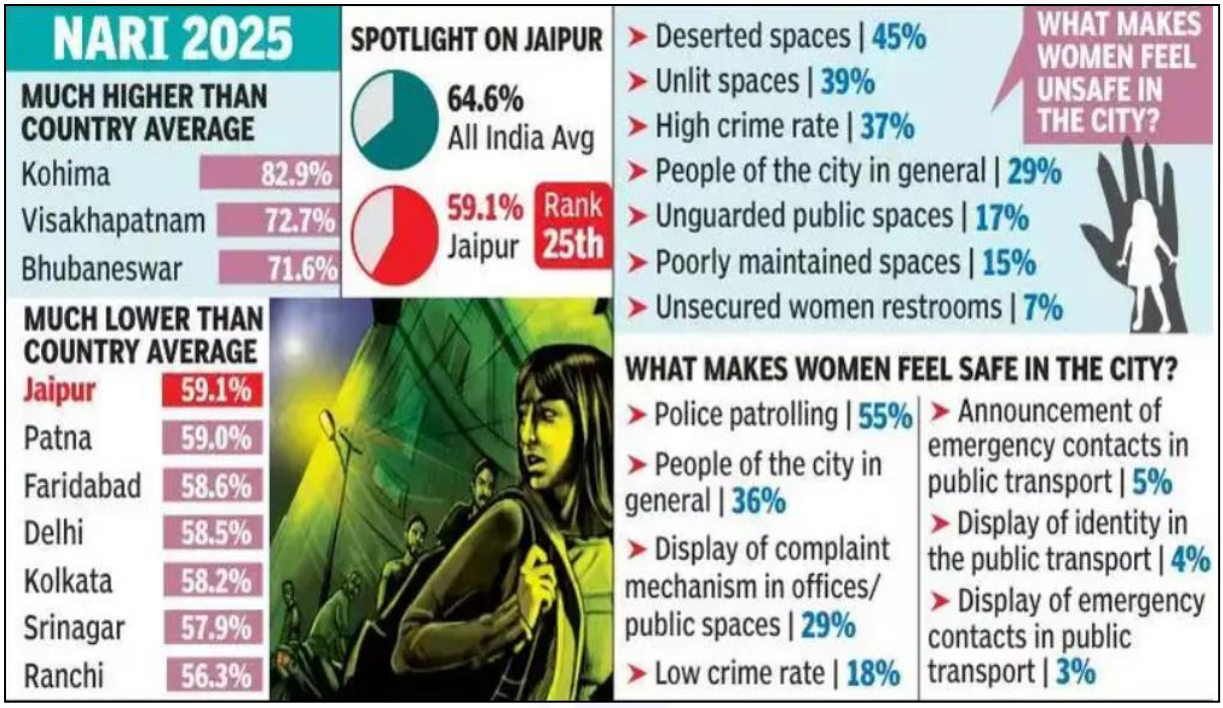
01 NARI 2025 REPORT

The NARI 2025 report has found that 40% of women in India's urban areas feel unsafe, with harassment experiences far exceeding official NCRB data.



KEY FACTS FROM NARI 2025

SCOPE & METHODOLOGY

- Conducted by **NCW (National Commission for Women)**, executed by Group of Intellectuals and Academicians and P-Value Analytics, based on perceptions of **12,770 women across 31 cities**.
- Cities were ranked across a **national safety score of 65%**, categorized as "much above," "above," "below," or "much below" the benchmark.

SAFETY PERCEPTION

- **60% of women** felt safe overall, while **40% felt "not-so-safe" or "unsafe"**.
- Safety perception sharply **declines after dark**, especially in **public transport**, **recreational spaces**, and low-lit urban areas.

HARASSMENT PATTERNS

- **7%** of women faced harassment in public spaces in 2024; this doubled to **14% among women under 24**.
- Main harassment hotspots: **neighborhoods (38%)** and **public transport (29%)**.

REPORTING AND INSTITUTIONAL TRUST

- Only **1 in 3 harassment cases are reported**; many go unreported.
- Formal registration occurs in only **~22%** of reported cases, and further action is taken in just **~16%**.
- Just **25% of women** trust authorities to act effectively on their complaints.

CITY RANKINGS

- **Safest Cities**: Kohima, Visakhapatnam, Bhubaneswar, Aizawl, Gangtok, Itanagar, Mumbai.
- **Least Safe Cities**: Patna, Jaipur, Faridabad, Delhi, Kolkata, Srinagar, Ranchi.
- **City-Specific Highlights**:
    - **Chennai**: Ranked 21/31; safety drops from **75% during day** to **54% at night**; harassment mostly verbal; only **8% feel highly safe**.
    - **Indore**: Around **70%** feel safe; night-time safety drops from **83%** to **48%**; recommendations include better police presence.
    - **Jaipur**: Harassment at **8% (> national average of 7%)**; only **28% reported incidents**; safety ranking low at **59.1%**.
    - **Delhi & Patna**: Rated among the **least safe**.
    - **Dehradun**: Ranked low (score **60.6%**); night-time safety falls from **70%** to **44%**; 40% took no action when harassed; police questioned survey's sample method

02 CHHATH FESTIVAL

The Bihar art and culture department has nominated INTACH as its knowledge partner to prepare the dossier for the inclusion of Chhath festival in UNESCO's Intangible Cultural Heritage list.

CHHATH FESTIVAL: HISTORY & IMPORTANCE

ORIGINS & HISTORICAL ROOTS

- **Ancient Vedic Tradition**: References found in Rigveda hymns worshipping the **Sun God (Surya)** and natural forces.
- **Mahabharata Link**: Draupadi and the Pandavas are said to have observed Chhath to regain their lost kingdom.
- **Regional Antiquity**: Practiced in ancient Magadh (present-day Bihar) for over **2,000 years**, making it one of the oldest surviving sun-worship rituals.

RITUALS & PRACTICES

- **Dedicated to Surya (Sun God)** and **Chhathi Maiya** (goddess associated with childbirth & well-being).
- Celebrated on the **6th day of Kartik month (October–November)**, also in **Chaitra (March–April)** as *Chaiti Chhath*.
- **Four-day ritual**:
    1. *Nahay-Khay* (ritual bathing, vegetarian food).
    2. *Kharna* (fasting and prasad preparation like kheer).
    3. *Sandhya Arghya* (offering to setting sun).
    4. *Usha Arghya* (offering to rising sun).
- **Prasad**: Thekua (wheat jaggery sweet), fruits, sugarcane.
- Observed with strict purity, fasting (even waterless at times), and community participation.

CULTURAL & SOCIAL IMPORTANCE

- Symbol of **ecological harmony**: rituals performed on riverbanks/ponds with offerings of natural produce.
- Promotes **gender inclusivity**: men and women both participate in fasting and rituals.

- Strengthens **community bonds**: collective preparation of ghats, community songs, folk music.
- **Diaspora significance**: Celebrated by Bihari and eastern UP communities globally (Mauritius, Fiji, USA, Nepal).

INTANGIBLE CULTURAL HERITAGE (ICH) – UNESCO

- As per **2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage**, ICH includes **practices, expressions, knowledge, and skills** recognized by communities as part of their cultural heritage.

KEY DOMAINS

- **Oral traditions & expressions** (stories, epics, languages).
- **Performing arts** (music, dance, theatre).
- **Social practices, rituals & festive events**.
- **Knowledge & practices about nature & the universe**.
- **Traditional craftsmanship**.

IMPORTANCE OF INCLUSION

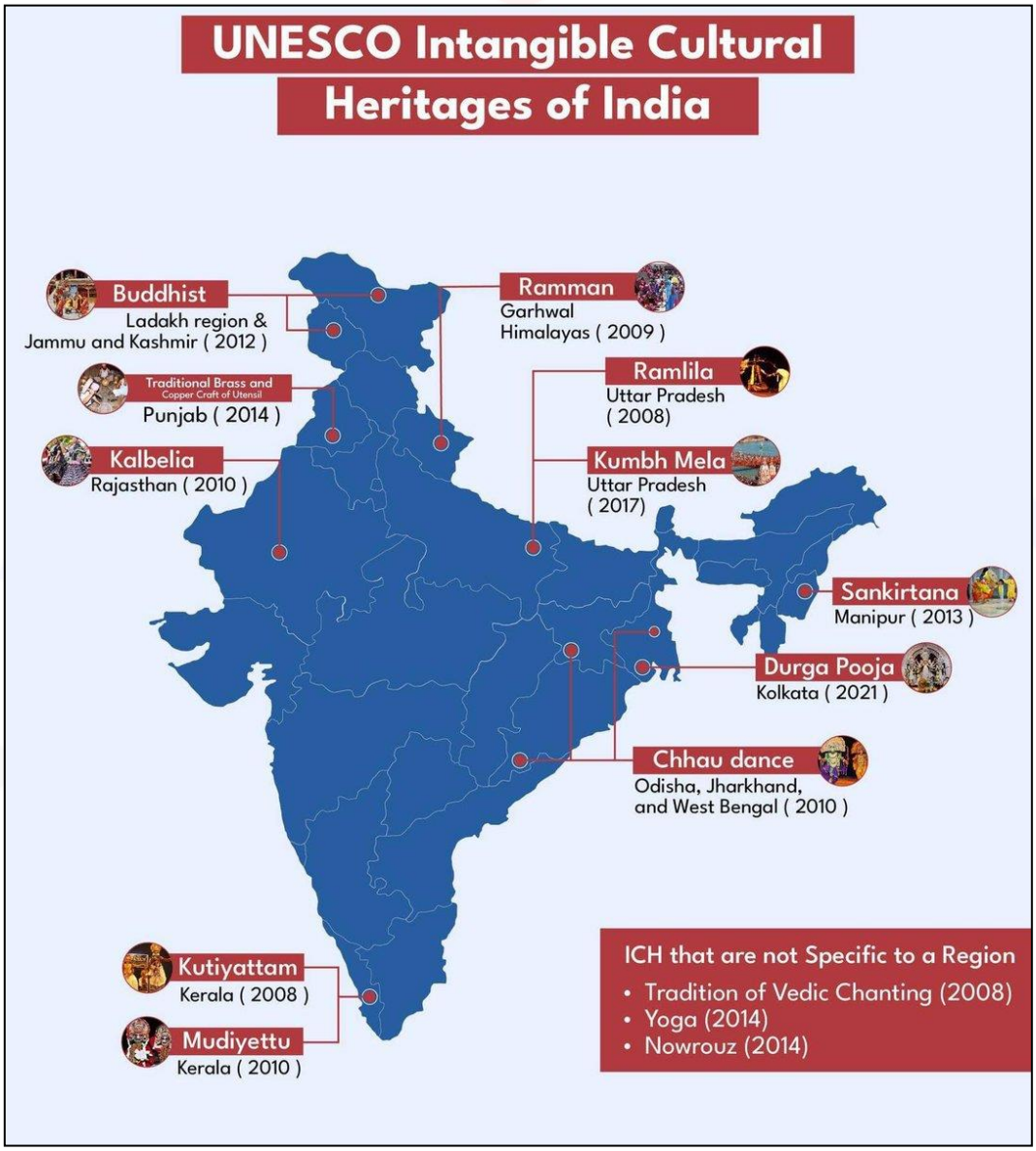
- Provides **international recognition & visibility**.
- Ensures **safeguarding measures & funding**.
- Encourages **community pride and inter-generational transfer**.
- Boosts **cultural tourism** and **soft power**.

INDIA & ICH

- India ratified the convention in **2007**.
- Currently has **14 elements inscribed** (e.g., Yoga, Kumbh Mela, Durga Puja, Ramman, Kalbelia, Chhau dance).

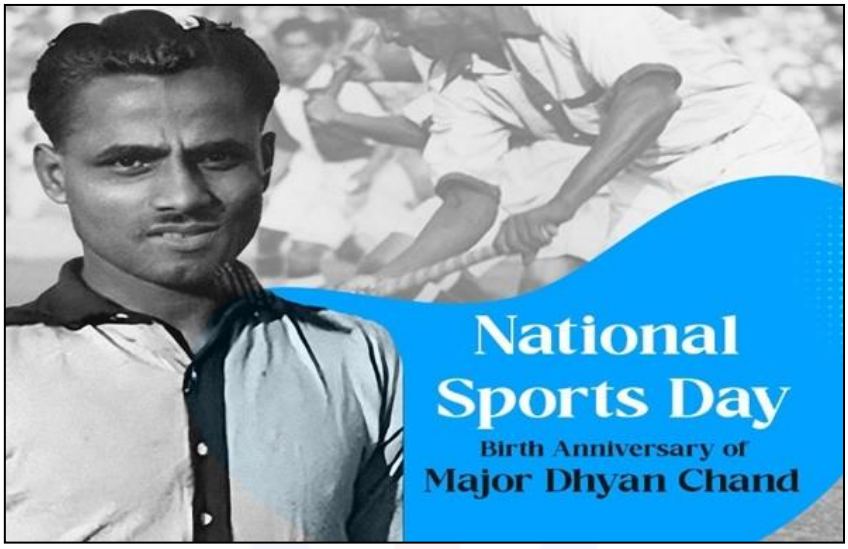
WHY BIHAR NOMINATED CHHATH?

- To **preserve & promote** the cultural heritage of Bihar.
- To highlight Chhath as a **living cultural tradition** deeply linked with **nature, sustainability, and women's empowerment**.
- Strengthen Bihar's image at **global cultural forums** and boost tourism



03 NATIONAL SPORTS DAY

India is celebrating **National Sports Day (29th August)** to mark the **birth anniversary of hockey legend Major Dhyan Chand**, with nationwide events under the theme *"Ek Ghanta, Khel ke Maidan Main"*.



NATIONAL SPORTS DAY – 29TH AUGUST

BACKGROUND

- Celebrated annually on **29th August**, marking the **birth anniversary of Major Dhyan Chand (1905–1979)**, India's greatest hockey legend.
- Dhyan Chand, known as the *"Hockey Wizard"*, won **3 Olympic gold medals** (1928, 1932, 1936) for India.
- The day honours his contribution and promotes the culture of sports and fitness in India.

NATIONAL SPORTS DAY 2025

- **Theme**: *"Ek Ghanta, Khel ke Maidan Main"* (One hour on the playground).
- Objective: Encourage citizens, especially youth, to spend at least an hour daily in physical activity or sports.
- **Nationwide events:**
    - Sports competitions in schools, colleges, and villages.
    - Fit India Movement activities.
    - Awareness campaigns linking sports to health, discipline, and nation-building.

GOVERNMENT INITIATIVES LINKED TO SPORTS DAY

- **Khelo India Programme** – grassroots sports promotion.
- **Target Olympic Podium Scheme (TOPS)** – nurturing medal prospects.
- **Fit India Movement** – lifestyle fitness campaign.
- **National Sports & Adventure Awards** (Rajiv Gandhi Khel Ratna → now **Major Dhyan Chand Khel Ratna Award**).

MAJOR DHYAN CHAND:

- **Early Life**: Born on **29 August 1905** in Allahabad (now Prayagraj), Uttar Pradesh.
- **Nickname**: Known as the *"Hockey Wizard"* for his unmatched skills.
- **Olympic Legacy**: Won **three Olympic gold medals** for India (1928, 1932, 1936).
- **Playing Style**: Renowned for his **ball control, goal-scoring ability, and sportsmanship**.
- **Honors**:
    - Awarded **Padma Bhushan in 1956**.
    - India's highest sporting honor was renamed as **Major Dhyan Chand Khel Ratna Award** in 2021.
- **Legacy**: His birthday immortalized as **National Sports Day**, symbolizing excellence and dedication in Indian sports.

04 PM SVANIDHI SCHEME

The **Union Cabinet has approved restructuring of the PM SVANidhi Scheme** with an extension of the lending period till **31 March 2030**.

UNION CABINET DECISION (SEPT 2025)

- The Union Cabinet has approved the **restructuring of the PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) Scheme**.
- **Lending period extended till 31 March 2030** (earlier till March 2027).
- **Aim:** To provide continued **working capital support to urban street vendors** and strengthen their financial inclusion journey.
- The extension aligns with the **government's vision of inclusive urban development** and post-COVID livelihood recovery.

PM SVANIDHI SCHEME: OVERVIEW

LAUNCH & NODAL MINISTRY

- **Launched: June 2020**, during COVID-19 pandemic.
- **Ministry: Ministry of Housing and Urban Affairs (MoHUA)**.
- **Objective:** Provide **affordable collateral-free working capital loans** to urban street vendors affected by lockdowns.

KEY FEATURES

- **Target Beneficiaries**:
  - Urban street vendors in towns/cities.
  - Includes vendors with/without prior bank accounts or ID.
- **Loan Structure**:
  - **1st tranche**: Up to ₹10,000 (repayable in 12 months).
  - **2nd tranche**: Up to ₹20,000 (on timely repayment).
  - **3rd tranche**: Up to ₹50,000 (further timely repayment record).
- **Incentives**:
  - **7% annual interest subsidy** credited directly to vendors' accounts via DBT.
  - **Cashback up to ₹1,200/year** for digital transactions.
  - **Credit score improvement** → higher loan eligibility.

- **Implementation Mechanism**:
    - Implemented via **Urban Local Bodies (ULBs)**, banks, MFIs, and digital payment apps.
    - Vendor identification through **Survey of Urban Local Bodies** and issue of **Certificate of Vending/Letter of Recommendation**.

PROGRESS SO FAR

- Over **60 lakh street vendors** have benefitted since 2020.
- Around **₹10,000 crore+ disbursed** in loans.
- Promoted **digital payments adoption** among vendors.

SIGNIFICANCE OF RESTRUCTURING TILL 2030

- Provides **long-term livelihood security** to a vulnerable group.
- Enhances **financial inclusion & credit discipline**.
- Strengthens **urban informal economy**, which is a backbone of city markets.
- Supports **AtmaNirbhar Bharat** and **Viksit Bharat 2047** goals.

UPSC RELEVANCE

PRELIMS

- PM SVANidhi launched in **2020** by **MoHUA**.
- Provides **collateral-free working capital loans** to urban street vendors.

- Interest subsidy: **7%**, Digital cashback: **₹1,200/year**.
- Lending extended till **March 2030**.

MAINS (GS2 & GS3)

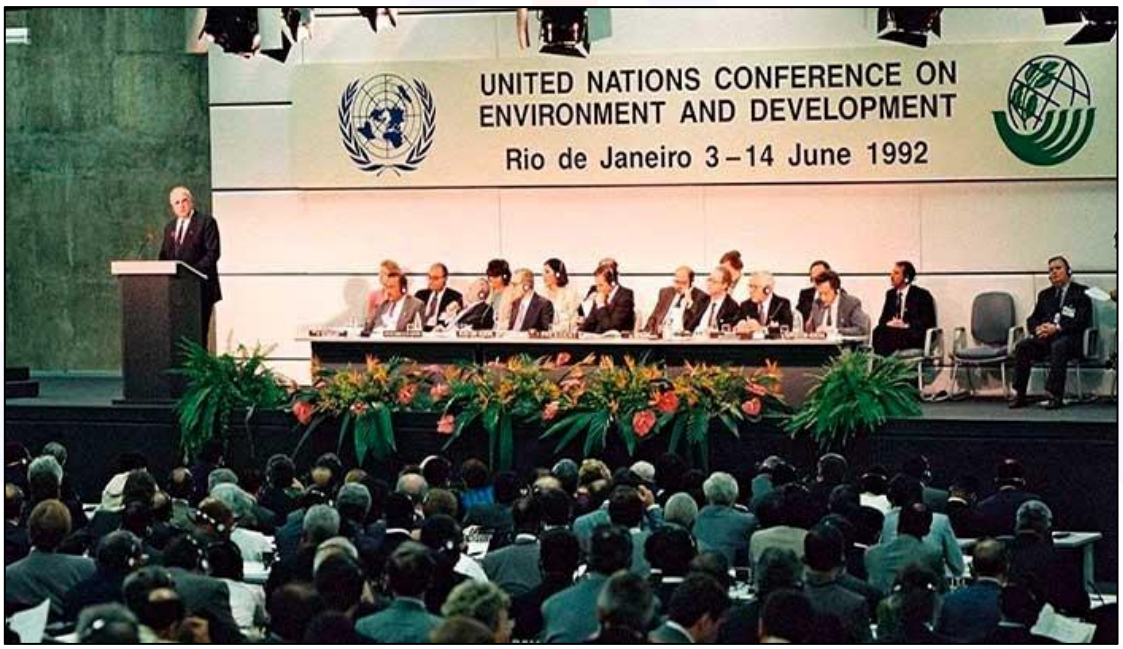
- **GS2 (Governance & Social Justice)**: Scheme as an instrument of **inclusive urban development**.
- **GS3 (Economy)**: Role in **informal sector revival**, financial inclusion, and strengthening livelihoods post-COVID.

05 RIO EARTH SUMMIT (1992)

The year 2025 marks **33 years since the 1992 Rio Earth Summit**, a landmark event that shaped global climate governance.

RIO EARTH SUMMIT, 1992 – BACKGROUND

- Officially called the **United Nations Conference on Environment and Development (UNCED)**.
- Held in **Rio de Janeiro, Brazil (3–14 June 1992)**.
- Attended by **170+ countries**, including **108 heads of state/government**.
- Aim: Balance **environmental protection with economic development** → foundation of *sustainable development*.



MAJOR OUTCOMES OF RIO EARTH SUMMIT

RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT

- 27 principles on sustainable development.
- Key: **Precautionary principle**, **Polluter Pays Principle (PPP)**, and **Common but Differentiated Responsibilities (CBDR)**.

AGENDA 21

- Global action plan for sustainable development in the 21st century.
- Emphasized local action (*Local Agenda 21*).

LEGALLY BINDING CONVENTIONS

- **UNFCCC (United Nations Framework Convention on Climate Change)** → basis for Kyoto Protocol (1997) & Paris Agreement (2015).
- **UNCBD (Convention on Biological Diversity)**.
- **UNCCD (Convention to Combat Desertification)** (later adopted in 1994, inspired by Rio).

FOREST PRINCIPLES

- Non-legally binding but significant for global forest conservation.

IMPACT ON GLOBAL CLIMATE GOVERNANCE

- Established the **institutional framework** for global climate negotiations (COPs under UNFCCC).
- Introduced **CBDR**, shaping North–South debates in climate talks.
- Linked **environmental protection with poverty eradication & sustainable development**.
- Led to **annual COPs (Conference of Parties)**, technology transfer discussions, and financial mechanisms like the **Global Environment Facility (GEF)**.

RIO+10, RIO+20 & BEYOND

- **Rio+10 (2002, Johannesburg Summit)**: Focus on implementation gaps.
- **Rio+20 (2012, Brazil)**: Adopted the document *"The Future We Want"*, leading to **Sustainable Development Goals (SDGs)** in 2015.
- **2025 → 33 years later**: The summit is remembered as the **birthplace of global climate governance**, but challenges remain—climate finance, equity, adaptation, and global cooperation.

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

BACKGROUND

- Adopted: **1992 Rio Earth Summit**.
- Entered into force: **1994**.
- Secretariat: **Bonn, Germany**.
- India: **Party since 1993**.

OBJECTIVE

- To **stabilize greenhouse gas (GHG) concentrations** in the atmosphere at safe levels.
- Prevent dangerous **anthropogenic (human-caused) interference** with the climate system.

KEY FEATURES

- **Non-binding commitments** for all Parties (Annex I: developed, non-annex I: developing).
- **Principle of Common but Differentiated Responsibilities (CBDR)** → developed nations to take the lead in reducing GHGs.
- Establishes the **Conference of Parties (COP)** as the decision-making body.

MAJOR OUTCOMES UNDER UNFCCC

- **Kyoto Protocol (1997)** → binding emission reduction targets for developed countries.
- **Paris Agreement (2015)** → global pact for limiting warming to **well below 2°C (preferably 1.5°C)**; **NDCs (Nationally Determined Contributions)** at core.
- **COPs** (annual meetings) → negotiate climate actions, finance, adaptation.

UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY (UNCBD / CBD)

BACKGROUND

- Also adopted at **1992 Rio Earth Summit**.
- Entered into force: **1993**.
- Secretariat: **Montreal, Canada**.
- India: Party since **1994**.

OBJECTIVES

- **Conservation of biological diversity**.
- **Sustainable use** of its components.
- **Fair and equitable sharing** of benefits from genetic resources.

KEY FEATURES

- **Legally binding** treaty.
- Recognizes the **sovereign rights of nations** over their biological resources.

- Promotes **Access and Benefit Sharing (ABS)** → commercial use of genetic resources must benefit local communities.
- Emphasizes **traditional knowledge** and **community participation**.

MAJOR PROTOCOLS & OUTCOMES

- **Cartagena Protocol (2000)** → biosafety (safe handling of Living Modified Organisms).
- **Nagoya Protocol (2010)** → access to genetic resources & benefit sharing.
- **Kunming-Montreal Global Biodiversity Framework (2022, COP15)** → "30×30 target" (conserve 30% of land & sea by 2030).

UPSC RELEVANCE

PRELIMS POINTERS

- Rio Summit → 1992, Brazil.
- Conventions: **UNFCCC, UNCBD, UNCCD**.
- Key principle: **CBDR**.
- Agenda 21 = Sustainable development action plan.

MAINS (GS2 & GS3)

- Evaluate Rio's role in shaping **climate justice** and **sustainable development discourse**.
- Discuss limitations: weak implementation, finance gaps, developed vs. developing world divide.
- Link to **Paris Agreement 2015, COP28/29 outcomes, and SDGs 2030 agenda**.

06 SAMUDRAYAAN PROJECT

Two Indian **aquanauts recently dived over 5,000 metres in the Atlantic Ocean** aboard the French submersible Nautile, as part of training for India's **Samudrayaan Project**.

SAMUDRAYAAN PROJECT

BACKGROUND

- Part of **Deep Ocean Mission (DOM)** approved by the Union Cabinet in **June 2021**.
- Implemented by **National Institute of Ocean Technology (NIOT), Chennai** under **Ministry of Earth Sciences**.
- India is the **6th country** (after USA, Russia, France, Japan, China) developing manned submersible technology.

OBJECTIVES

- Develop India's capability for **manned deep-sea exploration** up to **6,000 metres**.
- Explore **polymetallic nodules (PMNs)** in the Central Indian Ocean Basin.
- Advance research in **deep-sea biodiversity, hydrothermal vents, and ecosystem studies**.
- Boost India's **blue economy** by harnessing resources (cobalt, nickel, copper, manganese).

THE SUBMERSIBLE – MATSYA 6000

- Designed by **NIOT**.
- A **manned submersible vehicle** capable of diving up to **6,000 metres**.
- **Capacity**: 3 aquanauts.
- **Endurance**: 12–16 hours of operational time (72 hours in emergency).
- **Structure**: Titanium alloy sphere (safety against deep-sea pressure).
- Equipped with **scientific sensors, cameras, manipulator arms**.

TRAINING WITH FRANCE (CURRENT NEWS)

- Two Indian aquanauts underwent training in **French submersible "Nautile"** (operated by IFREMER, France).

- Nautile is one of the few deep-submergence vehicles capable of diving to **6,000 m**.
- **Training included:**
  - Operating in extreme pressure and darkness.
  - Handling scientific instruments.
  - Emergency procedures in hostile deep-sea conditions.
- This training is crucial before India begins its own **Samudrayaan sea trials** (expected around **2026–27**).

OTHER ASPECTS OF DEEP OCEAN MISSION (DOM)

- **Development of Manned Submersible (Samudrayaan)**.
- **Exploration of polymetallic nodules** in Central Indian Ocean Basin (India has exploration rights over **75,000 sq. km** from the **International Seabed Authority**).
- **Deep-sea biodiversity studies** (microbes, extremophiles).
- **Climate change-linked ocean studies**.
- **Marine biotechnology** and pharmaceuticals.
- **Ocean energy and deep-sea mining technologies**.

SIGNIFICANCE FOR INDIA

- **Strategic**: Self-reliance in deep-ocean exploration (only elite nations have this capability).
- **Economic**: Access to critical minerals (cobalt, nickel, rare earths) → essential for **EVs, renewable energy, electronics, defense**.
- **Scientific**: Ocean ecosystem studies help in **climate modelling** & disaster warning systems.
- **Geopolitical**: Enhances India's role in **Indo-Pacific Blue Economy** and aligns with **UN Ocean Decade (2021–2030)**.

07 JAPAN

Prime Minister of India is on an official visit to Japan for the 15th India–Japan Annual Summit, his first meeting with Japanese PM Shigeru Ishiba, to strengthen the Special Strategic and Global Partnership.

ABOUT JAPAN:

- **Location:** An island nation in **East Asia**, lying in the **North Pacific Ocean**, east of China, Korea, and Russia.
- **Capital: Tokyo**, one of the world's most populous and modern cities.
- **Neighbouring Nations:** Bordered by the **Sea of Japan (East Sea)** to the west (separating it from Korea, China, and Russia), **Pacific Ocean** to the east and south, and the **East China Sea** to the southwest.

GEOGRAPHICAL FEATURES:

- **Islands:** Japan comprises four main islands Honshu (largest), Hokkaido, Kyushu, and Shikoku along with smaller island groups like Ryukyu, Izu, Bonin, and Volcano Islands.

- **Mountains:** Nearly 80% of the land is mountainous, with frequent volcanic activity. Mount Fuji (3,776 m) is the highest and most iconic peak.
- **Rivers & Valleys:** Rivers are generally short, fast-flowing, and form narrow valleys and fertile deltaic plains (Kantō, Nōbi, Osaka).
- **Climate & Vegetation:** Abundant rainfall and mild climate support lush forests, rice fields, and fruit orchards, despite limited arable land.
- **Geology:** Located on the Pacific "Ring of Fire", Japan is prone to earthquakes, tsunamis, and volcanic eruptions.

5TH INDIA–JAPAN ANNUAL SUMMIT (TOKYO, AUGUST 2025)

- Held in Tokyo during PM Modi's official visit (29–30 August 2025).
- First meeting with Japanese PM **Shigeru Ishiba**.
- Aimed at strengthening the **"Special Strategic and Global Partnership" (2014)**.
- Marks a **decade-long roadmap (2025–2035)** for bilateral ties.

KEY OUTCOMES IN DETAIL

POLITICAL & STRATEGIC COOPERATION

- **Joint Vision Statement for the Next Decade** launched → focuses on *8 priority areas*:
    1. Economic partnership
    2. Economic security
    3. Mobility & skill development
    4. Ecological sustainability
    5. Technology & innovation
    6. Health cooperation
    7. People-to-people exchanges
    8. State–prefecture linkages
- **Security Cooperation Declaration (2008) upgraded** → to counter evolving Indo-Pacific threats.
- Strong emphasis on **Indo-Pacific cooperation** → reaffirmed **Quad** commitment for a *free, open, rules-based Indo-Pacific*.
- Expressed concerns on:
    - East & South China Sea tensions.

- North Korea's missile activities.
- Ukraine & Gaza conflicts – called for peaceful diplomatic solutions.
- UNSC reform → Japan supported India's bid for permanent membership.

DEFENSE & SECURITY COOPERATION

- Deeper collaboration in **joint military exercises**:
  - *Veer Guardian* (Air Forces)
  - *MILAN* (naval multilateral)
  - *Dharma Guardian* (Army)
- Focus on **defense technology & co-production** (naval vessels, air systems).
- Cybersecurity, maritime surveillance, and space situational awareness cooperation.

ECONOMIC & TRADE PARTNERSHIP

- Japan pledged **¥10 trillion (~USD 68 billion)** private investment in India over 10 years (double of 2014 pledge).
- Boost to **supply chain resilience** across critical sectors:
  - Semiconductors
  - Rare earths & critical minerals
  - Green energy tech (hydrogen, ammonia)

- Pharma & medical devices
- Telecommunications & AI chips

- Emphasis on **India–Japan Industrial Competitiveness Partnership** (manufacturing hubs, startups, SME support).

DIGITAL, AI & INNOVATION PARTNERSHIP

- **Digital Partnership 2.0** launched.
- **India–Japan AI Cooperation Initiative (JAI)** announced → focused on:
  - Artificial Intelligence & Large Language Models (LLMs).
  - Startup ecosystems in data centers & fintech.
  - Joint R&D and AI governance frameworks.
- Commitment to **cyber resilience & trusted digital infrastructure**.

MOBILITY, SKILLS & HUMAN EXCHANGE

- **Action Plan for Human Resource Exchange** signed.
- Target of **500,000 exchanges over 5 years**, including:
  - 50,000 Indian skilled workers to Japan (healthcare, IT, manufacturing).
  - Student scholarships, cultural exchanges, academic collaborations.
- Enhanced **youth exchange programs** and mutual recognition of skills.

SPACE & SCIENCE COOPERATION

- **MoU on Chandrayaan-5 collaboration** → JAXA–ISRO to jointly work on lunar polar exploration.
- Focus on **space situational awareness, satellite data sharing, and disaster management applications**.
- Research partnerships in **quantum technology, robotics, oceanography**.

ENERGY, ENVIRONMENT & CLIMATE COOPERATION

- **Memorandum on Joint Crediting Mechanism (JCM)** → to promote decarbonization tech transfer.
- Clean energy collaboration:
  - Hydrogen & ammonia fuel development.
  - Offshore wind & solar parks.
  - Smart grids & EV infrastructure.

- Both nations reaffirmed Paris Agreement goals and cooperation under **UNFCCC** frameworks.

CULTURAL & PEOPLE-TO-PEOPLE DIPLOMACY

- **Tokyo Skytree lit in Indian Tricolor** as symbolic gesture.
- PM Modi presented with a **Daruma doll** (Japanese symbol of perseverance).
- Indian diaspora in Japan played a strong role in welcoming PM.
- Expansion of **State–Prefecture partnerships**:
    - Gujarat–Hyogo, Tamil Nadu–Osaka, Karnataka–Fukuoka ties strengthened.

AGREEMENTS & MOUS SIGNED (13–21 REPORTED)

Key ones include:

- Joint Vision Statement (2025–2035).
- Economic Security Initiative & Fact Sheet.
- Digital Partnership 2.0.
- AI Cooperation Initiative (JAI).
- Human Resource Exchange Action Plan.
- MoU on Chandrayaan-5.
- Joint Crediting Mechanism (JCM) on clean energy.

- Cybersecurity cooperation MoU.
- State–Prefecture Cooperation framework.
- Defense & technology sharing framework.

WHY THIS SUMMIT IS IMPORTANT

FOR PRELIMS

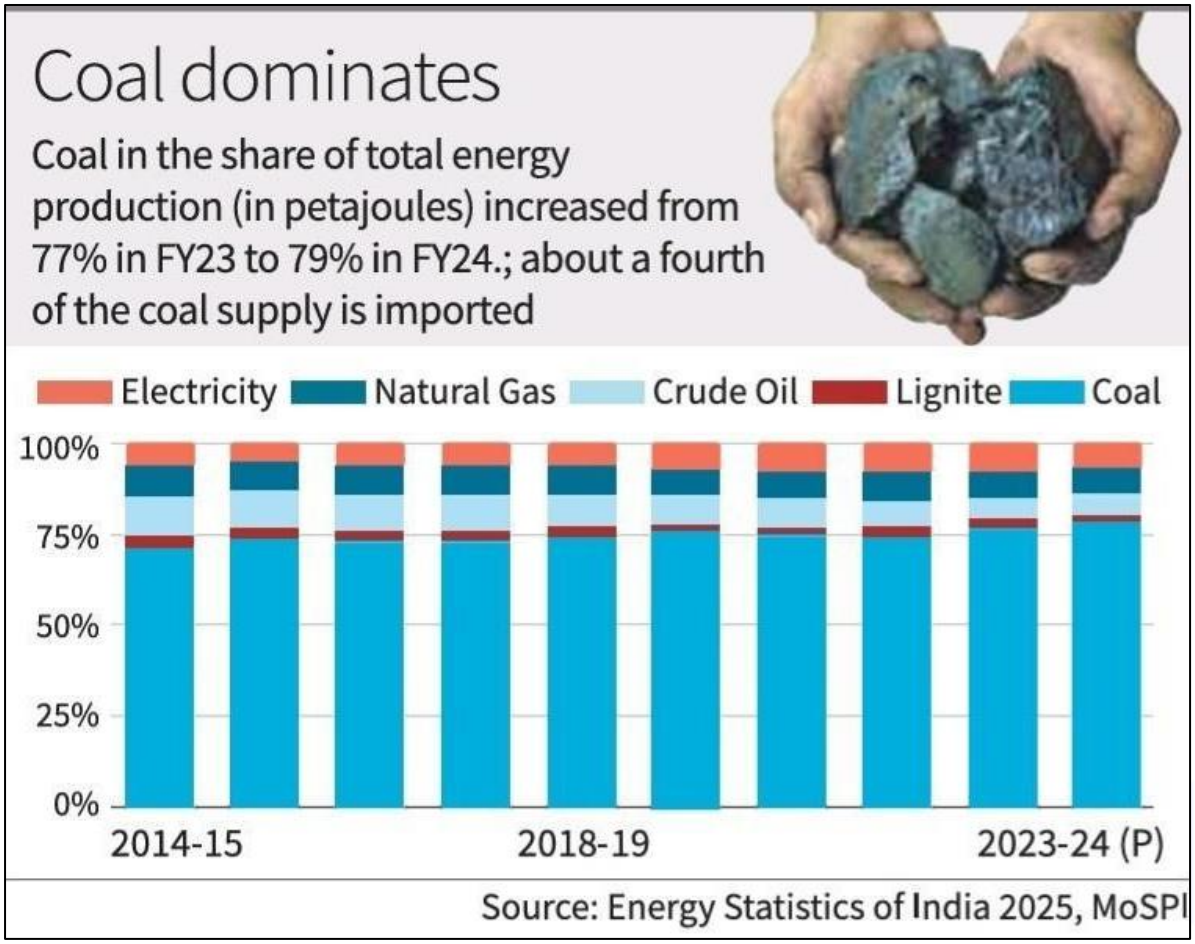
- **Year**: 15th Annual Summit (2025).
- **Investment pledge**: ¥10 trillion (~USD 68 bn).
- **Skill exchange**: 500,000 → includes 50,000 Indian workers.
- **Initiatives**: Digital Partnership 2.0, JAI (AI Cooperation), Chandrayaan-5 MoU.
- **Host**: Tokyo, PM Ishiba.

FOR MAINS (GS II – IR, GS III – ECONOMY/S&T/ENVIRONMENT)

- Strengthens **Special Strategic & Global Partnership** → beyond bilateral → regional Indo-Pacific & global governance.
- Enhances **economic security & resilience** in a multipolar world with supply chain challenges (China dependence).
- **Technology & AI governance cooperation** → relevance for India's digital growth.
- Boosts **Blue Economy & Clean Energy** agenda → aligns with India's net-zero 2070 target.
- Cultural diplomacy → diaspora + soft power dimensions.
- Reflects **convergence of democratic values** in global geopolitics.

08 REGULATING COAL OPERATIONS

A new report titled *"Regulating Coal Operations: Environmental and Social Impacts through the Lens of the NGT"* was released on **26 August 2025** in New Delhi.



WHY INDIA RELIES HEAVILY ON COAL

- **Energy Security Imperative**: Coal constitutes over **70% of India's power generation capacity** (2022–23). Unlike imported oil and gas, coal provides relative **energy sovereignty** due to large domestic reserves (~350 billion tonnes).
- **Industrial Backbone**: Thermal power supports **steel, cement, aluminium, fertiliser and railways**. The cost-competitiveness of coal-based power keeps industry running amidst global energy volatility.
- **Affordability & Infrastructure Lock-In**: Coal-fired plants are cheaper to build and have long operational lifespans. Existing investments in **railway transport, coal-handling infrastructure, and state utilities** create "path dependency".

- **Employment Dependence**: Coal mining sustains livelihoods for **millions of workers** in Jharkhand, Chhattisgarh, Odisha, and West Bengal. Political economy considerations make sudden exits difficult.
- **Intermittency of Renewables**: Solar and wind, while growing, face issues of **grid integration, storage, and round-the-clock reliability**. Coal continues as the "baseload" provider.
- **Transition Challenges**: Lack of adequate **financing, technology transfer, and adaptation plans** for workers and communities hinders rapid decarbonization.

ENVIRONMENTAL & HEALTH IMPACTS

- **Air Pollution**: PM10 levels five times above permissible limit (e.g., Jharia, Ennore).
- **Water Contamination**: Fly ash leaks poison rivers and soil fertility.
- **Biodiversity Loss**: Mining destroys forests and wildlife corridors.
- **Public Health Burden**: Cases of **silicosis, respiratory disorders, neurological damage** linked to fly ash and heavy metals.
- **Livelihood Disruptions**: Agriculture, fisheries, and cattle grazing severely impacted, leading to poverty and out-migration.

GOVERNANCE & REGULATORY CONCERNS

- **Weak Enforcement**: Emission manipulation (e.g., Ennore plant).
- **Inconsistent Compensation**: Farmers in Mejia and Chandrapur received inadequate or delayed payouts.
- **Neglect of FRA Rights**: Tribal and forest dwellers often excluded from consent processes under Forest Rights Act (2006).
- **Tokenistic Participation**: Communities rarely represented in decision-making bodies.

RECOMMENDATIONS FROM REPORT

- **Health Impact Assessments (HIAs)**: Must accompany Environmental Impact Assessments (EIAs) in coal regions.
- **Community Participation**: Local committees of villagers, NGOs, and experts to oversee restoration and monitoring.
- **Continuous Monitoring**: Independent audits of air, water, soil, and health indicators.

- **Mission-Mode Restoration**: Mandate MoEFCC and states to treat clean-up as priority.
- **Just Transition Strategy**: Incorporate **social equity, livelihood diversification, and skill training** into coal-phase-out plans.

WAY FORWARD

- **Diversify Energy Mix**: Aggressive push for solar, offshore wind, and green hydrogen to reduce baseload coal reliance.
- **Just Transition Fund**: Dedicated financing to rehabilitate coal workers and support alternative livelihoods in mining states.
- **Health-Centric Planning**: Institutionalize **Health Impact Assessments** in project approvals.
- **Stronger Accountability**: Empower NGT and Pollution Control Boards with **community oversight powers**.
- **Circular Economy of Coal Waste**: Promote **fly ash utilisation** in cement, bricks, and road construction.
- **International Climate Finance**: Leverage G-20, Green Climate Fund, and Just Energy Transition Partnerships (JETP) to fund India's transition.

Coal will remain a **pillar of India's energy architecture** for the coming decades, but without community involvement, strict enforcement, and a just transition framework, its **environmental and human costs will outweigh economic benefits**. India must craft a strategy that simultaneously ensures **energy security, social justice, and climate responsibility**.

09 COMMONWEALTH GAMES

The Union Cabinet has approved India's bid to host the 2030 Commonwealth Games, naming Ahmedabad as the proposed host city with world-class stadiums and infrastructure. India is also positioning Ahmedabad as a frontrunner for the 2036 Olympics.

CONTEXT

- **Union Cabinet (2025)** approved India's official bid to host the **2030 Commonwealth Games (CWG)**.
- **Proposed Host City**: **Ahmedabad (Gujarat)**.
- This marks India's second time as CWG host after **Delhi 2010**.
- Ahmedabad is also being **projected for the 2036 Olympic Games**.

COMMONWEALTH GAMES – BACKGROUND

- **Started**: 1930, Hamilton (Canada).
- **Frequency**: Every 4 years.
- **Members**: 56 Commonwealth nations (mostly former British colonies).
- **India's Record**:
  - Hosted once → Delhi 2010.
  - Ranked among top-5 medal-winning nations.
  - Strength: Shooting, Wrestling, Weightlifting, Badminton, Boxing.

WHY AHMEDABAD?

- **Sardar Vallabhbhai Patel Sports Enclave** (Motera): World's largest cricket stadium (Narendra Modi Stadium, capacity 132,000+).
- **Multi-sport complexes** being developed → athletics, aquatics, hockey, football.
- Smart-city infrastructure & international connectivity.
- Gujarat Govt. planning **athlete villages, metro expansion, tourism hubs**.

INDIA'S PITCH FOR 2036 OLYMPICS

- Ahmedabad is being positioned as India's candidate city.
- IOC (International Olympic Committee) informal discussions ongoing.
- CWG 2030 bid is seen as a **stepping stone** → demonstrating India's readiness for mega global events.

INDIA & THE COMMONWEALTH GAMES:

- First participated in **1934 London Games**; wrestler Rashid Anwar won India's first medal (bronze in wrestling).
- Milestones: Milkha Singh (first Indian gold, Cardiff 1958), rise of wrestling, shooting, weightlifting and badminton in later decades.
- **Best performance:** *2010 Delhi Games* → India won **101 medals (39 golds)**, finishing **2nd overall**.
- Till date, India has won **564 medals (203 golds)** at the Commonwealth Games.

SIGNIFICANCE FOR INDIA

- **Sports Diplomacy & Soft Power**
  - Hosting CWG strengthens India's global sporting image.
  - Boosts chances for **2036 Olympics**.
- **Infrastructure Development**
  - Modern sports complexes, urban transport, housing, and tourism.
  - Employment generation & city branding.
- **Economic Impact**
  - International tourism inflow.
  - Global business exposure for Ahmedabad.
- **Sports Development**
  - Encourages grassroots participation.
  - Exposure for Indian athletes at home turf.

UPSC RELEVANCE

PRELIMS

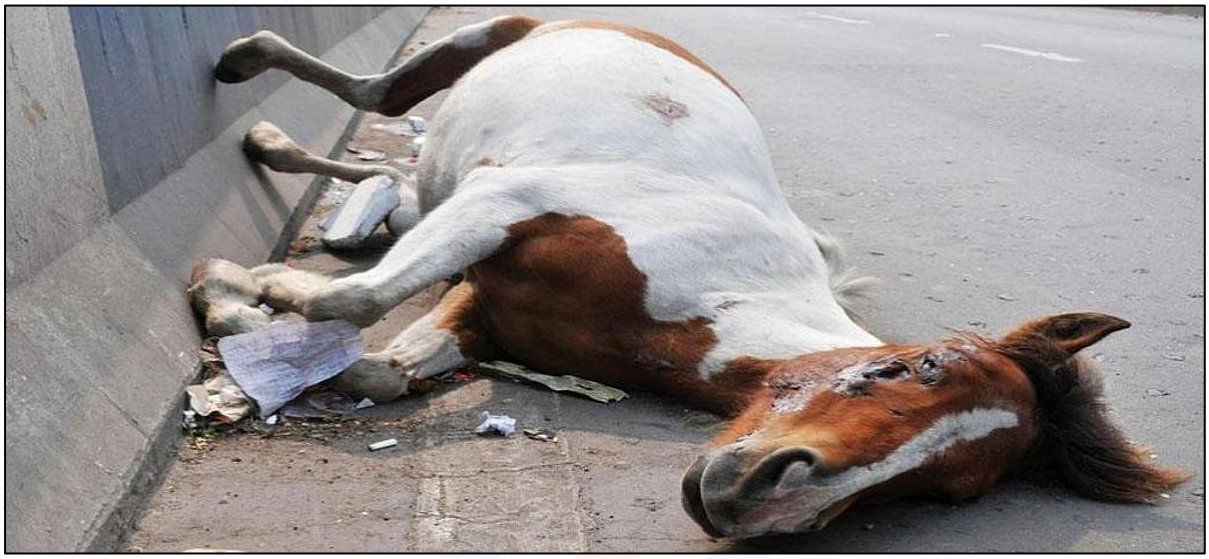
- 2030 CWG bid → Ahmedabad.
- Last CWG hosted by India → Delhi, 2010.
- World's largest cricket stadium → Ahmedabad (Motera).

MAINS (GS II & GS III)

- Role of sports in diplomacy and nation-building.
- Economic, cultural, and infrastructural impacts of mega sporting events.
- India's ambition → From CWG 2030 → Towards 2036 Olympics.

10 REVISED NATIONAL ACTION PLAN ON GLANDERS

The **Department of Animal Husbandry & Dairying (DAHD)** has rolled out a **Revised National Action Plan on Glanders** to strengthen surveillance, prevention, control, and eradication of the equine disease.



CONTEXT

- The **Department of Animal Husbandry & Dairying (DAHD)** has launched a **Revised National Action Plan on Glanders**.
- Aim: **Strengthen surveillance, prevention, control, and eradication** of **Glanders**, a contagious disease affecting **horses, donkeys, and mules**.

ABOUT GLANDERS

- **Causative Agent**: *Burkholderia mallei* (bacterium).
- **Species Affected**: Mainly equines (horses, donkeys, mules); also, zoonotic → humans can be infected.
- **Transmission**:
    - Direct contact (nasal discharge, contaminated feed/water).
    - Indirect via harness, equipment, or stables.
- **Symptoms in Equines**: Fever, coughing, nasal discharge, ulcers on skin and mucous membranes.
- **Public Health Risk**: Classified as a **notifiable zoonotic disease** under the **Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009 (PCICDA)**.

INDIA & GLANDERS

- Reported in several states (esp. Uttar Pradesh, Maharashtra, Himachal Pradesh, Rajasthan, Punjab).
- Outbreaks cause **economic loss** → equine mortality, trade restrictions.
- Equines are vital for **transport, pilgrimage (Vaishno Devi, Kedarnath), brick kilns, military, rural livelihoods**.

KEY FEATURES OF THE REVISED ACTION PLAN

- **Enhanced Surveillance**
  - Nationwide mapping of equine population.
  - Regular screening & testing at district/state levels.
  - Mandatory reporting under PCICDA, 2009.
- **Diagnosis & Laboratory Network**
  - Standardized **Complement Fixation Test (CFT)** and ELISA-based kits.
  - Strengthening of **Regional Disease Diagnostic Laboratories (RDDLs)**.
- **Control Measures**
  - Isolation & humane euthanasia of infected animals.
  - Disinfection of contaminated premises.
  - Movement restrictions for equines from endemic zones.
- **Prevention & Awareness**
  - Training of veterinarians & field staff.
  - Awareness campaigns for equine owners, pilgrimage boards, army units.
  - Incentives/compensation for owners losing animals to culling.
- **Eradication Goal**
  - Long-term → declare India as **Glanders-free** (important for international equine trade & tourism).

SIGNIFICANCE

- **Animal Health Security**: Protects equine-dependent livelihoods.
- **Public Health**: Prevents zoonotic transmission to humans.
- **Trade & Diplomacy**: Helps India meet OIE (World Organization for Animal Health) standards for animal exports.

- **Rural Economy**: Safeguards small farmers, transporters, and military logistics.

UPSC RELEVANCE

PRELIMS

- Glanders → caused by *Burkholderia mallei*.
- Affects horses, donkeys, mules.
- Notifiable disease under **PCICDA, 2009**.

MAINS (GS II & GS III)

- Government schemes/policies in **animal husbandry & disease control**.
- **One Health approach** → linking animal disease control with public health.
- Significance of livestock sector in rural economy & sustainable development.

11 UMEED PORTAL

The **Ministry of Minority Affairs** has launched an **additional module on the UMEED Portal** to allow widows, divorced women, and orphans to apply for maintenance support from **Waqf-alal-aulad properties**.

CONTEXT

- The **Ministry of Minority Affairs (MoMA)** has launched a new **module on the UMEED Portal**.
- Purpose → To allow **widows, divorced women, and orphans** to apply for **maintenance support** from **Waqf-alal-aulad properties**.
- Step towards ensuring **inclusive welfare** and better **digital governance** in minority affairs.

ABOUT THE UMEED PORTAL

- **Launched by MoMA** to ensure **transparent, accountable, and efficient management of Waqf properties** in India.
- UMEED = **Unified Minority E-services for Empowerment, Education & Development** (government's integrated digital platform).
- Provides:
  - Digital records of Waqf properties.
  - Online applications for beneficiaries.

- Monitoring of schemes and grants.

- **Nodal Ministry:** Ministry of Minority Affairs, in coordination with **State Waqf Boards** and judicial authorities.

OBJECTIVES OF THE PORTAL:

- Ensure **transparent and time-bound registration** of Waqf properties.
- Empower beneficiaries with **digital access to rights, obligations, and legal safeguards**.
- Resolve **long-standing property disputes** and enhance accountability.
- Facilitate **policy-level insights** through real-time data and geotagged mapping.

KEY FEATURES OF UMEED PORTAL:

- **Time-Bound Registration:** All Waqf properties must be registered within 6 months of launch.
- Geotagging **and Digitization:** Properties must include precise measurements and geolocation data during registration.
- **Dispute Resolution Trigger:** Unregistered properties after deadline will be declared disputed and sent to Waqf Tribunal.
- **User Support Services:** Provides legal awareness tools and clarifies rights under amended law.
- **Women-Centric Provision:** Properties under women's names cannot be designated as Waqf, but women, children, and EWS will remain eligible beneficiaries.

WAQF & WAQF-ALAL-AULAD

- **Waqf** → Permanent dedication of property by a Muslim for religious, pious, or charitable purposes under Islamic law.
- **Waqf-alal-aulad** → Waqf dedicated **for the welfare of family members** of the settlor (waqif), while still retaining the character of Waqf.
    - For example, income generated from such properties can be used for the maintenance of heirs like widows, divorced women, and orphans.
- Managed under the **Waqf Act, 1995**.

NEW MODULE FEATURES

- **Direct Applications:** Eligible groups (widows, divorced women, orphans) can apply online for maintenance.
- **Transparency:** Prevents misuse/diversion of funds from Waqf-alal-aulad properties.
- **Inclusivity:** Targets vulnerable sections among minorities.
- **Digital Monitoring:** Ministry and Waqf Boards can track beneficiaries and fund utilization.

SIGNIFICANCE

- **Women & Child Welfare**: Provides economic support to vulnerable women and children.
- **Minority Empowerment**: Ensures fair use of Waqf resources for community upliftment.

- **Digital Governance**: Enhances transparency and reduces corruption in Waqf property management.
- **Legal & Religious Compliance**: Aligns with provisions of the **Waqf Act, 1995** while addressing social justice.

UPSC RELEVANCE

PRELIMS

- UMEED Portal → linked to **Minority Affairs & Waqf management**.
- Waqf-alal-aulad → family Waqf under **Waqf Act, 1995**.

MAINS (GS II – GOVERNANCE, GS I – SOCIETY)

- **Social Justice**: Welfare measures for widows, divorced women, and orphans.
- **Inclusive Development**: Protecting vulnerable groups in minority communities.
- **E-Governance**: Digital portals enhancing accountability in welfare schemes.

12 NATIONAL BIOFOUNDRY NETWORK

India launched its **first National Biofoundry Network** under the **BioE3 Policy**, marking a step towards indigenous biomanufacturing and a projected **bioeconomy target of $300 billion by 2030**.

CONTEXT

- India has launched its **first National Biofoundry Network (NBN)** under the **BioE^3 Policy**.
- Aim → to strengthen **indigenous biomanufacturing**, reduce import dependence, and accelerate India's **bioeconomy target of $300 billion by 2030**.

NATIONAL BIOFOUNDRY NETWORK (NBN)

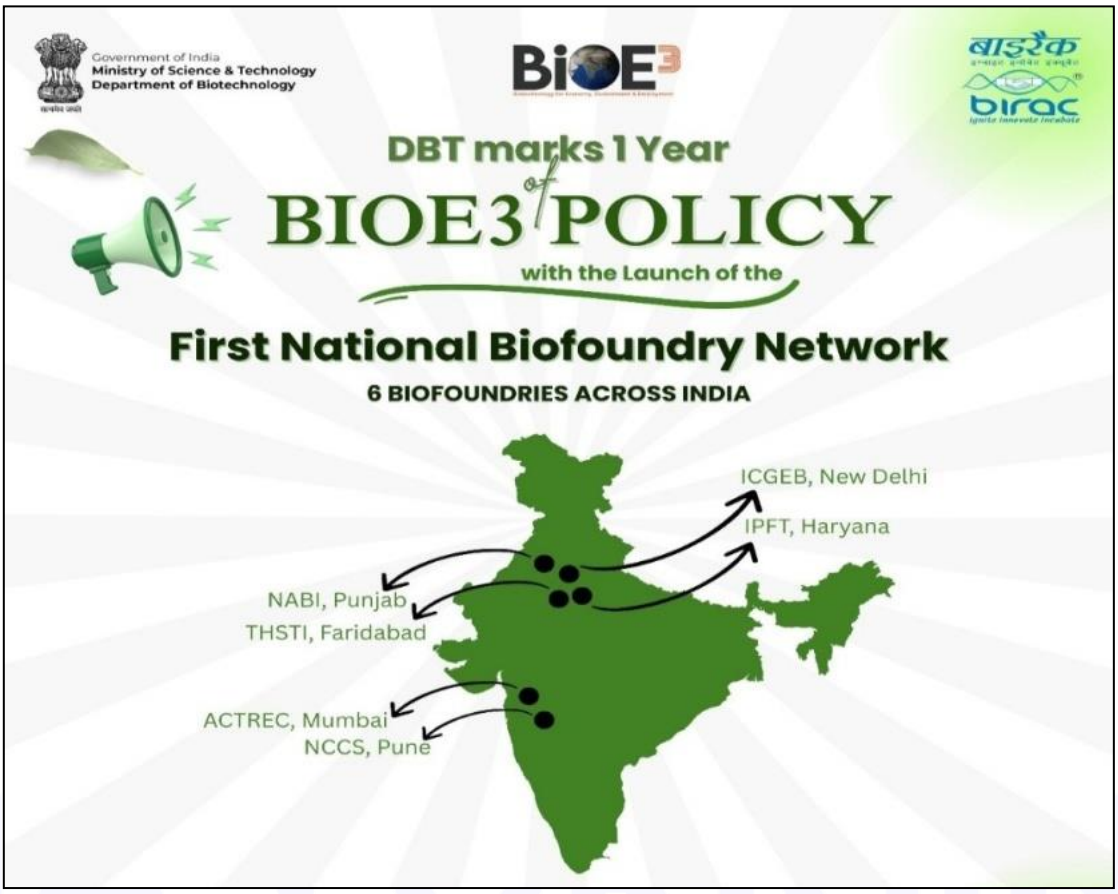
WHAT IS A BIOFOUNDRY?

- A **bio foundry** is a facility that uses **synthetic biology, automation, AI, and data-driven design** to create engineered biological systems for industrial use.
- Works like a "factory for biology" → designing, building, and testing microbes/enzymes for bio-based products.

NATIONAL BIOFOUNDRY NETWORK – FEATURES

- **Pan-India Network**
  - Multiple bio foundries connected under a **national digital platform**.
  - Collaboration between **research labs, startups, industry, and academia**.
- **Core Functions**
  - **Design & Engineering**: Genome editing, enzyme engineering, metabolic pathway design.
  - **Testing & Prototyping**: Rapid scaling of microbial strains for production.
  - **Automation & AI Integration**: High-throughput experimentation, data analytics.
- **Applications**
  - **Green Alternatives**: Bio-based plastics, fuels, fertilizers, and chemicals.
  - **Healthcare**: Biopharmaceuticals, vaccines, diagnostics.
  - **Agriculture**: Microbial biofertilizers, pest-resistant crops.
  - **Environment**: Waste-to-value technologies, carbon capture.

- **Strategic Role**
  - Reduce reliance on imported biotech products.
  - Position India as a **global hub for sustainable biomanufacturing**.



BIOE³ POLICY (BIOMANUFACTURING & BIOECONOMY POLICY)

FULL FORM

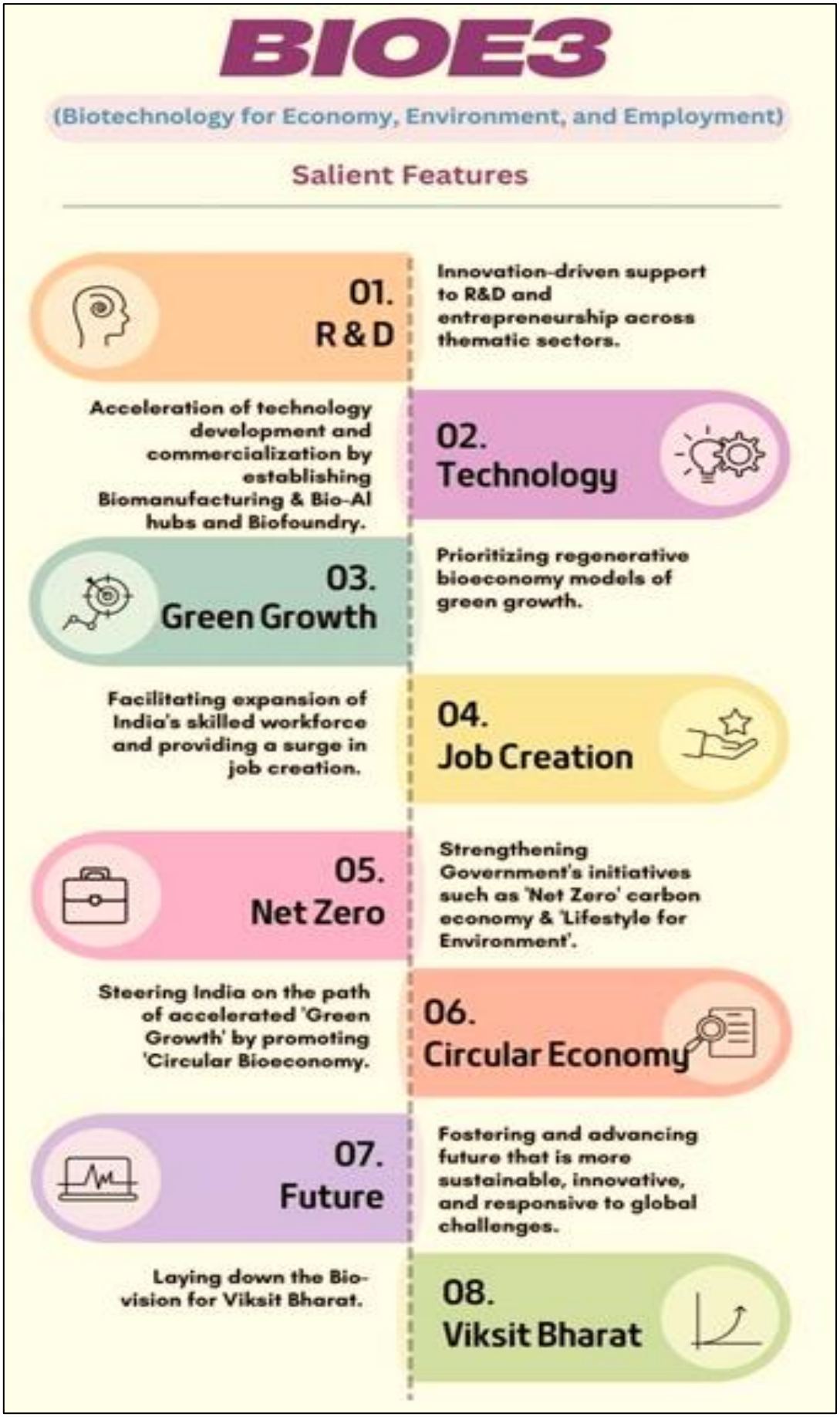
- **BioE^3 = Bio-manufacturing, Bio-economy, and Bio-entrepreneurship Policy.**

LAUNCHED BY

- **Department of Biotechnology (DBT), Ministry of Science & Technology.**

OBJECTIVES

- **Promote Biomanufacturing** → shift from petrochemical-based economy to **bio-based economy**.
- **Boost Bioeconomy** → achieve $300 billion bioeconomy by 2030.
- **Support Bio-entrepreneurs** → startups, MSMEs, and innovators in biotech sector.


BIOE3
(Biotechnology for Economy, Environment, and Employment)
Salient Features
01. R & D
Innovation-driven support to R&D and entrepreneurship across thematic sectors.
Acceleration of technology development and commercialization by establishing Biomanufacturing & Bio-AI hubs and Biofoundry.
02. Technology
03. Green Growth
Prioritizing regenerative bioeconomy models of green growth.
Facilitating expansion of India's skilled workforce and providing a surge in job creation.
04. Job Creation
05. Net Zero
Strengthening Government's initiatives such as 'Net Zero' carbon economy & 'Lifestyle for Environment'.
Steering India on the path of accelerated 'Green Growth' by promoting 'Circular Bioeconomy.
06. Circular Economy
07. Future
Fostering and advancing future that is more sustainable, innovative, and responsive to global challenges.
Laying down the Bio-vision for Viksit Bharat.
08. Viksit Bharat

KEY FEATURES

- **Policy Focus Areas**
  - Biofoundries and shared infrastructure.
  - Sustainable production (biofuels, biomaterials, bioplastics).
  - Green alternatives to single-use plastics, chemicals, and fertilizers.
- **Economic Impact**
  - Target → $150 billion bioeconomy by 2025; $300 billion by 2030.
  - Job creation in **biotech & green manufacturing sectors**.
- **Global Alignment**
  - Supports **climate change goals**, **SDGs**, and India's **Net Zero 2070 commitment**.
- **Public–Private Partnership**
  - Encourages **industry-academia-startup collaboration**.
  - Funding support for **translation of R&D into market-ready products**.

SIGNIFICANCE FOR INDIA

- **Atmanirbhar Bharat** → Indigenous biomanufacturing reduces import bills.
- **Green Growth** → Supports Mission LiFE, Circular Economy, Net Zero goals.
- **Strategic Security** → Ensures self-reliance in critical biotech products (vaccines, biofuels, biochemicals).
- **Global Competitiveness** → India as a **bioeconomy hub** in Global South.

UPSC RELEVANCE

PRELIMS

- National Biofoundry Network → first-of-its-kind in India, uses **synthetic biology + AI + automation**.
- BioE^3 Policy → DBT initiative, target: **$300 billion bioeconomy by 2030**.

MAINS (GS III – SCIENCE & TECH, ENVIRONMENT, ECONOMY)

- Application of **biotechnology in sustainable development**.
- Role of **bioeconomy in India's green growth strategy**.
- India's transition to **circular and low-carbon economy**.

13 ENERGY SOVEREIGNTY IS THE NEW OIL

Energy is no longer a passive growth input but the foundation of sovereignty and security. For India, with 85% crude and 50% natural gas dependence, energy shocks directly hit trade balance, inflation, and national resilience.

GLOBAL CONTEXT: LESSONS FROM ENERGY FLASHPOINTS

- **1973 Oil Embargo** – The Arab embargo quadrupled oil prices, compelling Western economies to create strategic reserves and efficiency mandates to cut OPEC dependence.
- **2011 Fukushima Disaster** – The meltdown eroded nuclear confidence, but its absence led to coal/gas resurgence, showing that abandoning zero-carbon baseload has climate costs.
- **2021 Texas Freeze** – Gas pipelines froze and wind turbines stalled, revealing how over-optimization for cost weakens resilience in extreme weather events.
- **2022 Russia–Ukraine War** – Europe's 40% gas dependence on Russia turned into a weapon, forcing LNG diversification and short-term coal revival.

INDIA'S CURRENT ENERGY VULNERABILITIES

- **Import Bill Burden** – Crude oil and gas imports worth $170 bn in FY24 formed 25% of merchandise imports, straining foreign exchange and widening CAD.

- **Overconcentration on Russia** – Post-Ukraine war, Russian share rose to 35–40% of imports, exposing India to geopolitical risk and sanctions vulnerability.
- **Macro Instability** – Import spikes depreciate the rupee, fuel inflation, and undermine fiscal space for welfare and infrastructure spending.
- **Geopolitical Flashpoints** – West Asian conflicts like Israel–Iran could disrupt 20 mb/d flows, pushing crude above $100 and destabilizing India's supply chains.

KEY CHALLENGES TO ENERGY SOVEREIGNTY

- **Technology Gaps** – India lacks indigenous SMR designs, advanced coal-gasification, and imports 80% of electrolyze parts from China/EU, weakening self-reliance.
- **Financing Deficit** – Energy transition requires $10 trillion till 2070 (CII estimate), but India's green finance inflows remain far below this target.
- **Infrastructure Bottlenecks** – Weak transmission networks, storage scarcity, and low-voltage stability hinder large-scale renewable integration.
- **Policy Fragmentation** – Overlapping mandates of MoP, MNRE, and MoPNG slow decisions, creating incoherence in long-term energy planning.
- **Environmental-Social Costs** – Coal gasification raises emissions, nuclear projects face land protests, and large hydro risks ecological displacement.

- **Global Market Volatility** – LNG price shocks, carbon border taxes like EU's CBAM, and OPEC supply curbs disrupt India's external balance.
- **Critical Mineral Dependence** – Lithium, cobalt, and nickel imports for batteries and hydrogen systems create new strategic dependencies.

FIVE PILLARS OF INDIA'S ENERGY SOVEREIGNTY

- **Coal Gasification with Carbon Capture** – India's 150 bn tonnes of reserves can produce syngas, methanol, and hydrogen if ash-barriers are overcome via advanced technology.
    - **Eg:** NITI Aayog's pilot coal-to-chemicals projects aim at commercialization.
- **Biofuels for Rural Empowerment** – Ethanol blending and SATAT CBG plants reduce crude imports while bio-manure enriches degraded soils and improves water retention.
    - **Eg:** Ethanol blending transferred ₹92,000 cr to farmers by 2024.

- **Nuclear Backbone** – Reviving thorium roadmap, expanding uranium tie-ups, and adopting SMRs will create stable, zero-carbon baseload for a renewable-heavy grid.
    - **Eg:** Nuclear stuck at 8.8 GW, far below India's 100 GW target.
- **Green Hydrogen Leadership** – Target of 5 MMT/year by 2030 requires local electrolyser, catalyst, and storage ecosystems to cut external dependence.

- **Eg:** National Green Hydrogen Mission launched in 2023 focuses on supply chain localization.

- **Pumped Hydro Storage** – Using India's topography, pumped hydro can provide inertia and backup to balance intermittent solar and wind.
  - **Eg:** New pumped storage projects in Maharashtra and Andhra Pradesh underway.

WAY FORWARD

- **Diversify Sources** – Beyond Russia and West Asia, India must secure crude and LNG ties with Africa, Central Asia, and Latin America.
- **Expand Strategic Reserves** – India's 77-days cover must scale to IEA's 90-day benchmark for true buffer security.
- **Balanced Transition** – Maintain a fossil-renewable mix till 2040 to avoid disruptions while scaling clean tech.
- **Institutionalise Sovereignty Doctrine** – A National Energy Sovereignty Council should integrate energy, climate, and security policy.
- **Technology Partnerships** – Use Quad, BRICS+, and I2U2 platforms for SMRs, hydrogen tech, and carbon capture collaborations.

14 GURU TEGH BAHADUR

Indian Railways will commemorate the **350th Martyrdom Day of Guru Tegh Bahadur Ji** with special trains, cultural programs, and heritage initiatives.

CONTEXT

- **Indian Railways** will commemorate the **350th Martyrdom Day of Guru Tegh Bahadur Ji (1621–1675)**.
- Events include:
    - Launch of **special trains** connecting historical Sikh pilgrimage sites.
    - **Cultural programs** highlighting his life and teachings.
    - **Heritage initiatives** such as exhibitions, station beautification, and light & sound show.

ABOUT GURU TEGH BAHADUR JI

- **9th Sikh Guru** (1621–1675).
- Known as **"Hind di Chadar"** (Shield of India) for defending **religious freedom** of Hindus and others.
- **Martyrdom**: Executed by Mughal Emperor Aurangzeb in 1675 at Delhi's Chandni Chowk for refusing to convert to Islam and for standing up for the Kashmiri Pandits' right to practice their faith.
- His son, **Guru Gobind Singh Ji**, became the 10th, Guru.

CONTRIBUTIONS

- **Spiritual Teachings**
    - Advocated tolerance, equality, justice, and freedom of conscience.
    - His hymns (116 shabads, 57 saloks) are included in **Guru Granth Sahib Ji**.
- **Social & Cultural**
    - Founded Anandpur Sahib (1665), an important Sikh religious center.
    - Promoted community service (seva) and defense of dharma.
- **Martyrdom**

- First spiritual leader in world history to sacrifice his life for **protection of another religion's rights**.
- Inspired Sikh ethos of **faith, courage, and martyrdom**.

COMMEMORATION BY INDIAN RAILWAYS

- **Special Trains**
  - Pilgrimage circuits connecting **Delhi, Punjab, Haryana, Bihar (Patna Sahib), and other Sikh heritage sites**.
- **Cultural Programs**
  - Exhibitions, lectures, street plays, and light & sound show at stations.
  - Awareness campaigns on his life's message.
- **Heritage Initiatives**
  - Station beautification with Sikh art & murals.
  - Digital screens displaying teachings of Guru Tegh Bahadur Ji.
- **Community Outreach**
  - Collaboration with Sikh bodies, scholars, and artists.
  - Public participation in remembrance events.

UPSC RELEVANCE

PRELIMS

- Guru Tegh Bahadur → 9th Sikh Guru, title "Hind di Chadar".
- Founded Anandpur Sahib, martyred in 1675 at Delhi.

MAINS (GS I – HISTORY & CULTURE, GS IV – ETHICS)

- Contribution of Sikh Gurus to India's spiritual, cultural, and freedom traditions.
- Martyrdom as an ethical value → sacrifice for protecting others' rights.
- Role of Indian Railways in cultural diplomacy and heritage promotion.

15 STATE ENERGY EFFICIENCY INDEX (SEEI) 2024 RELEASED

The **Bureau of Energy Efficiency (BEE)** released the **State Energy Efficiency Index (SEEI) 2024** on 29 August 2025.

BUREAU OF ENERGY EFFICIENCY (BEE)

- The **Bureau of Energy Efficiency (BEE)** is a **statutory body** under the **Ministry of Power**, established in **March 2002** under the provisions of the **Energy Conservation Act, 2001**.
- **Mission & Objective**: To institutionalize energy efficiency services and reduce the **energy intensity** of India's economy using policy measures, self-regulation, and market-based mechanisms.
- **Key Roles & Programs**:
    - **Regulatory**: Setting energy performance standards for appliances and industries, conducting energy audits, enforcing building codes.
    - **Promotional**: Implementing programs like the **Standards & Labelling (Star Rating)** scheme, **Perform, Achieve, and Trade (PAT)**, **Demand-Side Management (DSM)** initiatives, and **Energy Efficiency Financing Platform (EEFP)**.
- BEE implements and monitors India's energy efficiency programs across various sectors to support sustainable development and climate action.

STATE ENERGY EFFICIENCY INDEX (SEEI) 2024

RELEASE DETAILS

- The **SEEI 2024** was released on **29 August 2025** by **Shri Akash Tripathi, IAS**, Additional Secretary in the Ministry of Power and **Director General of BEE**, in collaboration with the **Alliance for an Energy Efficient Economy (AEEE)**.

PURPOSE & FRAMEWORK

- The index evaluates the **energy efficiency performance of 36 States and Union Territories (UTs)** for **FY 2023–24**.
- The **6th edition** employs an **implementation-focused framework** using **66 indicators** across seven key sectors:
    - Buildings, Industry, Municipal Services, Transport, Agriculture, Electricity Distribution Companies (DISCOMs), and Cross-sector initiatives.

STATE RANKING & CATEGORIES

States are categorized into four performance tiers based on their overall scores:

- **Front Runners** (>60%)
- **Achievers** (50–60%)
- **Contenders** (30–50%)
- **Aspirants** (<30%)

TOPPERS BY GROUP:

- The number of **Front Runners** dropped from seven to five; the others—**Andhra Pradesh, Karnataka, Maharashtra, Telangana, Tamil Nadu**—retained their status.
- **Assam and Kerala** emerged as **"Achievers"**; **Tripura** led the group with minimal energy use.

Group	Energy Consumption (MToE)	Top Performer
1	>15	Maharashtra
2	5–15	Andhra Pradesh
3	1–5	Assam
4	<1	Tripura

SECTORAL & POLICY HIGHLIGHTS

Progress across states includes:

- **24 States** have notified the **Energy Conservation Building Code (ECBC 2017)**.
- **10 States** have MSME-focused energy efficiency policies.
- **31 States** adopted **electric mobility (EV) policies**.
- **13 States** are promoting **solar-powered agricultural pumps**; **Kerala** achieved 74% adoption.
- **All 36 States/UTs** have formulated **State Energy Efficiency Action Plans (SEEAPs)**; **31** have established **State-Level Steering Committees on Energy Transition**.
- New emphasis on **EV policies, star-rated buildings, DSM strategies, ESCO models, and PAT scheme expansion**.

STRATEGIC IMPORTANCE

- The SEEI serves as a **data-driven tool** to guide state-level policy formulation, promote healthy competition, and facilitate best-practice sharing.
- It aligns with India's **Net-Zero by 2070** goal and target of **45% reduction in emissions intensity by 2030**, underscoring energy efficiency as a cost-effective pathway for sustainable transition.

SUMMARY TABLE

Feature	Details
Released by	Shri Akash Tripathi, DG, BEE
Developed by	BEE in association with AEEE
Coverage	36 States/UTs for FY 2023-24
Indicators Used	66 across seven sectors
Top Performers	Maharashtra, Andhra Pradesh, Assam, Tripura
Policy Highlights	ECBC, EV policies, MSME EE policies, solar pumps, SEEAPs
Strategic Role	Promotes energy transition, supports Net-Zero 2070 & emissions goals

UPSC RELEVANCE

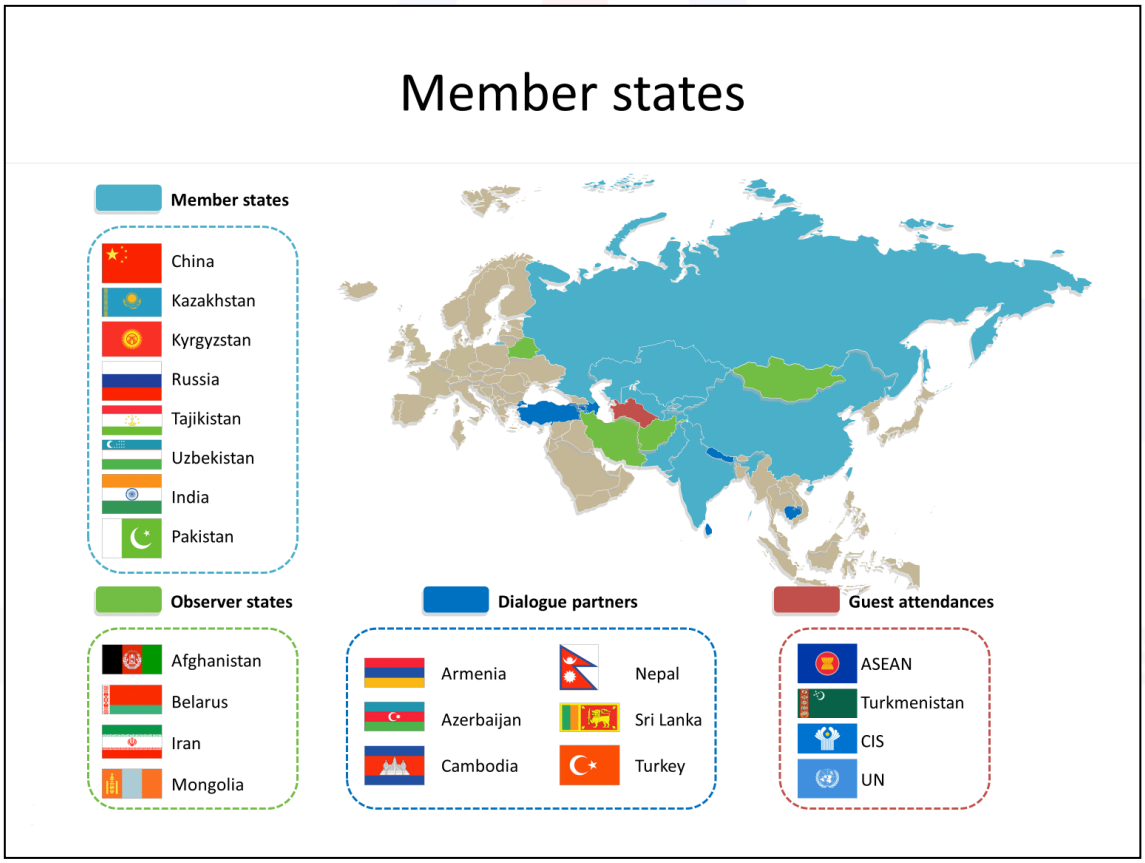
- **Prelims**: Remember details like top-performing states, sectors evaluated, launch authority, and the role of BEE.
- **Mains (GS III – Environment & Energy)**: Use SEEI as a case study on how **digital tools and benchmarking** can energize state-level governance in climate and energy transition.

16 SHANGHAI COOPERATION ORGANIZATION (SCO)

Prime Minister **Narendra Modi will attend the 25th SCO Heads of State Council Summit** in Tianjin, China, on **August 31, 2025**.

SHANGHAI COOPERATION ORGANISATION (SCO)

- **Established: 2001**, Shanghai.
- **Founding Members: China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan**.
- **Expanded: India & Pakistan (2017), Iran (2023), Belarus (2024).**
- **Secretariat: Beijing, China**.
- **Current Membership: 10 countries** (covers ~40% of world population & ~30% of global GDP).



OBJECTIVES

- **Regional Security** → Counter-terrorism, separatism, extremism.
- **Economic Cooperation** → Trade, energy, connectivity, finance.
- **Cultural & People-to-People Exchanges** → Education, health, tourism.

- **Multipolar World Order** → Reduce Western dominance in global governance.

ORGANS

- **Heads of State Council (HSC)** → Supreme decision-making body (annual summit).
- **Heads of Government Council (HGC)** → Focuses on economy & trade.
- **Regional Anti-Terrorist Structure (RATS)** → Based in Tashkent, combats terrorism.
- **Secretariat** → Admin & coordination (Beijing).

KEY CONCLUSIONS OF THE 25TH SCO SUMMIT (TIANJIN, 2025)

ADOPTION OF SCO 2035 STRATEGY

- A **10-year roadmap (2025–2035)** for cooperation in security, economy, energy, digital innovation, and cultural ties.

SECURITY & COUNTER-TERRORISM

- Reaffirmed **"zero tolerance for terrorism"** and stressed collective action via **RATS**.
- Modi highlighted **"Security first, no exceptions"** – indirect message to Pakistan.

CONNECTIVITY

- Members endorsed **greater trade & transport connectivity**, but India reiterated that projects must respect **sovereignty & territorial integrity** (criticism of China's BRI/CPEC).

ECONOMIC COOPERATION

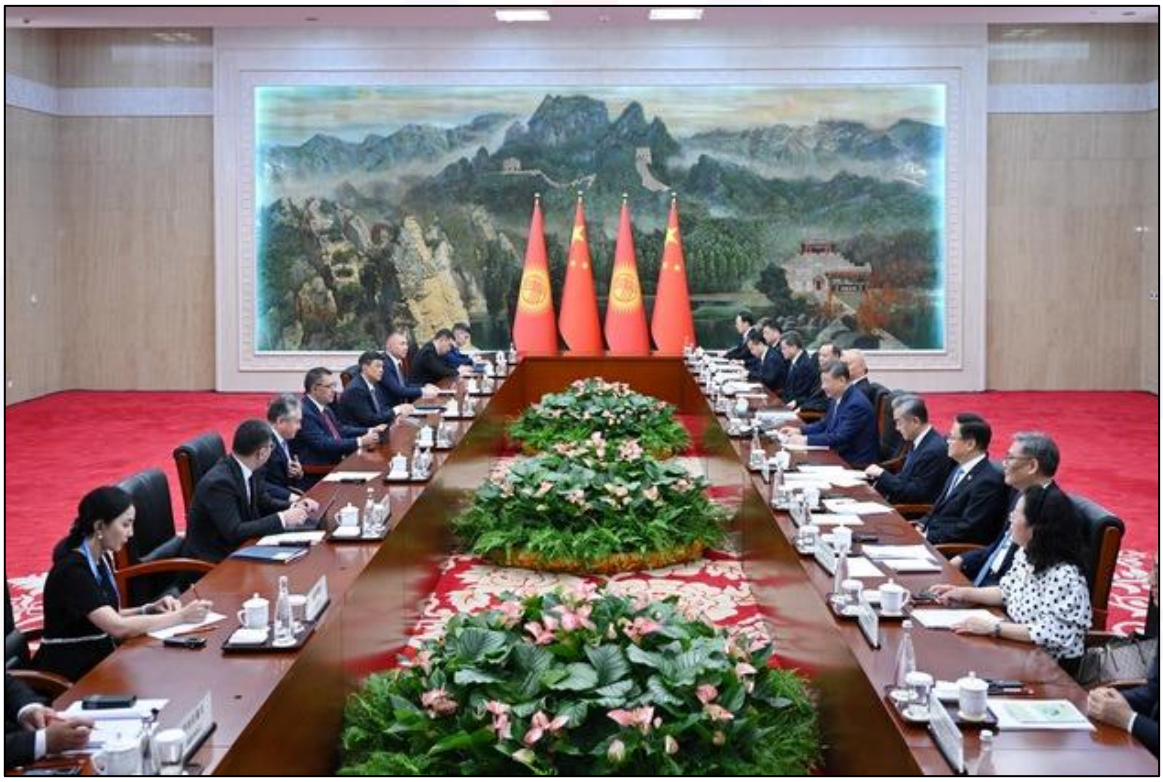
- Proposal for an **SCO Development Bank** and **energy platform**.
- Push for **renewables** (solar & wind projects in Central Asia).
- Promotion of trade in local currencies (including "electro-yuan" energy trade idea).

TECHNOLOGY & INNOVATION

- China offered SCO members access to its **BeiDou satellite navigation system**.
- Cooperation in AI, digital governance, and biotech.

GLOBAL GOVERNANCE

- SCO leaders opposed **"Cold War mentality"** and **Western sanctions regime**.
- Called for **UN reform** and **multipolar world order**.



INDIA'S POSITION

- Modi used SCO acronym as India's vision:
  - **S → Security** (fight terrorism)
  - **C → Connectivity** (trust-based, not coercive)
  - **O → Opportunity** (economic & cultural ties).

- Bilateral with **Xi Jinping** → agreement on border disengagement talks, resumption of Kailash Mansarovar yatra, and direct flights.
- Bilateral with **Putin** → reaffirmed **India-Russia strategic partnership**.

UPSC TAKEAWAY

PRELIMS

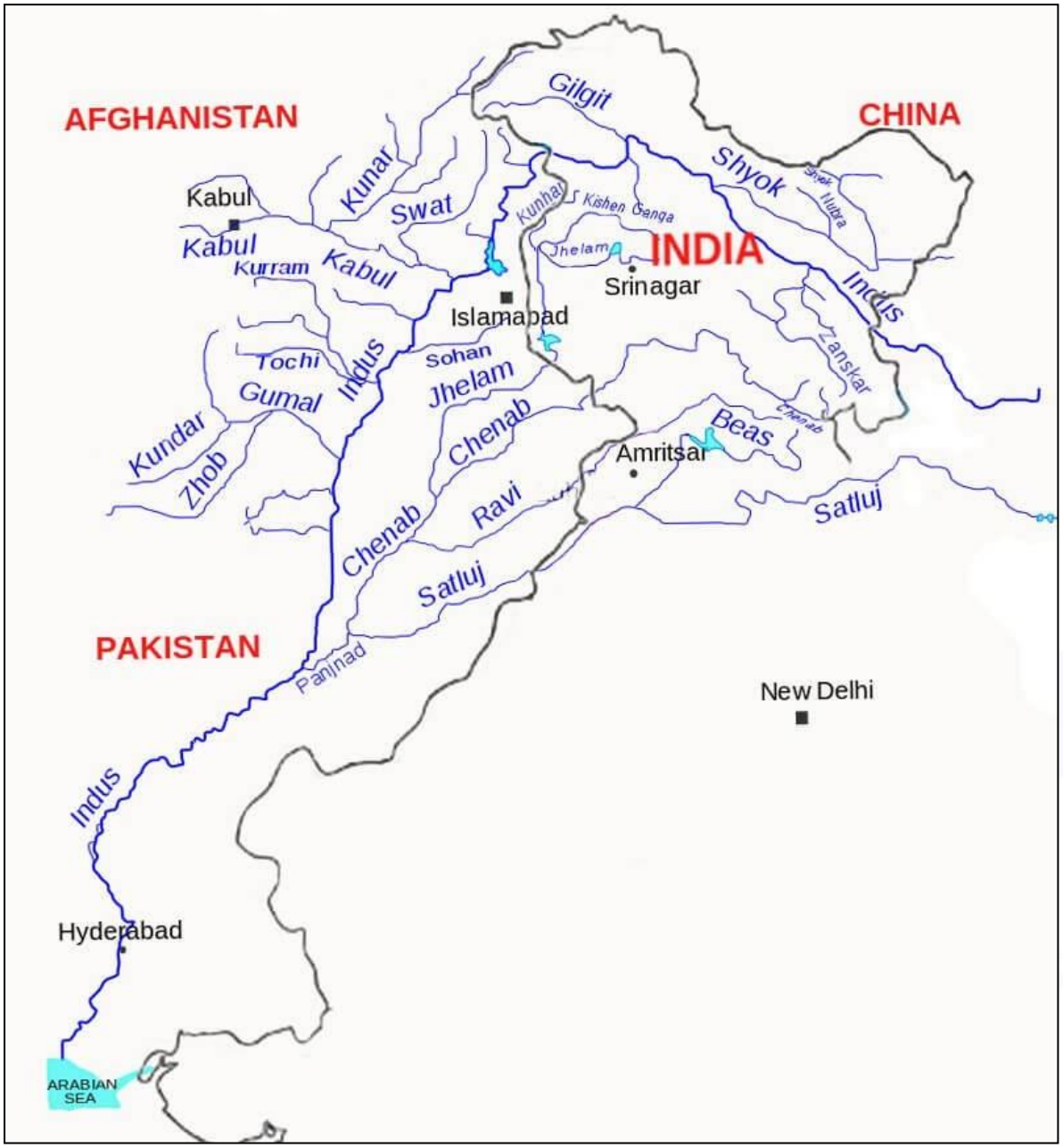
- SCO basics (members, HQ, objectives, RATS).
- 2025 Summit → held in **Tianjin, China**.
- Theme: **"Upholding the Shanghai Spirit: SCO on the Move"**.

MAINS

- **GS-II (IR):**
  - India's balancing act → engaging SCO while countering China's BRI.
  - SCO's relevance in multipolarity & Eurasian integration.
  - Role in regional stability (Afghanistan, Central Asia).
- **GS-III (Security):**
  - Cooperation against terrorism, cyber security, energy security.

17 RAVI RIVER

Recently, floodwaters from the **Ravi River** submerged the **Kartarpur Corridor complex in Pakistan's Narowal district**, including Gurdwara Darbar Sahib, stranding over 100 people and forcing large-scale evacuations.



RAVI RIVER

BASIC FACTS

- **One of the five rivers of Punjab** (Jhelum, Chenab, Ravi, Beas, Sutlej).
- Length: ~720 km (India – ~320 km, Pakistan – ~400 km).

- Drainage basin area: ~14,000 sq. km in India.
- Part of the **Indus River System**, finally draining into the **Chenab River**.

ORIGIN & COURSE

- **Origin**: Near **Rohtang Pass** (Himalayas, in Himachal Pradesh's Kullu district).
- **Upper Course**:
  - Flows through deep gorges and narrow valleys in Himachal Pradesh.
  - Major tributaries: **Budhil, Nai, Seul, Tant Gari**.
- **Middle Course**:
  - Enters **Punjab plains** near Madhopur.
  - Irrigation canals & dams divert its water.
- **Lower Course**:
  - Flows westward into **Pakistan's Punjab**.
  - Joins the **Chenab River** near **Ahmadpur Sial (Pakistan)**.

TRIBUTARIES

- **Right-bank tributaries**: Budhil, Nai, Seul.
- **Left-bank tributaries**: Siawa, Tant Gari, Baira Nalla.
- Together, they contribute to its perennial flow.

HYDROLOGY & CLIMATE IMPACT

- **Perennial River** (fed by snowmelt + rainfall).
- Peak discharge: **Southwest monsoon (July–September)**.
- Flood-prone areas: Punjab plains (India & Pakistan).

PROJECTS ON RAVI (INDIA)

Since Ravi is allocated to **India** under the **Indus Waters Treaty (1960)**, India has built several projects:

- **Ranjit Sagar Dam (Thein Dam)** – Punjab-J&K border; multipurpose (irrigation, power, flood control).
- **Shahpur Kandi Dam Project** – Punjab–J&K; aimed at using India's share of Ravi waters effectively.
- **Ujh Multipurpose Project (J&K)** – planned project for irrigation and hydropower.
- **Madhopur Headworks** – diverts Ravi water into canals for irrigation in Punjab.

INDUS WATERS TREATY (1960)

- Ravi, Beas, Sutlej → Allocated to **India**.
- Indus, Jhelum, Chenab → Allocated to **Pakistan**.
- India can use Ravi waters **for irrigation, power, domestic use**, but must ensure minimal flow downstream.
- Despite this, large quantities flow unutilized into Pakistan due to incomplete projects.

STRATEGIC & POLITICAL IMPORTANCE

- Ravi flows close to the **India–Pakistan border**, making it significant for **security & diplomacy**.
- Unutilized Indian share → Pakistan benefits (political friction).
- Floods in Pakistan Punjab (like Kartarpur Corridor submergence) are partly due to Ravi's downstream overflow.

ENVIRONMENTAL & CULTURAL IMPORTANCE

- Ravi basin is rich in **biodiversity** – forests, wildlife sanctuaries (e.g., Sechu Tuan Nalla WS, Himachal).
- **Cultural link**: Flows near **Amritsar & Lahore**, historically fertile heartland of Punjab.
- **Partition (1947)**: Ravi became part of the **India–Pakistan boundary line** in Punjab.

KARTARPUR CORRIDOR

HISTORICAL & RELIGIOUS SIGNIFICANCE

- **Kartarpur Sahib (Gurdwara Darbar Sahib)**:
  - Founded in **1522** by **Guru Nanak Dev Ji**, the 1st Sikh Guru.
  - He spent the last 18 years of his life here.
- Considered the **second holiest site in Sikhism** after **Golden Temple (Amritsar)**.

KARTARPUR CORRIDOR PROJECT

- Inaugurated: **9 November 2019** (on 550th birth anniversary of Guru Nanak).
- Connects: **Dera Baba Nanak (India, Punjab, Gurdaspur district)** → **Kartarpur Sahib (Pakistan, Narowal district)**.

- Length: ~4.1 km.
- Purpose: Allows Indian Sikh pilgrims **visa-free access** to visit the shrine, though passport & prior registration required.

SYMBOLISM

- Seen as a **peace corridor** between India and Pakistan.
- Represents **cross-border religious diplomacy**, despite strained bilateral ties.

UPSC RELEVANCE

PRELIMS

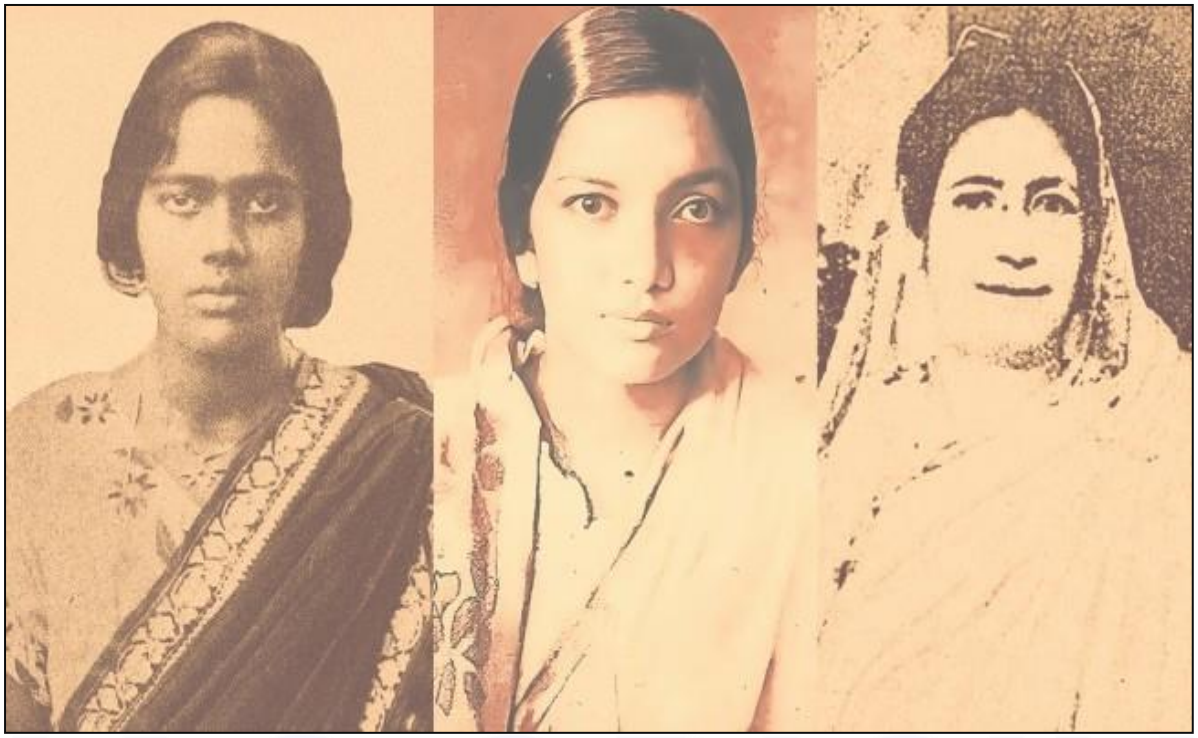
- **Ravi River**: Origin, tributary of Chenab, part of Indus system, allocated to India under Indus Waters Treaty.
- **Kartarpur Corridor**: Opened in 2019, connects Dera Baba Nanak (India) with Kartarpur Sahib (Pakistan).

MAINS

- **GS I (History & Culture):** Guru Nanak's legacy, Sikh heritage.
- **GS II (IR):** Kartarpur Corridor as an example of cultural diplomacy & people-to-people ties.
- **GS III (Disaster Management):** Flood management, transboundary river challenges.

18 BENGALI WOMEN REVOLUTIONARIES

An editorial highlighted the untold stories of Bengali women revolutionaries, stressing their crucial role in India's freedom struggle and the need to recognise them as foundational architects of independence, not mere footnotes in history.



BENGALI WOMEN REVOLUTIONARIES IN THE INDIAN FREEDOM STRUGGLE

- Bengal was the **epicenter of revolutionary nationalism** in the early 20th century.
- Women from Bengal not only supported but **actively participated** in underground movements, assassinations, intelligence networks, and mobilization.
- Their courage broke the myth of women being confined to the domestic sphere.

MAJOR WOMEN REVOLUTIONARIES OF BENGAL

PRITILATA WADDEDAR (1911–1932)

- Member of Surya Sen's revolutionary group.
- Led attack on the **European Club at Pahartali, Chittagong (1932)**.
- Died by consuming cyanide to avoid arrest.
- Symbol of martyrdom and female leadership in armed struggle.

KALPANA DATTA (1913–1995)

- Close associate of Surya Sen in **Chittagong Armoury Raid (1930)**.
- Participated in guerrilla warfare, later arrested and sentenced to transportation for life (commuted later).
- After release, joined Communist movement.

BINA DAS (1911–1986)

- Attempted assassination of Bengal Governor **Stanley Jackson (1932)** during convocation of Calcutta University.
- Member of Chhatri Sangha (women's student revolutionary group).
- Later joined Congress Socialist and participated in Quit India Movement.

SUNITI CHOUDHURY & SANTI GHOSH (BOTH TEENAGERS, 1931)

- Schoolgirls from Comilla, Bengal.
- Assassinated British District Magistrate **C.G.B. Stevens** (1931).
- Became symbols of youth defiance against colonial rule.

USHA MEHTA

- Famous for **Congress Radio (1942)**, had linkages with Bengal networks.

OTHERS

- **Satyabati Devi** – Organized women workers and nationalist activities.
- **Kamala Dasgupta** – Active in Jugantar, wrote memoir *Swadhinata Sangrame Banglar Nari*.
- **Kalyani Das**, **Amita Dasgupta** – Associates of Chhatri Sangha.

ORGANIZATIONS & NETWORKS

- **Jugantar Party** and **Anushilan Samiti** provided revolutionary platforms.
- **Chhatri Sangha (Women's Student Association, Calcutta)** trained women in firearms and self-defense.
- **Chittagong Uprising (1930–32)** saw prominent female leadership under Surya Sen's group.

NATURE OF PARTICIPATION

- Armed revolution (assassinations, raids, bomb attacks).

- Intelligence & sheltering revolutionaries.
- Mobilizing students and women for protests.
- Propaganda, writings, underground publications.

IMPACT & LEGACY

- Inspired **future women participation** in Quit India and socialist movements.
- Shattered **gender stereotypes** in colonial India.
- Many became **role models in post-independence India** (e.g., Kalpana Datta as Communist leader).
- Highlighted that **freedom struggle was not only Gandhian non-violence** but also included **armed resistance**.

UPSC RELEVANCE

PRELIMS

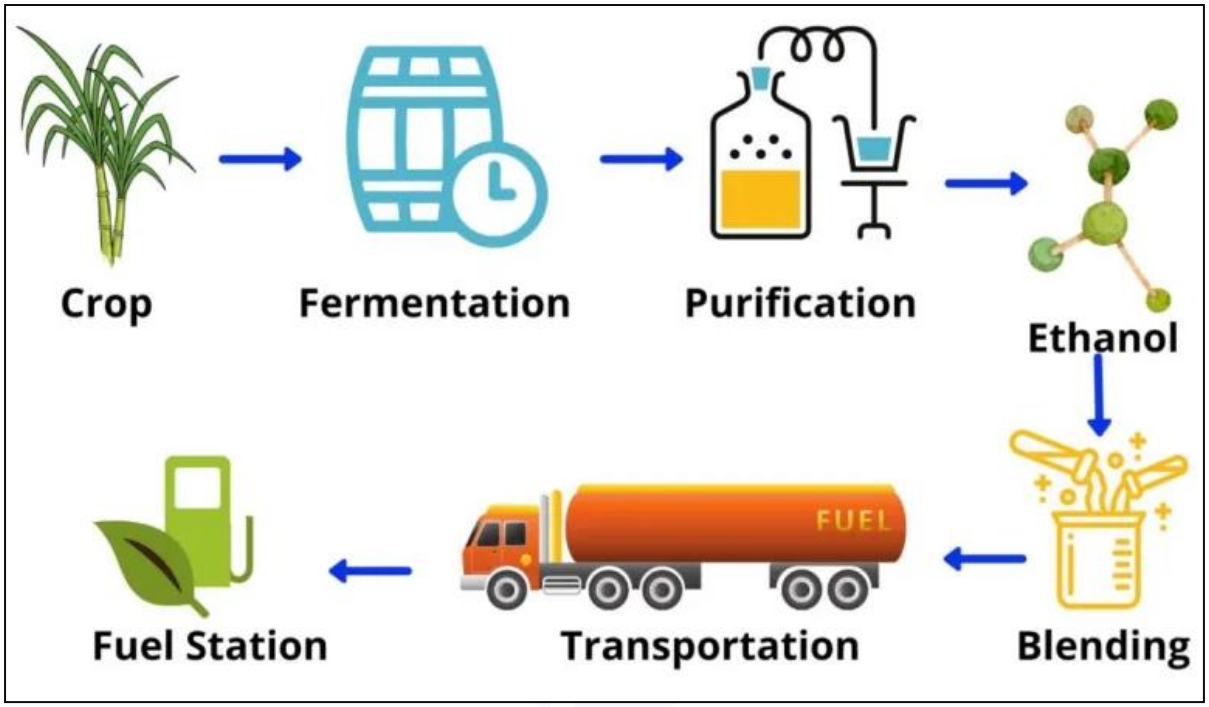
- Match the following (Person – Event).
- Example: Pritilata Waddedar – Attack on Pahartali European Club.

MAINS (GS I)

- "Discuss the role of Bengali women revolutionaries in India's struggle for independence and how they redefined the role of women in colonial society."

19 ETHANOL BLENDED PETROL (EBP) PROGRAMME.

India has announced plans for **27% ethanol blending in petrol (E27) by 2030**, extending its successful Ethanol Blended Petrol (EBP) programme.



WHAT IS ETHANOL BLENDING?

- **Ethanol** = A biofuel (C_2H_5OH), produced mainly from **sugarcane, maize, damaged food grains, rice, wheat, etc.**
- **Blending** = Mixing ethanol with petrol to reduce fossil fuel consumption.
- Example: **E10 = 10% ethanol + 90% petrol**, **E20 = 20% ethanol + 80% petrol**.
- India's new target: **E27 (27% ethanol blend by 2030)**.

WHY ETHANOL BLENDING?

- **Energy Security** – Reduces dependence on costly crude oil imports (India imports >85% of crude).
- **Environment Friendly** – Lower carbon monoxide & hydrocarbon emissions; helps in reducing air pollution.
- **Farmers' Income** – Provides market for surplus sugarcane, maize, rice → supports rural economy.
- **Paris Agreement Goals** – Contributes to reducing carbon footprint & meeting **Net Zero by 2070**.

- **Foreign Exchange Saving** – Lower fuel imports → saves billions of dollars.

ETHANOL BLENDED PETROL (EBP) PROGRAMME

- **Launched in 2003** (Ministry of Petroleum & Natural Gas).
- Objective: Promote the use of alternative & environment-friendly fuels.
- Implemented by **Oil Marketing Companies (OMCs)**.
- **Initially**: E5 (5% blending) in 9 states.
- **Progress**:
    - 2014 → National Policy on Biofuels adopted.
    - 2018 → Policy revised, allowing use of damaged food grains, maize, surplus rice for ethanol.
    - **Target preponed**: E20 blending by 2025 (instead of 2030).
    - 2023 → India achieved **12% average blending** (some states crossed 20%).
    - 2025 → Expected to achieve **E20 nationwide**.
- **Now (2025 update)**: Target for **E27 blending by 2030**.

RECENT DEVELOPMENTS

- India became the **3rd largest ethanol producer** after USA & Brazil.
- **Flex-fuel vehicles** (FFVs) being promoted → can run on E20/E85 blends.
- Ethanol production capacity expansion: using **1G (food crops) + 2G (agri waste, lignocellulosic biomass) technology**.
- Establishment of **2G Ethanol Bio-refineries** in Panipat, Bargarh, Numaligarh etc.

CHALLENGES IN ETHANOL BLENDING PROGRAMME (EBP)

FEEDSTOCK-RELATED CHALLENGES

- **Overdependence on sugarcane**
    - 80% of ethanol currently comes from sugarcane molasses.
    - Sugarcane is **water-intensive** (requires ~2000–3000 litres of water per kg of sugar).
    - Unsustainable for states like Maharashtra & Uttar Pradesh where water stress is high.
- **Diversion of food crops**

- Surplus **rice & maize** are being diverted for ethanol.
- Raises the **"food vs fuel" debate**, especially in times of food inflation.
- FCI grains used for ethanol may strain food security schemes (PDS, NFSA).

- **Seasonal supply issues**
  - Sugarcane availability is seasonal, leading to **inconsistent ethanol supply**.
  - Heavy dependence on monsoons → climate change impacts feedstock production.

INFRASTRUCTURE & DISTRIBUTION BOTTLENECKS

- **Storage & transport**
  - Ethanol is hygroscopic (absorbs water easily), making **long-distance transport difficult**.
  - Limited dedicated pipelines → ethanol mostly moved via road tankers → higher logistics cost.
- **Blending capacity gaps**
  - Many **petrol pumps & depots lack blending facilities**.
  - Regional imbalance – Ethanol produced mainly in UP, Maharashtra, Karnataka; but demand exists pan-India.

TECHNOLOGY & VEHICLE COMPATIBILITY

- **Higher blends (E20–E27)** require **engine modifications**.
  - Existing two-wheelers & cars are optimized for E10.
  - Flex-Fuel Vehicles (FFVs) are still limited in India.
- **Consumer awareness is low** → hesitation in adopting FFVs due to performance concerns.
- Cold-start issues → ethanol has lower energy density & higher vaporization, leading to poor ignition in winter.

ECONOMIC & FINANCIAL ISSUES

- **Cost of production**
  - Ethanol from sugarcane is relatively cheap, but **2G ethanol (from crop residues & biomass)** is costly.

- High initial investment for distilleries & refineries.

- **Price fixation delays**
  - Ethanol procurement price is set by the **government annually**.
  - Distilleries face payment delays from OMCs → affects working capital.
- **Oil price fluctuations**
  - When crude oil prices fall, ethanol blending appears costlier → resistance from OMCs.

ENVIRONMENTAL CONCERNS

- **Water stress** due to over-cultivation of sugarcane.
- **Overuse of fertilizers & pesticides** in maize and sugarcane cultivation → soil degradation.
- If crop residues are diverted to ethanol, it may affect **organic manure availability**.
- Transporting ethanol via diesel trucks increases **carbon footprint**, offsetting some climate gains.

POLICY & REGULATORY CHALLENGES

- **Inter-ministerial coordination issues**
  - Multiple ministries involved (Petroleum, Food, Agriculture, Environment).
  - Policy overlaps & slow approvals delay projects.
- **State-level barriers**
  - Excise duty differences between states.
  - Licensing requirements for distilleries vary → discourages investment.
- **Unutilized Indian share of ethanol feedstock**
  - Despite surplus capacity, bureaucratic hurdles prevent optimal use.

GLOBAL & STRATEGIC FACTORS

- India imports crude oil but also depends on global ethanol technology & machinery.
- Trade-offs between **exporting sugar vs converting it into ethanol**.
- Global food security debates (e.g., FAO warning on using grains for fuel) may pressure India to limit diversion.

20 YOUNGER VS OLDER FORESTS

A new study in Nature Ecology & Evolution revealed a global shift towards younger forests, causing a net carbon loss as mature, carbon-rich forests decline.

Aspect	Younger Forests	Older Forests
Age	Newly regenerated or planted; typically, a few decades old	Have grown undisturbed for centuries or millennia
Biodiversity	Lower species richness; dominated by pioneer species	Very high biodiversity; complex, stable ecosystems
Structure	Simple structure, few canopy layers	Multi-layered canopy, diverse niches, old-growth trees
Carbon Storage	High **carbon sequestration rate** (fast growth absorbs CO_2 quickly)	High **carbon stock** (large biomass stores vast carbon, even if growth slows)
Soil Health	Developing soil profile; less humus and microbial diversity	Mature soils rich in organic matter and nutrients
Wildlife Habitat	Limited shelter and food sources; supports fewer specialized species	Rich habitat; supports specialized and endangered species
Resilience	More vulnerable to drought, pests, and human disturbances	Greater resilience due to ecological balance and genetic diversity
Human Use	Often planted for timber, fuelwood, pulpwood, commercial plantations	Sacred groves, heritage forests, source of medicinal plants, biodiversity hotspots
Examples in India	Teak and eucalyptus plantations, afforestation areas	Western Ghats, parts of Northeast forests, Himalayan oak and deodar forests

21 ISRO INTEGRATED AIR DROP TEST (IADT-01)

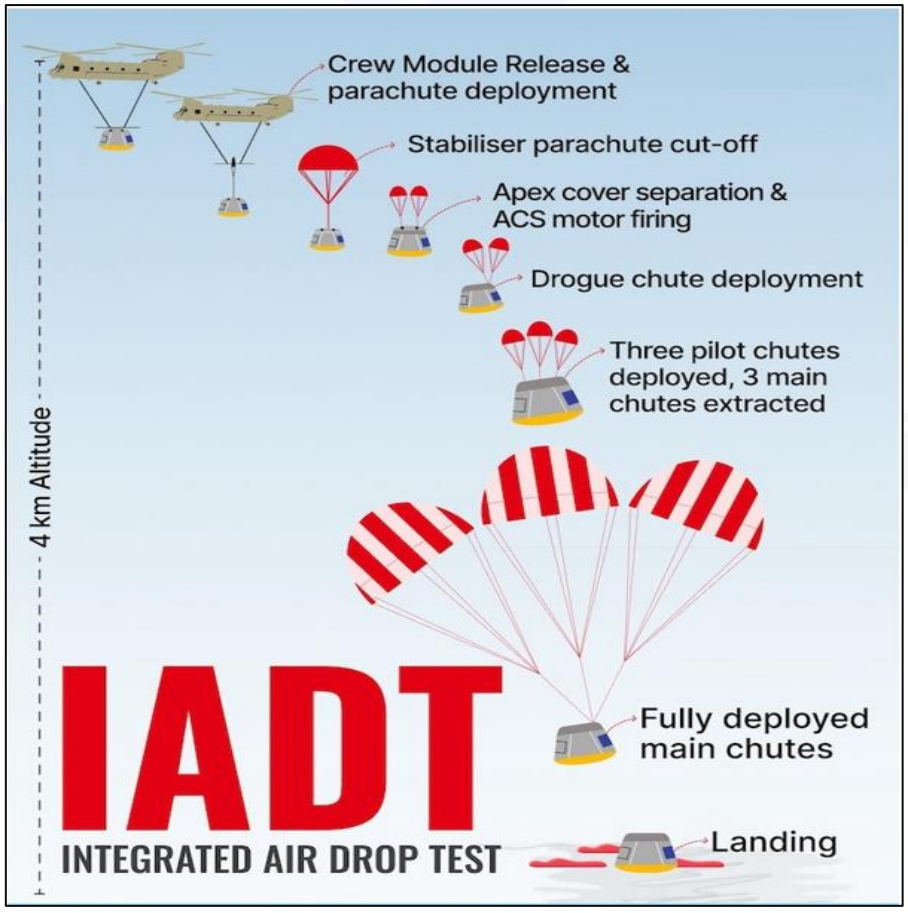
ISRO has successfully conducted its first Integrated Air Drop Test (IADT-01) for the Gaganyaan mission.

WHAT IT IS?

- A specialised **air-drop experiment** to test the **end-to-end parachute recovery system** of the Gaganyaan crew module.
- Conducted with a **dummy crew capsule** (≈ 5 tonnes) released from an Indian Air Force Chinook helicopter.
- **Developed by:** Indian Space Research Organization (ISRO)

AIM:

- To demonstrate the **reliability and sequencing** of parachutes for slowing and stabilizing the crew module during **re-entry and splashdown**.
- Ensure astronaut **safety in descent and landing phases**, the riskiest part of human spaceflight.



HOW THE IADT SYSTEM WORKS?

AIR DROP RELEASE:

- A **dummy crew module (~5 tonnes)** is lifted by an **IAF Chinook helicopter** to a designated altitude.
- The capsule is then **air-dropped** into free fall.

INITIAL DECELERATION – DROGUE PARACHUTES:

- Two **drogue parachutes** (conical, funnel-shaped) open first.
- They stabilise the tumbling capsule and begin slowing it down.

TRIGGER MECHANISM – PILOT CHUTES:

- Smaller **pilot parachutes** are deployed.
- Their role is to **pull out and activate the larger main parachutes**.

FINAL DECELERATION – MAIN PARACHUTES:

- Three large **main parachutes** deploy sequentially.
- They reduce the descent speed to a safe level for splashdown.
- Built with **redundancy**: even if one fails, the rest can ensure safe descent.

SPLASHDOWN & RECOVERY:

- The slowed capsule splashes down in water at a survivable speed.
- **Indian Navy & Coast Guard teams** conduct recovery operations.

SIGNIFICANCE:

- Critical milestone in human-rating India's space systems.
- Boosts confidence ahead of upcoming missions: Test Vehicle-D2 (TV-D2) and first uncrewed Gaganyaan mission (G1).
- Enhances India's progress towards Gaganyaan crewed mission (target ~2027).

22 INTEGRATED AIR DEFENCE WEAPON SYSTEM (IADWS)

India successfully conducted the maiden flight-tests of the Integrated Air Defence Weapon System (IADWS) off the coast of Odisha.

CONTEXT

- India has **successfully conducted maiden flight-tests** of the **Integrated Air Defence Weapon System (IADWS)** off the coast of **Odisha (2025)**.
- This marks a major step in **indigenously strengthening India's layered air defence capabilities** against aerial threats (fighter aircraft, UAVs, cruise missiles).

WHAT IS IADWS?

- A **multi-layered air defence system** designed to detect, track, and neutralize aerial threats.
- Developed by **DRDO (Defence Research and Development Organisation)** with support from Indian armed forces.
- Integrates **radars, command-and-control units, surface-to-air missiles (SAMs), and interceptor technologies** into one system.

KEY FEATURES

- **360° Coverage** – Can engage multiple targets simultaneously.
- **Interoperability** – Integrates with existing Indian air defence systems (Akash, QR-SAM, MR-SAM, S-400, BMD).
- **High Mobility** – Mounted on vehicles for quick deployment.
- **Advanced Radars** – AESA-based radars for detection of low-flying objects.
- **Layered Protection** – Close-in weapon systems + short- & medium-range missiles for multi-tier defence.
- **Automation** – AI-based threat analysis and automated target allocation.

SIGNIFICANCE FOR INDIA

- **Strengthens Multi-Layered Air Defence** → Complements Akash, S-400, Barak-8, and BMD systems.
- **Protects Critical Assets** → Air bases, cities, nuclear plants, defence installations.
- **Counters Emerging Threats** → Drones, swarm UAVs, cruise missiles.
- **Atmanirbhar Bharat Push** → Reduces reliance on foreign systems like Israel's Spyder or Russia's Pantsir.
- **Strategic Edge** → Boosts deterrence against Pakistan's cruise missiles and China's UAV/drone warfare.

COMPARISON WITH OTHER SYSTEMS

Feature / System	IADWS	Akash Missile System	S-400 Triumf (India-Russia)	Barak-8 (India-Israel)
Type	Integrated Air Defence Weapon System (Short to Medium Range)	Medium-range Surface-to-Air Missile (SAM)	Long-range Surface-to-Air Missile (SAM)	Medium to Long-range SAM
Range	~25–50 km (short to medium range threats)	25–30 km	Up to 400 km	70–100 km

Targets	Low-flying aircraft, UAVs, cruise missiles, helicopters	Aircraft, UAVs, helicopters	Aircraft, ballistic/cruise missiles, stealth targets	Aircraft, UAVs, anti-ship & cruise missiles
Radar System	Advanced phased-array radars with quick reaction capability	Rajendra 3D Passive Electronically Scanned Array radar	Advanced mobile phased array radars (Nebo-M, etc.)	MF-STAR (EL/M-2248 AESA radar)
Mobility	Highly mobile, truck-mounted, quick deployment	Mobile, truck-based	Mobile but heavy (large convoys)	Ship & land-based variants
Response Time	Very fast, designed for integrated layered defence	Quick reaction	Slightly slower due to long-range tracking	High-speed response
Induction Timeline	Testing stage (2025 maiden trial)	Operational since 2009	Induction started 2021	Operational with Navy & IAF
Special Features	Compact, rapid, multi-layered defence for tactical zones	Indigenous, cost-effective	Advanced long-range air defence umbrella	Joint Indo-Israeli project, strong naval use
Best Use Case	Protecting forward bases, tactical assets, cities	Medium-range air defence of bases & assets	Strategic defence against long-range threats	Naval air defence, versatile medium-range shield

23 INVASIVE ALIEN SPECIES

A new study published in *Nature Ecology & Evolution* has revealed that **India is massively underestimating the economic cost of invasive alien species**, with management costs underreported by over **1.16 billion percent** — the highest global discrepancy.

WHAT ARE INVASIVE ALIEN SPECIES (IAS)?

- IAS are plants, animals, fungi, or microorganisms that are **not native** to a region but get introduced (intentionally or accidentally) and cause **ecological, economic, or health-related harm**.
- **Stages of invasion:**
    1. **Introduction** – species enters a new area (via trade, transport, ornamental use).
    2. **Establishment** – species survives and reproduces.
    3. **Spread** – species expands rapidly, outcompeting natives.
- IAS are considered the **second biggest threat to biodiversity** after habitat loss (IUCN).

INVASIVE ALIEN SPECIES IN INDIA

India, being **megadiverse** and highly connected through trade, is particularly vulnerable. Both terrestrial and aquatic ecosystems face invasions.

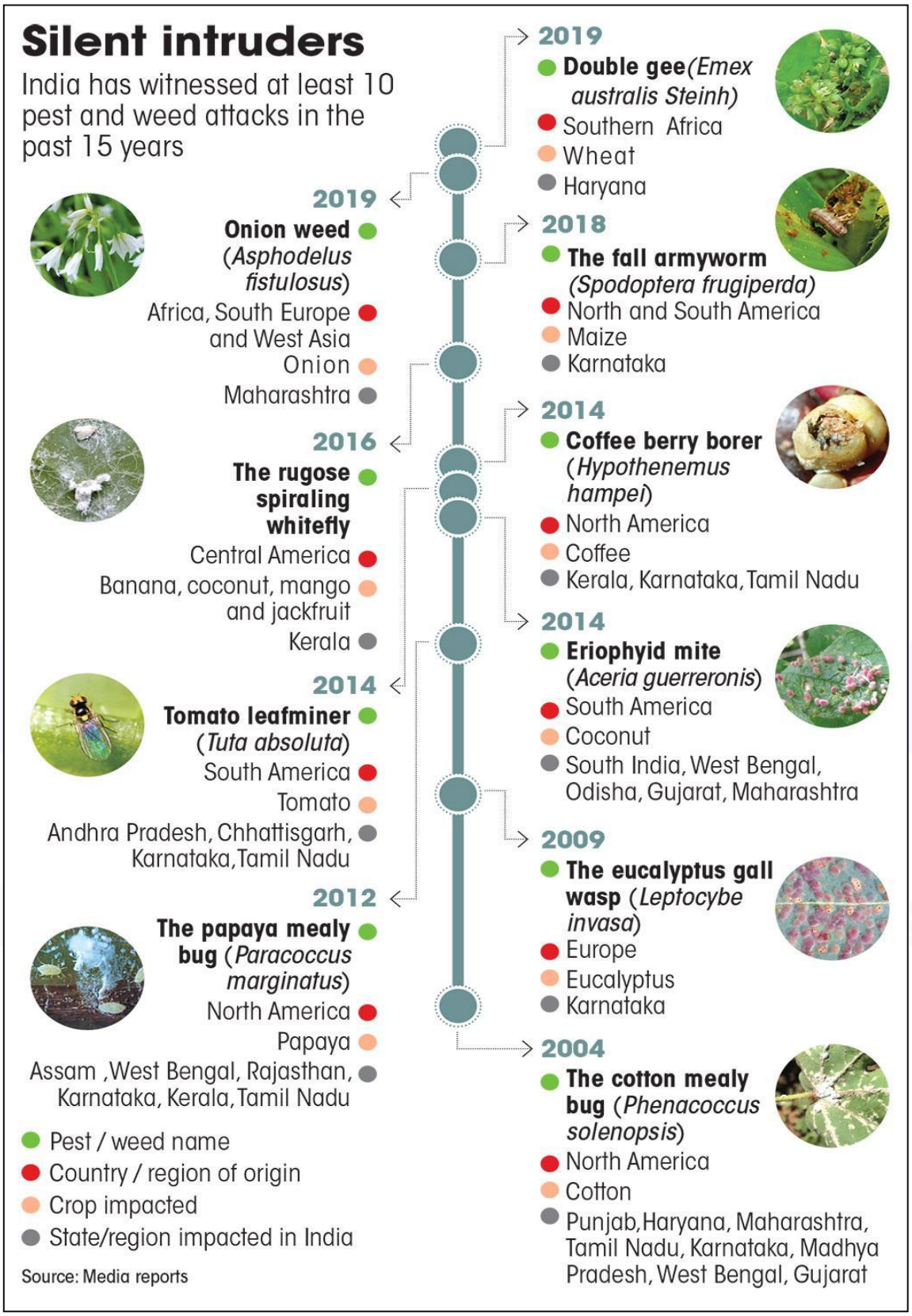
TERRESTRIAL INVASIVE PLANTS

- **Lantana camara** – Introduced as an ornamental shrub → now invades forests, displaces native plants, makes areas fire-prone.
- **Parthenium hysterophorus** (Congress grass) – Brought with wheat imports → causes dermatitis, asthma, reduces fodder quality.
- **Prosopis juliflora** (Vilayati babul) – Introduced for afforestation → spreads in dry regions (Rajasthan, Gujarat), suppresses grasses, affects pastoralists.
- **Mikania micrantha** ("Mile-a-minute weed") – Rampant in NE India → chokes tea plantations, forests.

AQUATIC INVASIVE PLANTS

- **Eichhornia crassipes** (Water hyacinth) – Introduced in Bengal as ornamental → clogs rivers/lakes, reduces oxygen, causes fish kills, promotes mosquito breeding.

- **Salvinia molesta** (Kariba weed) – Spreads rapidly in backwaters (Kerala), blocks waterways.
- **Pistia stratiotes** (Water lettuce) – Competes with native aquatic vegetation.



INVASIVE ANIMALS

- **Tilapia (Oreochromis mossambicus)** – Popular in aquaculture → displaces native fish, reduces biodiversity.
- **African Giant Snail (Achatina fulica)** – Pest in Andaman & NE India, damages crops.
- **House crow (Corvus splendens)** – Expands aggressively, spreads waste and diseases.
- **Indian Bullfrog (Hoplobatrachus tigerinus)** – Introduced in Andamans → preys on native amphibians.

MARINE INVASIVES

- **Kappaphycus alvarezii (Seaweed)** – Introduced for commercial use → now invades Gulf of Mannar corals.
- **Caribbean false mussel (Mytella strigata)** – Detected in Kerala backwaters (2017).

IMPACTS OF INVASIVE ALIEN SPECIES IN INDIA

ECOLOGICAL IMPACTS

- **Biodiversity loss** – Lantana, Parthenium, Water hyacinth suppress native plants and alter habitats.
- **Soil & hydrological changes** – Prosopis alters soil salinity; water hyacinth increases evapotranspiration.
- **Forest fires** – Lantana and Eupatorium make forests more flammable.

ECONOMIC IMPACTS

- **Agriculture losses** – Parthenium reduces crop yield, livestock fodder, increases health costs.
- **Fisheries affected** – Water hyacinth & tilapia reduce fish catch.
- **Management costs** – Huge expenditure on mechanical/manual removal of weeds.

HEALTH IMPACTS

- **Allergies & respiratory issues** – Parthenium pollen causes asthma, dermatitis.
- **Vector-borne diseases** – Water hyacinth promotes malaria and dengue by providing breeding grounds.
- **Food security threats** – Loss of crop productivity.

EXAMPLE CASES IN INDIA

- **Kaziranga National Park (Assam):** Invaded by Mimosa and Mikania → affecting rhino habitats.
- **Gulf of Mannar (Tamil Nadu):** Kappaphycus seaweed damaging corals.
- **Rajasthan & Gujarat drylands:** Prosopis juliflora reducing grazing lands for pastoralists.
- **Vembanad Lake (Kerala):** Infestation of water hyacinth & false mussel → impacting fishing community.

POLICIES & MANAGEMENT IN INDIA

- **Biological Diversity Act, 2002** – Framework for conserving biodiversity.
- **Wildlife Protection Act, 1972** – Restricts introduction of exotic species in protected areas.
- **National Biodiversity Authority (NBA):** Prepared an IAS plant list (2018).
- **CPCB & State Wetland Authorities** – Monitor aquatic invasions.

CONTROL METHODS:

- Mechanical removal (cutting, uprooting).
- Biological control (e.g., Mexican beetle for Parthenium, weevils for water hyacinth).
- Awareness and strict quarantine on exotic introductions.

24 ARCHAEOLOGICAL SURVEY OF INDIA (ASI)

The Archaeological Survey of India (ASI) has come under criticism over its handling of the **Keeladi excavations** in Tamil Nadu and the controversial transfer of archaeologist K. Amarnath Ramakrishna.

ARCHAEOLOGICAL SURVEY OF INDIA (ASI)

BACKGROUND

- Established: **1861** by Alexander Cunningham (first Director General).
- Works under: **Ministry of Culture, Government of India.**
- HQ: **New Delhi**.

FUNCTIONS

- **Excavation & Exploration**
    - Conducts excavations of historical and pre-historic sites (e.g., Harappa, Lothal, Keeladi).
- **Monument Conservation**
    - Responsible for preservation of **3,600+ monuments and sites** protected under the **Ancient Monuments and Archaeological Sites and Remains Act (AMASR), 1958.**
- **Epigraphy & Numismatics**

- Maintains India's **epigraphic and numismatic records**.

- **Museums**
  - Runs over **50 archaeological site museums**.
- **World Heritage Sites**
  - Coordinates with UNESCO for protection of **40 World Heritage Sites** in India.
- **Training & Research**
  - Has institutions like the **Institute of Archaeology** (Delhi).

KEELADI EXCAVATIONS

LOCATION & CONTEXT

- **Keeladi (Keezhadi)**: A village near Madurai, Tamil Nadu (Sivaganga district).
- Excavations began in **2015** by ASI, later taken over by the **Tamil Nadu State Archaeology Department**.
- Part of the **Vaigai River Valley Civilization Project**.

KEY FINDINGS

- **Urban Settlement (Sangam Age link):**
  - Evidence of a **sophisticated urban settlement** (brick structures, drainage system).
  - Dates to around **6th century BCE – 3rd century CE**, contemporaneous with the **Sangam Age** mentioned in Tamil literature.

- **Artifacts:**
  - **Pottery with Tamil-Brahmi inscriptions** → proves early literacy and script usage.
  - **Beads, spindle whorls, bangles** → suggest trade and craft specialization.
  - **Iron tools & weapons** → evidence of metallurgical knowledge.
- **Cultural Significance:**
  - Pushes back the antiquity of **Tamil civilization**.
  - Shows **continuity between Indus Valley Civilization (IVC) and Tamil culture** (urban planning, craft, trade).

CONTROVERSY

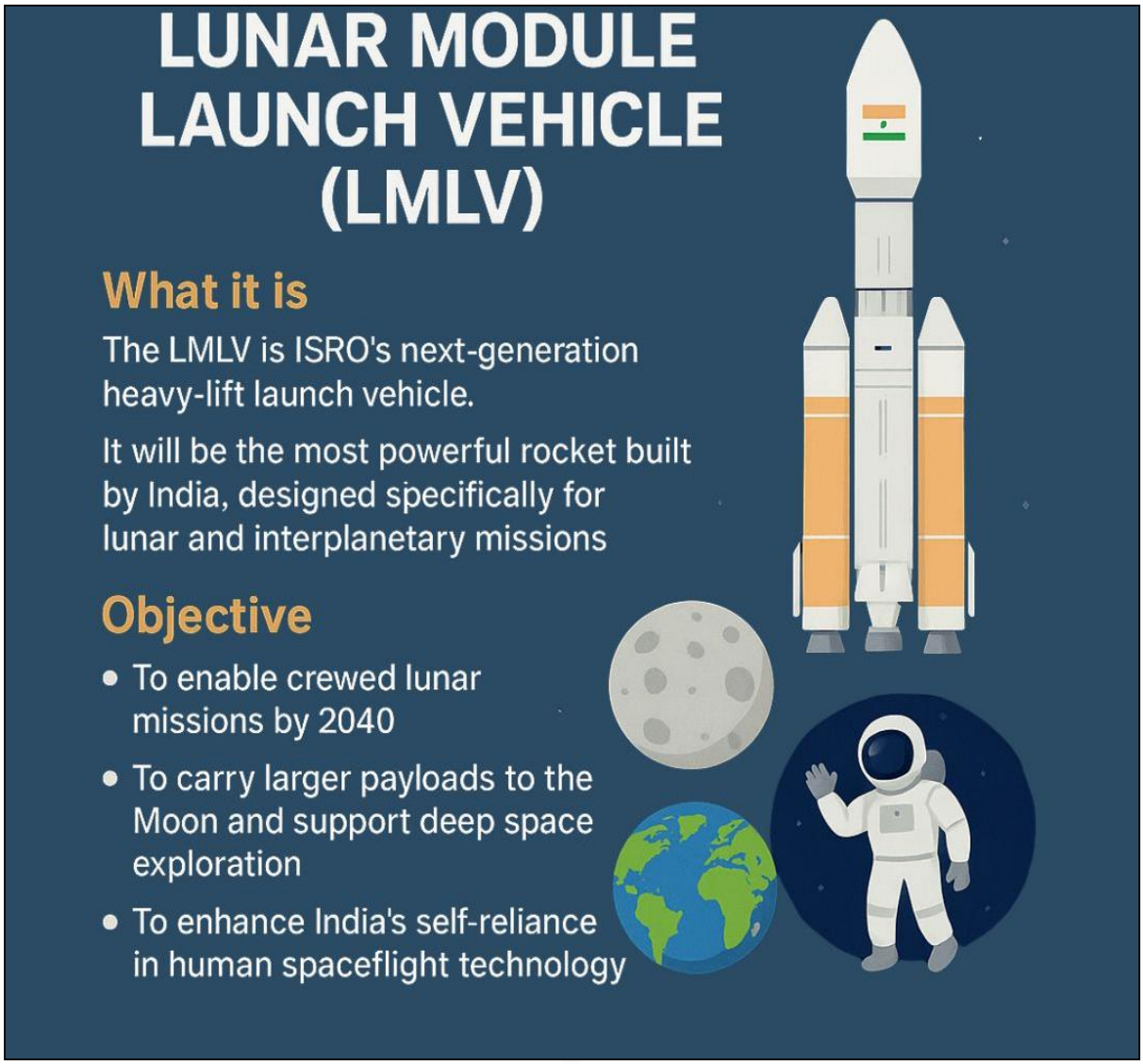
- **Criticism of ASI:**
  - Archaeologist **K. Amarnath Ramakrishna**, who led the Keeladi excavation, was **transferred abruptly in 2017**, sparking allegations of **political interference**.
  - Critics argued that ASI was **slow in publishing reports** and **undermined findings** that highlighted Tamil cultural antiquity.
- **Tamil Nadu State Archaeology Department (TNSDA):**
  - Took over in 2018 and expanded excavations.
  - Their **carbon dating** results from US labs suggested sites were as old as **580 BCE**, supporting Sangam Age antiquity.

SIGNIFICANCE OF KEELADI EXCAVATIONS

- **Historical:** Bridges gap between **Indus Valley Civilization and later Tamil civilization**.
- **Cultural:** Validates Sangam texts, strengthens **Tamil identity and heritage**.
- **Political:** Became a **cultural pride issue** in Tamil Nadu; ASI accused of downplaying Dravidian contributions.
- **Academic:** Opens debates on **urbanization in South India** independent of Ganga valley civilizations.

25 LUNAR MODULE LAUNCH VEHICLE (LMLV)

The **Indian Space Research Organisation (ISRO)** has announced the development of its **heaviest rocket ever the Lunar Module Launch Vehicle (LMLV),** expected to be ready by **2035**.



LUNAR MODULE LAUNCH VEHICLE (LMLV)

CONTEXT

- Announced by: **Indian Space Research Organisation (ISRO)** in 2025.
- Target readiness: **By 2035**.
- Objective: To develop **India's heaviest rocket ever**, specifically designed for **deep space exploration missions**, including **lunar bases, crewed missions, and heavy payload delivery**.

KEY FEATURES OF LMLV

- **Heavy-Lift Capability**
  - Will surpass **LVM3 (Launch Vehicle Mark-3)**, currently India's heaviest rocket.
  - Expected payload capacity: **40–60 tonnes to Low Earth Orbit (LEO)**, **15–20 tonnes to Geostationary Transfer Orbit (GTO)**.
- **Modular Design**
  - Optimized for **lunar module launches** (landers, rovers, habitats).
  - Will support **Gaganyaan successors** (post-2030 human spaceflight programmes).
- **Advanced Propulsion**
  - Likely to use **cryogenic & semi-cryogenic engines** (CE-20 upgrades + new SC120 engines).
  - Possible integration of **green propellants** and **reusable technology**.
- **Applications**
  - Launching **lunar colonies infrastructure** (habitats, power modules).
  - Supporting **Mars missions** and **deep-space telescopes**.
  - Strengthening **India's human spaceflight programme**.

ISRO'S ROADMAP (2030S VISION)

- **2025–2030** → Gaganyaan human spaceflight, Chandrayaan-4 sample return, Aditya missions.
- **2030–2035** → Space station modules, advanced lunar exploration.
- **By 2035** → **LMLV operational**, enabling India to compete with **NASA's SLS** and **SpaceX's Starship** in heavy-lift missions.

GLOBAL COMPARISONS

Rocket	Country	Payload to LEO	Purpose
SLS (Space Launch System)	USA (NASA)	95–130 tonnes	Artemis lunar missions
Starship (SpaceX)	USA	100–150 tonnes (reusable)	Mars & Moon missions

Long March 9	China	140 tonnes	Lunar base, Mars missions
LMLV (proposed)	India	40–60 tonnes (expected)	Lunar & deep-space missions

EVOLUTION OF ISRO'S LAUNCH VEHICLES

- Sounding Rockets (1963)
- First Nike Apache sounding rocket launched from Thumba, Kerala.
- Used for atmospheric experiments, not capable of orbital flight.

SATELLITE LAUNCH VEHICLE (SLV-3) – 1980

- India's **first indigenous rocket**.
- Led by **A.P.J. Abdul Kalam**, placed **Rohini satellite** in orbit.

AUGMENTED SATELLITE LAUNCH VEHICLE (ASLV) – 1987-94

- Improved SLV with strap-on boosters.
- Limited success, carried payloads up to **150 kg**.

POLAR SATELLITE LAUNCH VEHICLE (PSLV) – 1994 ONWARDS

- India's **workhorse rocket**, highly reliable.
- Payload: ~1,000–1,750 kg to LEO.
- Key missions: **Chandrayaan-1 (2008), Mangalyaan (2013)**.

GEOSYNCHRONOUS SATELLITE LAUNCH VEHICLE (GSLV)

- Introduced **cryogenic engines** after US denied transfer in 1990s.
- Payload to GTO: ~2,000–2,500 kg.

LAUNCH VEHICLE MARK-3 (LVM-3 / GSLV MK-III) – 2017

- India's **heaviest operational rocket** today.
- Payload: ~4,000 kg to GTO.
- Major missions: **Chandrayaan-2 (2019), Chandrayaan-3 (2023)**.

LUNAR MODULE LAUNCH VEHICLE (LMLV) – 2035 (PLANNED)

- Will surpass all previous rockets.
- Designed for **human spaceflight to the Moon** and beyond.

26 WASTEWATER SURVEILLANCE

The **Indian Council of Medical Research (ICMR)** is set to expand **wastewater surveillance** for **10 viruses across 50 Indian cities** within the next six months.

CONTEXT (ICMR 2025 EXPANSION PLAN)

- **Indian Council of Medical Research (ICMR):** Expanding **wastewater surveillance** across **50 Indian cities** in the next **6 months**.
- Focus: **10 viruses**, including →
  - **SARS-CoV-2** (COVID-19)
  - **Hepatitis A & E**
  - **Poliovirus**
  - **Rotavirus**
  - **Norovirus**
  - **Enteroviruses**
  - **Influenza viruses**

Aim = Build an **early epidemic warning system** + integrate into **India's health intelligence network**.

WHAT IS WASTEWATER SURVEILLANCE?

- **Definition:** Monitoring pathogens & chemicals in **sewage/effluents** to study community-level health trends.
- **Uses:** Tracks disease spread, antimicrobial resistance (AMR), drug consumption, and even chemical pollutants.

PROCESS FLOW

- **Sample Collection** → sewage lines, treatment plants.
- **Testing** → PCR for viral RNA/DNA, microbial assays, chemical analysis.
- **Data Analysis** → detects disease trends before clinical symptoms spread.
- **Policy Response** → alerts hospitals, preventive measures, vaccination drives.

WHY IT MATTERS FOR INDIA

- **COVID-19 experience:** Delhi, Bengaluru, and Hyderabad used sewage testing to detect **Omicron sub-variants earlier than clinical testing**.
- **Coverage Gap:**
  - India generates **72,368 MLD (million litres/day) of sewage**.
  - Only **28% is treated** (CPCB 2023 report).
  - Rest flows untreated → polluting rivers & lakes, spreading pathogens.
- **Global Example:** The Netherlands detected **COVID-19 in sewage** even before the first case was officially reported.

BENEFITS OF WASTEWATER EPIDEMIOLOGY

- **Early Detection:** Weeks before hospital cases surge.
- **Low-cost monitoring:** Sample from one sewage point = covers entire community.
- **Inclusive Data:** Captures **asymptomatic cases** too.
- **Public Health Planning:** Helps allocate vaccines, hospital beds.
- **Environmental Safety:** Tracks AMR, toxic chemicals, industrial discharge.

GREYWATER AND ITS MANAGEMENT

WHAT IS GREYWATER?

- Wastewater from **kitchen, bathrooms, laundry, wash basins**.
- Excludes **blackwater (toilet sewage)**.
- Forms **~60–70% of total household wastewater** (CPHEEO data).

WHY GREYWATER MANAGEMENT IS IMPORTANT IN INDIA

- India's **per capita water availability** has declined from **1,816 m^3 (2001)** to **1,486 m^3 (2021)** → risk of **water stress by 2030**.

- Greywater reuse can **reduce freshwater demand by 30–40%** in households.

GREYWATER MANAGEMENT APPROACHES

- **Decentralized Treatment Systems**
  - Reed-bed filtration, root-zone treatment.
  - Example: **Auroville (Tamil Nadu)** uses reed-bed greywater treatment.
- **Reuse Applications**
  - Agriculture irrigation (non-food crops).
  - Toilet flushing.
  - Construction activities.
- **Government Initiatives**
  - **Jal Jeevan Mission (JJM)** → Greywater Management at village level.
  - **Swachh Bharat Mission (SBM 2.0)** → Focus on liquid waste management.
  - **National Water Policy 2021 (draft)** → Encourages wastewater recycling.

CHALLENGES IN WASTEWATER SURVEILLANCE

INFRASTRUCTURE GAPS

- India generates **72,368 MLD of sewage daily**, but only **28% is treated** (CPCB, 2023).
- Lack of adequate **sewage treatment plants (STPs)** → untreated wastewater mixes with freshwater sources.

- **Unequal coverage**: Big cities like Delhi, Bengaluru have pilot surveillance projects, but **Tier-2/3 towns lack basic sewage networks**.

SAMPLING & TECHNICAL BARRIERS

- **Mixed sewage**: In many Indian cities, **stormwater drains carry both sewage & industrial effluents**, making sampling unreliable.
- **Standardization issue**: No **uniform national protocol** for wastewater-based epidemiology (WBE).
- **Detection limits**: Some viruses exist in **low concentrations**, making them hard to detect.

FUNDING & RESOURCE CONSTRAINTS

- Advanced wastewater testing needs **high-end labs, RT-PCR machines, trained microbiologists**.
- Municipal budgets often prioritize **drinking water** over wastewater research.
- Example: During **COVID-19**, only 10–12 cities could afford continuous sewage testing.

DATA SHARING & INTEGRATION

- Data is often **fragmented** between **municipal bodies, state health departments, and ICMR labs**.
- No **national wastewater surveillance network** comparable to the USA's **NWSS (National Wastewater Surveillance System)**.

POLICY & LEGAL GAPS

- Wastewater epidemiology is **not part of India's public health law**.
- Ethical concerns: Should community-level sewage data be linked to **privacy & stigma** (e.g., identifying slum clusters as hotspots)?

CHALLENGES IN GREYWATER MANAGEMENT

URBAN–RURAL DIVIDE

- **Urban areas**: Greywater mixes with blackwater → difficult to treat separately.
- **Rural areas**: No sewerage networks; greywater is often discharged into **ponds/open drains**, contaminating groundwater.

HEALTH RISKS

- Untreated greywater can spread **E. coli, cholera, typhoid, hepatitis A & E**.

- Example: **Rajasthan & Gujarat villages** reported outbreaks linked to reuse of untreated greywater in irrigation.

TECHNOLOGICAL CHALLENGES

- Many low-cost **decentralized greywater treatment systems (like reed-beds, bio-digesters)** fail due to poor maintenance.
- Lack of **skilled manpower** in villages to operate treatment plants.

FINANCIAL CONSTRAINTS

- Setting up a **1 MLD decentralized treatment system** costs ₹30–50 lakh.
- Many Gram Panchayats & small towns lack funds for O&M (operation & maintenance).

AWARENESS & BEHAVIORAL BARRIERS

- **Low awareness** among households about segregating greywater.
- Social resistance to **reuse of treated greywater** for household use.
- Perception that greywater is "dirty", even when treated.

INSTITUTIONAL FRAGMENTATION

- Responsibility divided between:
  - **Urban Local Bodies (ULBs)** – urban sewage.
  - **Rural Development Dept.** – village-level greywater.
  - **Jal Shakti Ministry** – water management.
- Results in **overlap, confusion, and lack of accountability**.

DATA & CASE STUDIES

- **Delhi, 2022** → Wastewater surveillance detected **Omicron BA.2 variant 2 weeks before clinical tests**.
- **Netherlands (2020)** → Detected COVID-19 in sewage **before the first reported case**, proving its early-warning potential.
- **India's sewage treatment gap** → Out of **1,093 STPs**, many operate at **<60% efficiency** (CPCB).
- **Rural greywater** → Accounts for **70% of rural wastewater**, but only **15% is treated** (JJM 2023).

27 FIJI

Fiji Prime Minister Sitiveni Rabuka three-day visit to India, his first in the current capacity, to strengthen bilateral relations and deepen people-to-people ties.

FIJI

- Sovereign island nation in **Melanesia, Oceania**, officially known as the **Republic of Fiji**.
- Known for strategic location in the South Pacific and rich natural resources.

LOCATION:

- Lies in the **South Pacific Ocean**, about **2,000 km northeast of New Zealand**.
- Surrounded by the **Koro Sea**, part of Oceania's Pacific archipelago.
- **Capital:** Suva – situated on the island of Viti Levu.

KEY FEATURES:

- **Archipelago:** 330+ islands, ~110 permanently inhabited, along with 500 islets.
- **Major Islands:** Viti Levu & Vanua Levu (home to 87% of the population).
- **Geography:** Volcanic origin with geothermal activity (notably on Vanua Levu & Taveuni).
- **Demography:** Austronesian & Melanesian ancestry with Polynesian influences.
- **Currency:** Fijian Dollar (FJD).

CONTEXT OF THE VISIT

- **First Official Visit**: PM Sitiveni Rabuka's trip marked his first visit to India since assuming office in December 2022.
- **Shared Heritage**: Deep historical and cultural ties, with approximately **38% of Fiji's population being of Indian descent**—Indo-Fijians, descendants of indentured laborers brought between 1879 and 1916.
- **Part of Pacific Outreach**: Signaled India's "Act East" policy and growing engagement with Pacific Island nations via FIPIC and the Indo-Pacific Oceans Initiative.

KEY OUTCOMES & AGREEMENTS SIGNED

DEFENCE & SECURITY COOPERATION

- **First India–Fiji Joint Working Group on Defence** established, including cooperation in UN peacekeeping, maritime security, military medicine, cybersecurity, and white shipping data sharing.
- **India pledged**:
    - Two ambulances to Fiji's military,
    - Establishment of a defence wing in India's High Commission in Suva,
    - A cyber training cell,
    - and an Indian naval port visit to Fiji.

HEALTHCARE & DEVELOPMENT ASSISTANCE

- India will construct a **100-bed super-specialty hospital** in Suva.
- Deployment of telemedicine via **e-Sanjeevani**, establishment of **Jan Aushadhi Kendras**, organizing Jaipur Foot camps, and "Heal in India" treatment for Fijians.
- Quick Impact Project: **Tubalevu Village Ground Water Supply** MoU signed.

CLIMATE, RENEWABLE ENERGY & AGRICULTURE

- Shared commitment to climate resilience via platforms: **ISA**, **CDRI**, **Global Biofuels Alliance**.
- Support for solar deployment and disaster preparedness.
- India donated **12 agricultural drones**, **2 mobile soil testing labs**, and **5 tonnes of cowpea seeds**; plus, ITEC training for Fiji's sugar sector.

TRADE, ECONOMICS & EDUCATION

- Fiji offered market access for Indian ghee.
- MoUs signed between:
    - NABARD and Fiji Development Bank (agri financing & rural development),
    - BIS and Fiji's standards agency,
    - NIELIT and Pacific Polytechnic (skills & human capacity),
    - CII and FCEF (trade & commercial cooperation).
- Declaration of Intent on facilitating **student and professional mobility**.
- Lease title handed over for **Chancery-cum-Cultural Centre** in Suva.

CULTURAL & PEOPLE-TO-PEOPLE ENGAGEMENT

- India deployed a **Hindi-Sanskrit teacher** to Fiji's University, training for Fijian pundits, and planned **Geeta Mahotsav** celebrations.
- Sports collaboration: India sending a **cricket coach** to develop Fiji's talent.

GLOBAL & REGIONAL ALIGNMENT

- Shared vision of a **free, open, secure Indo-Pacific**; Fiji expressed interest in joining India's **Indo-Pacific Oceans Initiative**.
- Mutual support reaffirmed in multilateral forums on terrorism, Global South cooperation, and UNSC reforms. Fiji backed India's **UNSC permanent membership** ambitions.

ANALYTICAL SIGNIFICANCE

FOR INDIA

- **Strategic Influence**: Enhances maritime presence and aligns with Indo-Pacific priorities.
- **Global South Leadership**: Reinforces India's credible development partner narrative.
- **Soft Power**: Cultural diplomacy through diaspora and historical empathy strengthens people-to-people ties.

FOR FIJI

- Gains in **healthcare, infrastructure, security, capacity building**.
- Leverages shared identity and political goodwill from India.
- Balances rising regional contests, notably China's strategic interest in the Pacific.

28 PROJECT AAROHAN

The **National Highways Authority of India (NHAI)** has launched **Project Aarohan** to support the education of **children of toll plaza employees.**

CONTEXT

- Toll plaza employees working under NHAI are part of the backbone of India's **highway infrastructure system**.
- Most employees belong to **lower-income families**, and their children often face barriers in accessing **quality education**.
- To address this social need, NHAI launched **Project Aarohan** in **August 2025**, as a welfare initiative under its **Corporate Social Responsibility (CSR)** framework.

WHAT IS PROJECT AAROHAN?

- **Project Aarohan** is an **educational support initiative** by NHAI aimed at providing **academic assistance, career guidance, and holistic development opportunities** for the children of toll plaza employees across India.
- The program ensures that **children from disadvantaged toll-worker families** are not left behind in terms of access to **quality schooling, higher education, and skill development**.

OBJECTIVES

- **Educational Upliftment** → To provide equal learning opportunities to children of toll plaza employees.

- **Skill & Career Development** → Guidance for competitive exams, scholarships, and higher studies.
- **Holistic Growth** → Beyond academics: sports, arts, and extracurricular activities.
- **Bridging Social Gap** → To reduce educational inequality between urban privileged children and those from toll plaza employee families.

KEY FEATURES OF PROJECT AAROHAN

- **Scholarships & Financial Aid**: Support for school/college fees, books, uniforms.
- **Coaching Support**: Free/assisted coaching for board exams, JEE, NEET, UPSC, SSC, Railways, etc.
- **Digital Learning Kits**: Tablets, internet connectivity, and e-learning resources provided.
- **Mentorship Programs**: Experienced mentors and volunteers to guide students.
- **Career Counselling**: Regular workshops for career awareness and future planning.
- **Special Focus on Girl Child**: To encourage education for daughters of toll employees.
- **National Roll-out**: Planned implementation across toll plazas managed by NHAI.

SIGNIFICANCE

- India has **900+ toll plazas**, employing **lakhs of workers**—their families directly benefit.
- Strengthens **social inclusiveness** in infrastructure development.
- Aligns with **NEP 2020 goals** of equitable education and **UN SDG-4 (Quality Education)**.
- Enhances **employee morale**, reduces attrition, and creates goodwill for NHAI.

NATIONAL HIGHWAYS AUTHORITY OF INDIA (NHAI)

- NHAI was established under the **NHAI Act, 1988** to oversee the **development, maintenance, and management of national highways**.
- National highways span **132,499 km**, carrying **40% of India's road traffic** while accounting for only **2% of the road network**.

29 VAQUITA PORPOISE

A new report has highlighted that only about 10 **vaquita porpoise**, the world's **rarest marine mammal,** remain in the **Gulf of California (Sea of Cortez), Mexico**.

VAQUITA PORPOISE (*PHOCOENA SINUS*)

The **vaquita porpoise (little cow** in Spanish), is the **world's most endangered marine mammal** discovered in 1958.

Porpoises are the **smallest members** of the **cetacean family** (whales, dolphins, porpoises) and are **distant relatives of dolphins,** diverging around 15 million years ago.

HABITAT:

- **Marine**, restricted to the **northern Gulf of California (Sea of Cortez), Mexico**, mostly in shallow waters up to **50 m deep.**

PHYSICAL CHARACTERISTICS:

- Vaquitas have **dark rings around the eyes**, dark patches on lips stretching to the fins. Newborns are darker with a gray fringe.
- Their large dorsal fin helps release body heat in warm waters.

BEHAVIOR:

- **Shy** and usually stay **near the shore**.
- They **avoid boats** and are mostly **solitary or in very small groups**, unlike other **cetaceans** that travel in large pods.

THREATS:

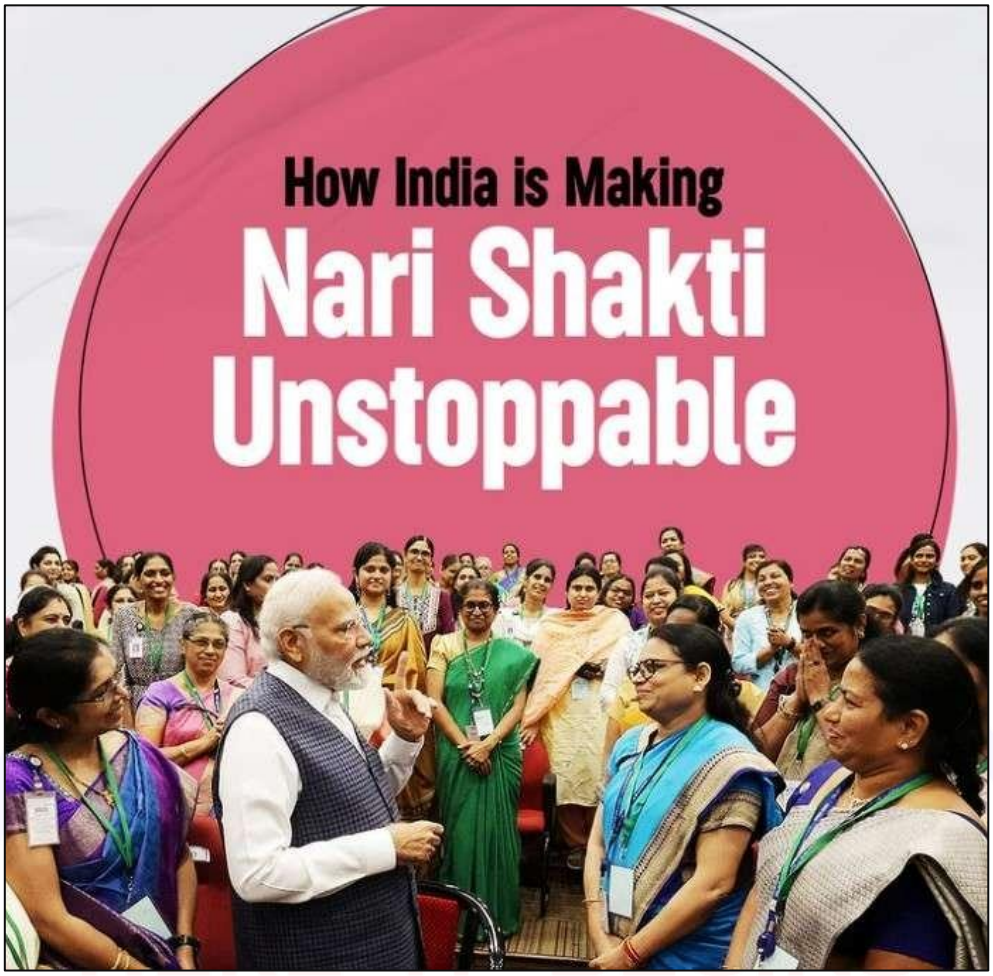
- **Bycatch in illegal gillnets** set for the vulnerable **totoaba fish**.

PROTECTION STATUS:

- **IUCN Red List:** Critically Endangered.
- **CITES:** Appendix I

30 WOMEN LED VIKSIT BHARAT

India's growth story is shifting, with **women driving economic rise** through higher workforce participation, entrepreneurship, and access to finance. Empowering them is now central to the vision of Viksit Bharat 2047.



HOW WOMEN ARE POWERING INDIA'S ECONOMIC TRANSFORMATION?

- **Workforce Participation:** India's female workforce participation rose from **22% in 2017-18 to 40.3% in 2023-24,** while **unemployment fell from 5.6% to 3.2%.**
    - Rural female employment grew by 96%, and urban by 43%, showing strong gains in opportunities for women.
    - Female graduate employability rose from **42% in 2013 to 47.53% in 2024**, while women with postgraduate and above saw Worker Population Ratio (WPR) increase from **34.5% in 2017-18 to 40% in 2023-24**.

- In the past seven years, **1.56 crore women joined the formal workforce,** while **16.69 crore women unorganized workers registered on e-Shram,** gaining access to government welfare schemes.

- **Women Development to Women – Led Development: Gender budgets** rose 429% over a decade, from Rs 0.85 lakh crore (2013-14) to Rs 4.49 lakh crore (2025-26), signaling a shift to women-led development.
  - Programs like **Startup India** have boosted women's entrepreneurship, with 50% of **Department for Promotion of Industry and Internal Trade (DPIIT)** startups having at least one-woman director. Around two crore women are now **Lakhpati Didis,** supported by initiatives like **Namo Drone Didi.**
  - Women-led **Micro, Small, and Medium Enterprises (MSMEs)** nearly doubled from **1 crore (2010-11) to 1.92 crore (2023-24)** and generating **89 lakh additional jobs for women (FY21–FY23).**
  - This marks a decisive move from development for women to development by women.
  - Financial inclusion schemes are pivotal, with **women receiving 68% of MUDRA loans** (worth Rs 14.72 lakh crore) and accounting for **44% of PM SVANidhi beneficiaries among street vendors.**

WHY IT IS SIGNIFICANT?

- **Women as Leaders**: Shifts women from welfare recipients to agents of change.
- **Gender Equality**: Reduces stereotypes and generational inequality, which is crucial as **India ranked 131st out of 148 countries in the Global Gender Gap Report 2025.**

- **Economic Growth**: Bridging the gender gap in employment could potentially lead to a 30% increase in **India's Gross Domestic Product (GDP).**
- **Inclusive Development**: Inclusion of **women boosts productivity, innovation, and decision-making.**
- Empowering women gives them autonomy, access to opportunities, and influence over personal, professional, and societal decisions, driving meaningful economic and social change.

WHAT ARE THE CHALLENGES?

- **Social and Safety Constraints:** Deep-rooted patriarchy limits decision-making and increases unpaid domestic work.
    - Early marriage, domestic responsibilities, and threats to **personal security** (as India records 51 cases of crime against women every hour). **curtail mobility, career progression,** and active participation in society.
- **Education and Skill Gaps**: Female literacy is **65.4% (2011 census)**, below the global average, restricting opportunities.
- **Underrepresentation in Governance & Leadership:** Women remain **underrepresented in political, corporate, and institutional decision-making**, reducing their influence on policies affecting them.
    - India's women's representation in the **Parliament remains well below the global average of 25%.**
- **Digital and Technological Exclusion:** Limited access to technology, internet, and digital literacy prevents women from participating fully in the modern economy.
- **Workforce Participation Barriers:** Women face **unequal pay, glass ceiling effects, occupational segregation, safety at workplace** and limited representation in formal and high-skilled sectors.

WHAT MEASURES CAN INDIA ADOPT?

- **Childcare & Care Economy:** Establish a **National Crèche Grid**, workplace crèches, professionalise care workers, and extend paid maternity leave to informal sectors to enable workforce retention.
- **Infrastructure & Digital Inclusion:** Mandate **gender-responsive budgeting** in sanitation, transport, water, housing. Embed **Digital Saksharta and PMGDISHA** into national infrastructure and rural internet projects to boost women's digital empowerment.

- **Representation & Governance:** Enforce gender quotas in boards, panchayats, MSME councils; build capacity in **gender budgeting**; link incentives to women's inclusion.
- **Decentralised Gender Planning:** Institutionalize **Gender Action Plans at the Gram Panchayat, block, and district levels,** incorporating input from Mahila Sabhas and SHG networks. Ensure these plans are co-created with women and integrated into annual development planning and financing.
- **Workplace Safety and Empowering Women's Mobility:** Create **women-friendly infrastructure with accessible spaces** and establish **Internal Complaint Committees (ICCs)** under the **Sexual Harassment of Women at Workplace Act, 2013** to address harassment.
- Foster a zero-tolerance culture and address cultural and structural violence through education, empowerment, and policy reforms for an equitable and safe environment.

31 PROJECT 17 A: INS UDAYGIRI AND INS HIMGIRI

Two advanced **Nilgiri-class (Project 17Alpha (P-17A)) multi-mission stealth frigates, INS Udaygiri and INS Himgiri** have been commissioned, marking a significant step in India's naval modernization

PROJECT 17A (P-17A): INDIA'S STEALTH FRIGATE PROGRAMME

- **P-17 (Shivalik-class)** was India's first indigenously designed stealth frigate class (3 ships).
- Building on that, **Project 17A (P-17A)** is a **follow-up programme** to enhance stealth, automation, and combat power.
- Approved in **2015**, it is India's **largest warship-building programme** for frigates.

KEY FEATURES OF PROJECT 17A

- **Total Ships → 7 stealth frigates** under construction.
  - **Mazagon Dock Shipbuilders Ltd (MDL), Mumbai** → 4 ships.
  - **Garden Reach Shipbuilders & Engineers (GRSE), Kolkata** → 3 ships.
- **Technology & Design**
  - Developed by **Indian Navy's Directorate of Naval Design**.
  - Uses **modular construction technology** (first time in India).

- Advanced stealth → **reduced radar cross-section**, infrared, acoustic & magnetic signatures.
- Equipped with **CODOG (Combined Diesel or Gas) propulsion** system.

- **Dimensions**
  - Length: **149 metres**
  - Displacement: **~6,670 tonnes**
  - Speed: **28 knots (~52 km/h)**
  - Crew: **~150+ sailors & officers**
- **Armament & Systems**
  - **Vertical Launch System (VLS)** for **Barak-8 surface-to-air missiles**.
  - **BrahMos supersonic cruise missiles** (anti-ship & land-attack).
  - Torpedoes, anti-submarine rockets.
  - 76mm Super Rapid Gun, Close-In Weapon Systems (CIWS).
  - Advanced sonar, radar, and electronic warfare systems.
  - Ability to carry **2 multi-role helicopters (like MH-60R Seahawk, HAL Dhruv, Sea King)**.
- **Indigenisation**
  - Around **75% indigenous content** (weapons, sensors, design).
  - Built under **Make in India** with public–private shipyard collaborations.

INS UDAYGIRI (2025)

- **Third ship of Project 17A**, built at **MDL, Mumbai**.
- **Name origin**: Udayagiri = *sunrise mountain range* (Andhra Pradesh), symbol of resilience.
- **Commissioned**: September 2025.
- **Role**:
  - Multi-role: air defence, anti-submarine, anti-ship warfare.
  - Will strengthen **Western Naval Command** (Arabian Sea, Persian Gulf).
- **Notable Features**:
  - Enhanced stealth shaping for radar evasion.
  - Modular weapon platform → allows upgrades in the future.
  - Integration with **indigenous combat management system** (CMS).

INS HIMGIRI (2025)

- **Second ship of Project 17A**, built at **GRSE, Kolkata**.
- **Name origin**: Himgiri = *snow-covered Himalayan peaks*.
- **Commissioned**: August 2025.
- **Role**:
  - Specialised in **Anti-Submarine Warfare (ASW)**.
  - Deployed to **Eastern Naval Command** (Bay of Bengal, Indo-Pacific).
- **Notable Features**:
  - Advanced sonar suite (developed by DRDO).
  - Will operate alongside aircraft carrier **INS Vikrant** and destroyers in Eastern Fleet.
  - Strong electronic warfare suite for **Indo-Pacific missions**.

STRATEGIC IMPORTANCE

MARITIME SECURITY IN INDIAN OCEAN REGION (IOR)

- Counters **China's PLA Navy presence** in IOR.
- Strengthens India's surveillance & strike capability in choke points (Strait of Malacca, Gulf of Aden).

BLUE WATER NAVY AMBITION

- Enhances India's ability to operate **carrier strike groups**, perform **sea control & power projection**.

- Supports India's **SAGAR (Security and Growth for All in the Region)** vision.

ATMANIRBHAR BHARAT

- 75% indigenous content → boosts Indian defence ecosystem (BrahMos, sensors, sonar).
- Reduces dependence on imports, strengthens defence PSUs & private shipbuilders.

GEOPOLITICAL SIGNIFICANCE

- Supports **Quad & Indo-Pacific cooperation** with the US, Japan, Australia.
- Useful for **anti-piracy, HADR (Humanitarian Assistance & Disaster Relief), UN Peacekeeping**.

TIMELINE OF SHIPS UNDER PROJECT 17A

- **INS Nilgiri** – launched 2019 (expected induction by 2026).
- **INS Himgiri** – commissioned 2025.
- **INS Udaygiri** – commissioned 2025.
- **INS Dunagiri** – expected 2026.
- **INS Taragiri** – expected 2027.
- **INS Vindhyagiri** – expected 2028.
- **INS Mahendragiri** – expected 2029.

32 TYPHOON KAJIKI

Typhoon Kajiki struck **Vietnam's** coastal provinces, resulting in **extensive flooding, significant crop losses, and multiple fatalities.**

TYPHOON KAJIKI

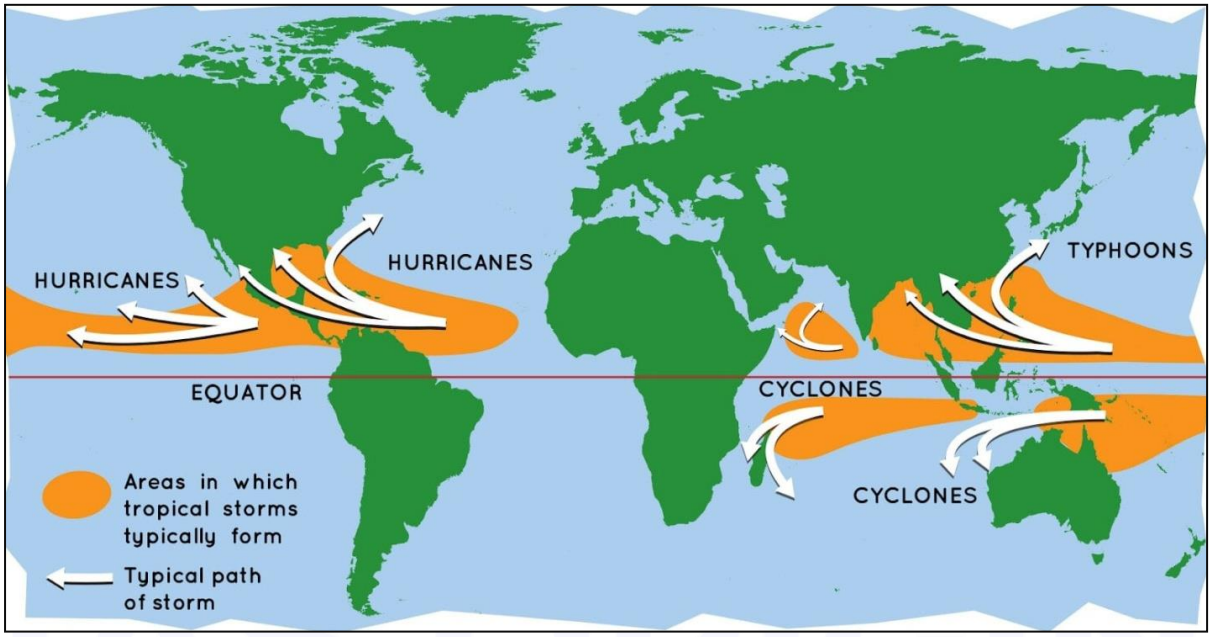
- **Background**: Typhoon Kajiki is a tropical cyclone that recently struck Vietnam's coastal provinces.
- **Impact**:
  - Caused **extensive flooding**, damaging homes, infrastructure, and farmlands.
  - Led to **significant crop losses**, particularly rice paddies and cash crops in the Mekong Delta and central coastal regions.
  - Resulted in **multiple fatalities and injuries**, forcing thousands of people to evacuate.
- **Meteorological Features**:
  - Typhoon Kajiki formed in the **Western Pacific Ocean**, intensified as it moved westward.
  - Brought **heavy rainfall (300–500 mm in some areas)**, **storm surges**, and **winds over 150 km/h**.

WHAT IS A TYPHOON?

- **Definition**:
  - A **typhoon** is a mature tropical cyclone that develops in the **Northwest Pacific Ocean (west of the dateline, north of the equator)**.
  - Equivalent to a **hurricane** (Atlantic & NE Pacific) or **cyclone** (Indian Ocean & South Pacific).
- **Formation**:
  - Warm sea surface temperatures (≥ 26°C).
  - High humidity in the troposphere.
  - Coriolis force to create cyclonic rotation (absent near equator).
  - Weak vertical wind shear to allow storm intensification.
- **Classification (Japan Meteorological Agency)**:
  - Tropical Depression: ≤ 61 km/h winds.

- Tropical Storm: 62–88 km/h winds.
- Severe Tropical Storm: 89–117 km/h winds.
- **Typhoon**: ≥ 118 km/h winds.

- **Hazards**:
  - Heavy rainfall → flash floods, landslides.
  - Storm surges → coastal flooding.
  - Strong winds → infrastructure collapse, crop destruction.

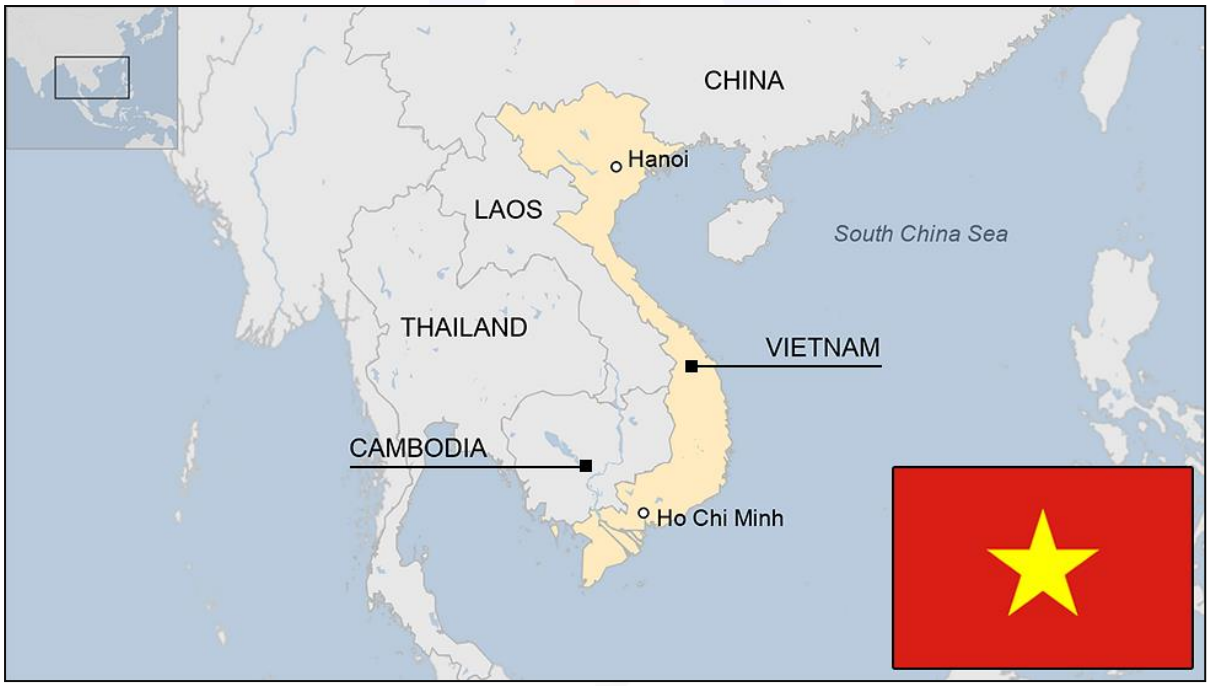


VIETNAM: CONTEXT AND VULNERABILITY

- **Geography**:
  - Located in **Southeast Asia**, on the **South China Sea (East Sea)**.
  - Long coastline (3,260 km), making it highly vulnerable to typhoons and sea-level rise.
- **Administrative Details**:
  - Capital: **Hanoi**.
  - Largest city: **Ho Chi Minh City**.
  - Government: Socialist Republic, ruled by the Communist Party of Vietnam.
- **Population**: ~100 million (2025 est.), with a large rural population dependent on agriculture.
- **Economy**:

- Growing economy driven by **manufacturing, agriculture, fisheries, and tourism**.
- Agriculture contributes ~15% of GDP, with rice being the staple crop (Vietnam is the **world's second-largest rice exporter**).

- **Climate Vulnerability**:
  - Lies in the **Typhoon belt of the Pacific Ocean**.
  - Experiences 8–10 typhoons annually, mostly between **June–November**.
  - Ranked among the **most climate-vulnerable countries** (Global Climate Risk Index).
- **Past Disasters**:
  - Typhoon Damrey (2017) killed over 100 people.
  - Typhoon Ketsana (2009) displaced hundreds of thousands.

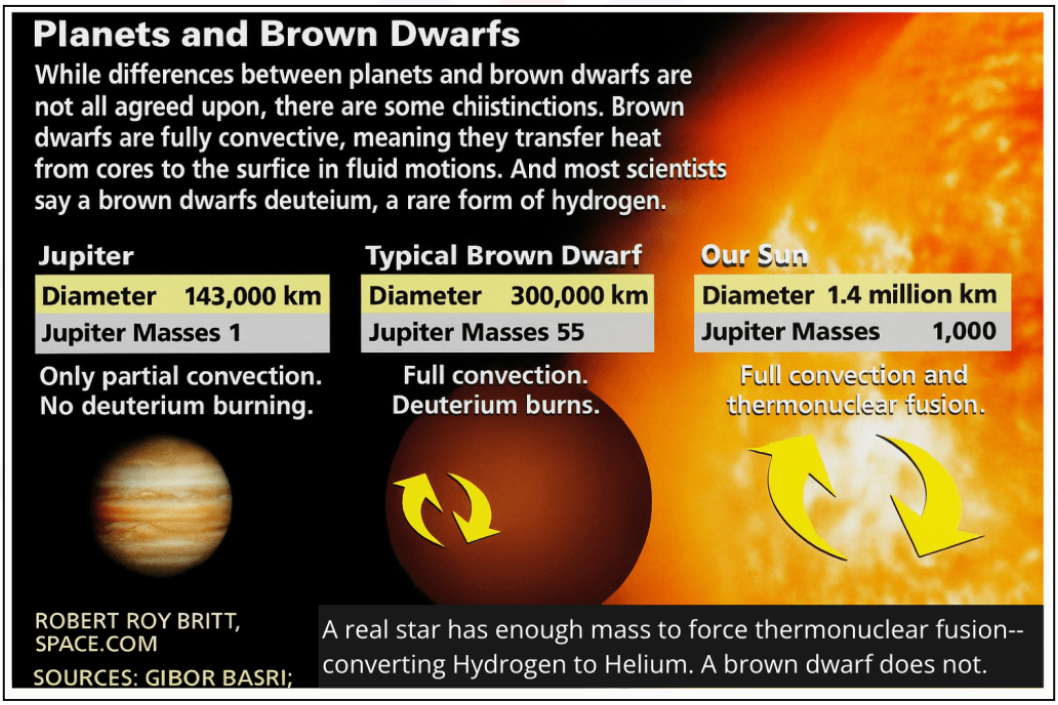


33 SCIENTISTS DISCOVER RARE QUADRUPLE STAR SYSTEM IN MILKY WAY

Scientists have discovered an extremely rare quadruple star system in the Milky Way. The system known as UPM J1040-3551 AabBab consists of a pair of cold brown dwarfs orbiting a pair of young red dwarf stars.

WHAT ARE BROWN DWARFS?

- Brown dwarfs are substellar objects that have more mass than the biggest gas giant planets, but less than the least massive main-sequence stars.
- They form like stars from collapsing clouds of gas and dust. Their atmospheres can consist of clouds and molecules like H2O. Their mass is approximately 13 to 80 times that of Jupiter.
- They are not massive enough to sustain nuclear fusion of Hydrogen into Helium in their cores (unlike the main-sequence stars). So, they are often known as “failed stars”.
- However, they emit some light and heat from the fusion of deuterium (2H).



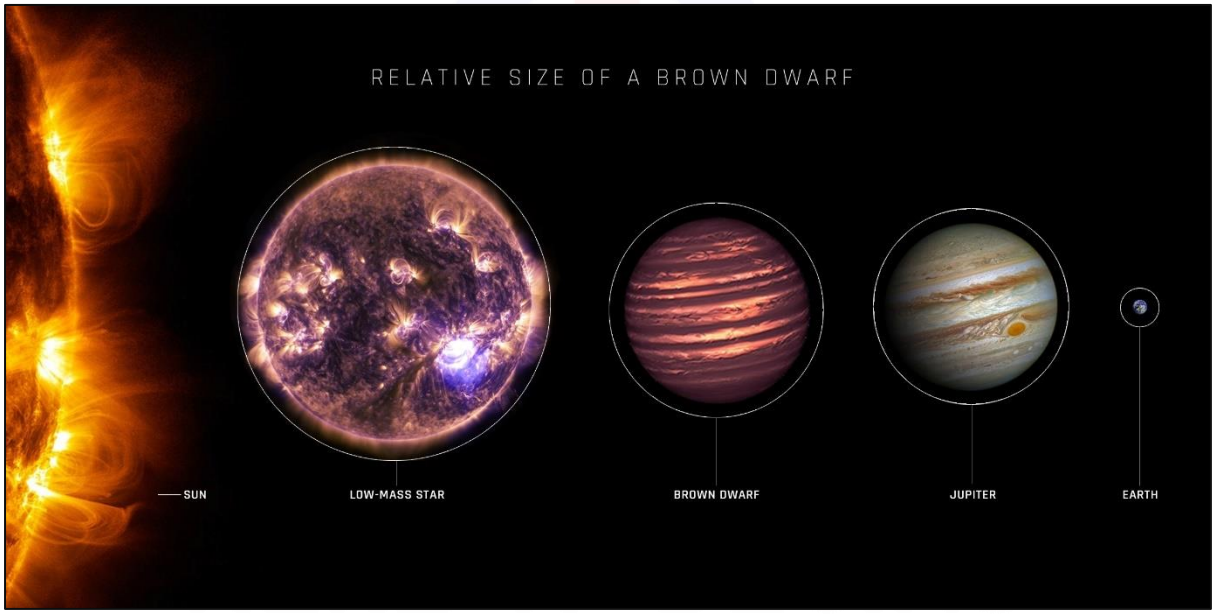
WHY ARE BROWN DWARFS DIFFICULT TO DETECT?

- Brown dwarfs can be difficult to detect as they are cold and faint. As a result, astronomers typically search for brown dwarfs orbiting companion stars, which often burn brighter.

- Measuring the brighter stars can be useful for estimating the properties of the fainter brown dwarfs, like their age, temperature and composition.
- Brown dwarfs are usually single, and hence the current findings are exciting because the chances of a low-mass brown dwarf having a companion are less than 5%.

WHY DO SCIENTISTS STUDY BROWN DWARFS?

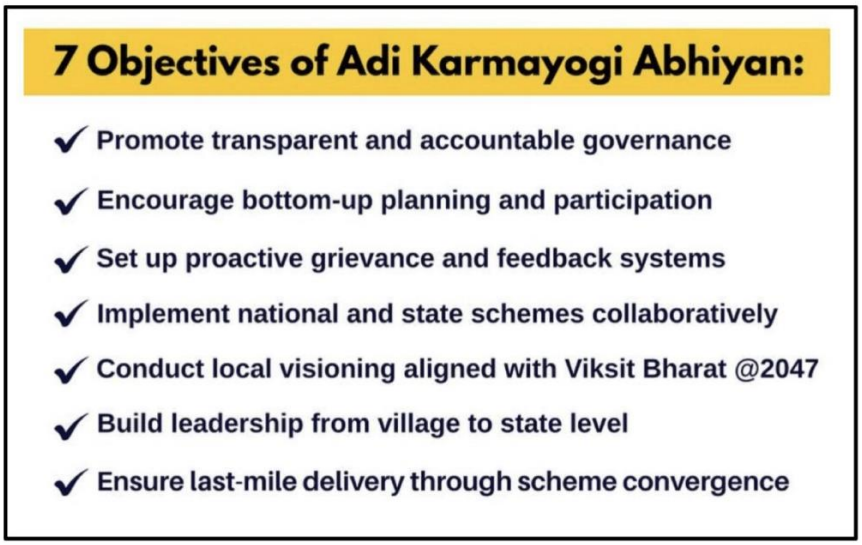
- Brown dwarfs can help astronomers better understand the conditions that are necessary for the formation of stars and planets.
- Determining the abundance and distribution of brown dwarfs gives key information on the distribution of mass in the universe to astronomers (much of the universe's mass has thus far been undetectable and is known as dark matter).



34 ADI KARMAYOGI

ADI KARMAYOGI INITIATIVE

- Adi Karmayogi Abhiyan is a national movement to build a decentralized tribal leadership and governance ecosystem.
- **Nodal Ministry:** Ministry of Tribal Affairs



AIM:

- To empower tribal communities, strengthen responsive governance, and create local leadership opportunities across the country.
- The initiative emphasises Sewa (service), Sankalp (Resolve), and Samarpan (Dedication) reflecting the guiding principle of **"Sabka Saath, Saka Vikas, Saka Prayas, Sabka Vishwas."**

OBJECTIVES:

- To promote responsive, people-centric governance at village and community levels.
- To conduct multi-departmental Governance Lab Workshops / Process Labs from state to district, block, and village levels for capacity Building of state, District, and Block Master Trainers.
- To co-create development plans where tribal communities and government officers jointly formulate the 1 Lakh Tribal Villages-Vision 2030, including detailed action plans and investment strategies.
- To build a network of 20 lakh change leaders across 550 districts and 30 States/UTs to implement grassroots development initiatives.

- To ensure 100% saturation of welfare schemes in tribal villages.

KEY FEATURES OF ADI KARMAYOGI INITIATIVE

- **Target Group**
  - Focuses on **tribal youth**, especially from marginalized and remote areas.
  - Prioritizes those who lack access to higher education, skill training, and employment opportunities.
- **Skill Development & Capacity Building**
  - Provides **training modules** on soft skills, digital literacy, entrepreneurship, leadership, and communication.
  - Encourages participation in governance and decision-making processes.
- **Mentorship Programme**
  - Connects tribal youth with **experts, professionals, and senior mentors** from diverse fields.
  - Aims to nurture **confidence, guidance, and career pathways**.
- **Career Orientation & Employment Support**
  - Offers **career counseling**, internship opportunities, and exposure visits.
  - Helps in preparing for competitive exams, government jobs, and entrepreneurship ventures.
- **Cultural Preservation with Modern Skills**
  - Encourages youth to **preserve tribal culture, traditions, and heritage** while adopting modern skill sets.
  - Promotes **fusion of traditional knowledge with innovation**.
- **Digital & Technological Empowerment**
  - Includes **digital training** to bridge the digital divide in tribal regions.
  - Supports participation in **Digital India, Startup India, and Skill India** initiatives.
- **Holistic Development**
  - Focuses on **physical, mental, emotional, and professional growth** of tribal youth.
  - Promotes values of self-reliance, community leadership, and social responsibility.

ADI KARMAYOGI ABHIYAN
RESPONSIVE GOVERNANCE PROGRAMME

Building a Viksit Bharat through a Cadre of 2 Million Committed Change Leaders

11 CRORE TRIBALS | 1 LAKH TRIBAL VILLAGES | 30 STATES/UT | 550+ DISTRICTS 3000 BLOCKS | 2 MILLION KARMAYOGIS

Overview

Under the visionary guidance of the Hon'ble Prime Minister, MOTA has Beta launched **AADI KARMAYOGI** —A National Mission to Transform Last Mile Service Delivery through a Cadre of **20 Lakh Trained Grassroots Functionaries and Village Change Leaders.** while promoting the **"Whole-of-Government" Approach** from the Centre to the Village Level.

Multi-Department Convergence: Tribal Welfare, Rural Development, Women & Child Development, Jal Shakti, School Education, and Forest.

Vision

Adi Karmayogi is a Mission of Viksit Bharat: Through **Seva (Service), Samarpan (Dedication), and Sankalp (Resolve)** to Achieve Responsive Governance and Last Mile Service Saturation

Objectives

- **Responsive Governance :** People-Centric
- **Bottom-Up Vision Building :** Jan Bhagidari
- **Grievance Redressal** Problem Identification, Resolution
- **Collaborative Implementation**

Cadre of Sparks

- **Aadi Karmayogi:** Government Officers: State to block & village
- **Aadi Sahyogi:** Youth Leaders, Teachers, Doctors, Social Workers
- **Aadi Sathi:** Tribal Leaders, SHG, Volunteers

Structure

- Centre Apex Group : Secretaries
- State Apex Committee: Chief Secretary
- State Coordinator: State TWD
- District Group: DM/DC
- Block Officer Team

TRI+ CBO

Process Flow

Regional:	Seven-Day **Process Lab :** State Coaches
State:	Change Coaches (4 Days) from **Districts 7** Line Departments
District:	District Master Training (3 Days) for **Block Representatives**
Block:	Block Training Sessions for **Village Workers**
Village:	**Community Collaboration**

Spiral of Change

Anticipated Outcomes – Adi Karmyogi Abhiyan

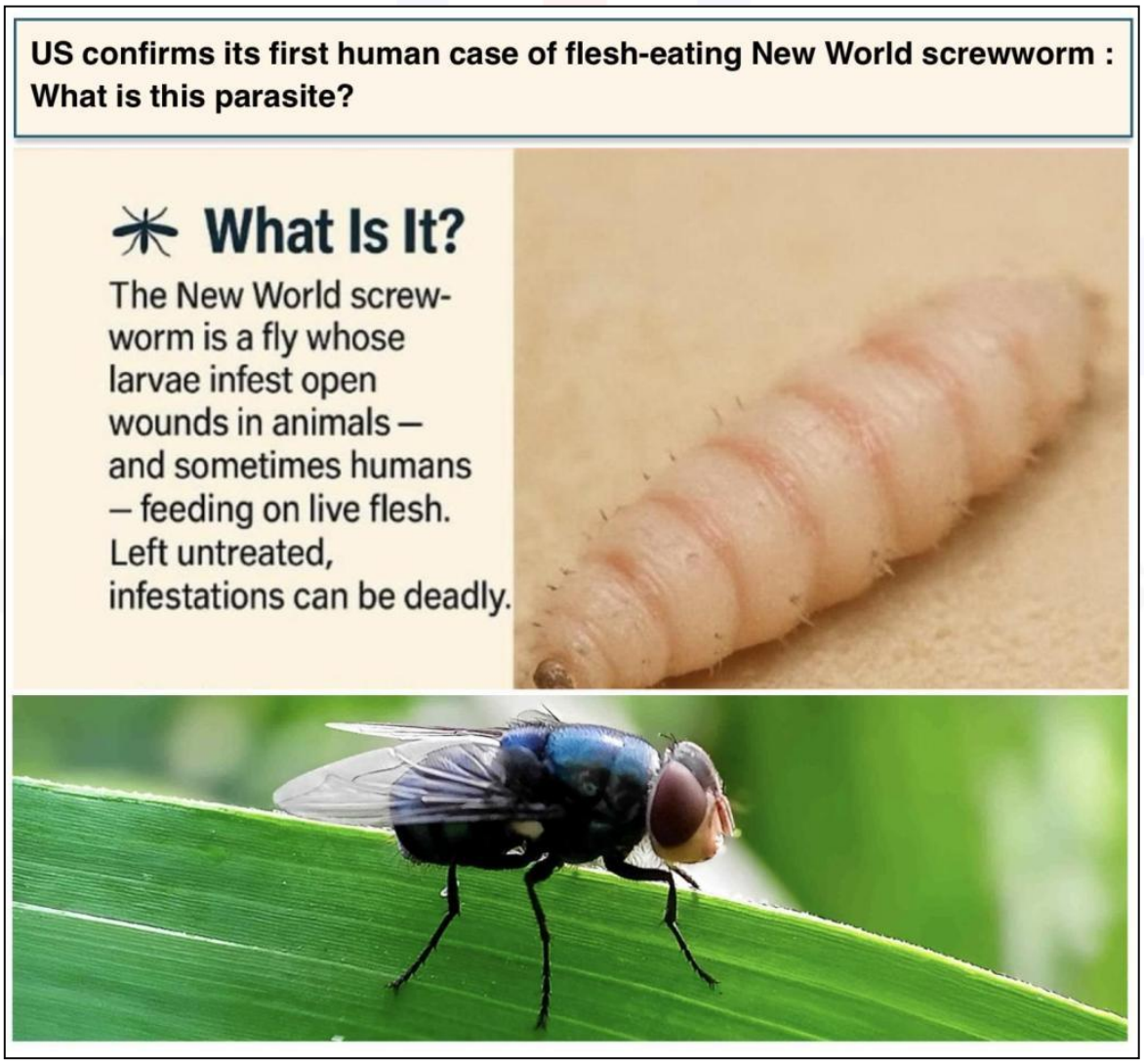
- **1 Lakh** Adi Sewa Kendras (One-Stop Tribal Service Centres)
- **1 Lakh** Village Visioning 2030 & Action Plans
- **20 Lakh** Adi Karmayogis as Grassroots Changemakers
- **10+ Crore** Tribal Citizens Benefitted
- **100+** Student Chapters in IITs, IIMs, NITs
- **Last-Mile Governance** Strengthened at Village Level

35 FLESH-EATING NEW WORLD SCREWWORM

Context: Recently, the US reported its first human case of New World screwworm infestation, a flesh-eating parasite once eradicated in 1966 through the Sterile Insect Technique.

WHAT IS THE NEW WORLD SCREWWORM?

- **Scientific name**: *Cochliomyia hominivorax*
- **Type**: Parasitic fly species belonging to the blowfly family (*Calliphoridae*).
- **Origin & Distribution**:
    - Native to the **Americas** (South & Central America, Caribbean).
    - Eradicated from the **U.S., Mexico, and parts of Central America** through large-scale programs.
    - Still present in parts of **South America and the Caribbean islands**.



BIOLOGICAL FEATURES

- **Eggs & Larvae**
  - Female lays eggs on **open wounds, cuts, or body orifices** of warm-blooded animals (including humans).
  - Eggs hatch into larvae (maggots) in less than 24 hours.
- **Feeding Habit**
  - Larvae feed on **living tissue** (unlike most blowfly species, which prefer dead tissue).
  - This leads to **myiasis** (infestation of live animals with fly larvae).
- **Lifecycle**
  - Eggs → Larvae (3 stages) → Pupae → Adult fly.
  - Full cycle takes about **3 weeks** in warm climates.

IMPACTS & DANGERS

- **Animals**:
  - Infests cattle, sheep, goats, horses, pigs, pets, and wildlife.
  - Causes severe wounds, weight loss, reduced milk/meat production, and even death if untreated.
- **Humans**:
  - Rare but possible infestations in wounds, ears, or nose.

- Causes extreme pain, tissue destruction, and requires immediate medical removal.

- **Economic Losses**:
  - Billions of dollars in livestock damage and control costs.

CONTROL & ERADICATION

- **Sterile Insect Technique (SIT)**:
  - Release of **sterile male flies** in the wild, which mate but produce no offspring.
  - Successfully eradicated NWS from **North & Central America up to Panama**.
- **Quarantine & Surveillance**:
  - Animal inspections at borders.
  - Strict livestock movement controls in affected regions.
- **Treatment**:
  - Manual removal of larvae.
  - Application of insecticides and wound care in animals.

REASONS FOR THE RECENT SPREAD OF NEW WORLD SCREWWORMS:

- The US eradicated screwworms in 1966 using the sterile insect technique, where billions of sterile males were released to prevent reproduction.
- This method was later used to eliminate screwworms in Mexico (1970s), Central America (early 2000s), and to contain a Florida outbreak in 2017. Despite eradication efforts, new cases have recently been reported in Panama, Costa Rica, Nicaragua, and Honduras.
- Experts suggest movement of infested cattle across borders as possible reasons for the recent spread of New World screwworms.

36 INCOME TAX ACT 2025

The Income Tax Act 2025 has received the President's assent. The new law will come into force from 1st of April 2026. The landmark reform replaces the Income Tax Act of 1961 and ushers in a simpler, transparent and compliance-friendly direct tax regime.

INCOME TAX ACT 2025

- The Income Tax Act 2025 will replace the Income Tax Act of 1961.
- The Act introduces a simpler, transparent and compliance-friendly direct tax regime.
- The new law will come into force from the next financial year starting April 1 2026.

KEY FEATURES OF THE INCOME TAX ACT 2025

SIMPLIFICATION OF THE LAW:

- The number of sections has been reduced from 819 to 536, chapters from 47 to 23, and the overall word count from 5.12 lakh to 2.6 lakh.
- It introduces 39 new tables and 40 formulas, making tax computations easier and more transparent.
- Redundant provisions and archaic language have been removed, ensuring that the law is simpler to read, understand, and implement.

REFUNDS AND RETURN FILING:

- Earlier draft had restricted refund claims only to returns filed within the due date. In the new Act, this provision has been removed, and taxpayers can now claim refunds even in the case of belated returns.

TCS ON LIBERALISED REMITTANCE SCHEME (LRS):

- The Act clarifies that no Tax Collected at Source (TCS) will be applicable on education-related remittances made under the Liberalised Remittance Scheme (LRS), if such payments are financed by banks or financial institutions.

CORPORATE TAXATION PROVISIONS:

- Drafting errors relating to inter-corporate dividend deductions for companies under concessional tax regimes have been corrected.
- The provisions for Minimum Alternate Tax (MAT) and Alternate Minimum Tax (AMT) have been clearly separated:

- MAT will continue to apply to companies.
- AMT will apply only to non-corporates who claim tax deductions.
- LLPs earning only capital gains and not availing deductions will not be liable to AMT.
- Taxpayers who have no tax liability can now obtain a nil-TDS certificate, reducing procedural hassles.
- Ambiguities related to transfer pricing and carry-forward and set-off of losses have been removed for greater clarity.
- For house property income, the Act specifies that the 30% standard deduction will be calculated after deducting municipal taxes.

RELIEF FOR NON-PROFIT ORGANISATIONS (NPOS):

- Earlier, exemption was allowed for only 5% of anonymous donations. Under the new law, exemption is allowed for 5% of total donations, providing greater flexibility to NPOs.
- The benefit has also been extended to mixed-object registered organisations, broadening the scope of relief for charitable and non-profit bodies.

RETIREMENT AND FAMILY BENEFITS:

- The Act provides explicit relief by allowing deductions on commuted pensions and gratuity payments received by family members.
- This ensures better financial support for dependents in cases of retirement or death of the primary earner.

INTRODUCTION OF THE TAX YEAR:

- The concept of a "Tax Year" has been formally introduced and defined as a 12-month period beginning April 1 each year. This codifies an already existing practice, reducing ambiguity in interpretation.

DIGITAL SEARCHES AND VIRTUAL DIGITAL SPACE:

- The Act retains the **definition of "Virtual Digital Space", bringing digital transactions and platforms firmly within the tax net.**
- Tax authorities are empowered to access information during surveys and searches from: Email servers, social media accounts, **Online banking, trading, and investment platforms, Cloud and remote servers, Other digital applications.**

- To safeguard taxpayer privacy, the government has announced that Standard Operating Procedures (SOPs) will be issued for handling personal digital data during such searches.

Aspect	Previous Law (1961)	New Income Tax Bill 2025
Number of Sections	800+ complex and overlapping sections	536 simplified, consolidated sections
Tax Regime	Multiple regimes (Old & New)	Single unified tax regime applicable to all
Tax-Free Income Limit	₹5 lakh (old regime), ₹7 lakh (new regime)	₹12 lakh + ₹75,000 standard deduction for salaried individuals
Rental Income Deduction	Variable deductions requiring proofs	Flat 30% standard deduction after municipal taxes; no proofs needed
Capital Gains	Different holding periods based on asset	Uniform 12-month holding period for long-term classification
Tax Year Concept	Separate Financial Year & Assessment Year	Unified "Tax Year" concept - income reported in same year earned
Assessments	Physical and digital mix, frequent in-person visits	Fully faceless, AI-assisted and online assessments
Cryptocurrency & Digital Assets	Unclear & inconsistent taxation	Defined as taxable capital assets; 15% flat tax on gains
Penalty Structure	Varied and sometimes complex	Simplified fixed fees and clear interest rates

37 CENSUS OF PVTGS

Ministry of Tribal Affairs (MoTA) has written to the Registrar General and Census Commissioner, urging that particularly vulnerable tribal groups (PVTGs) be separately enumerated in the upcoming census.

WHO ARE PARTICULARLY VULNERABLE TRIBAL GROUPS (PVTGS)?

- **Definition**: PVTGs are the most marginalized and vulnerable section among Scheduled Tribes (STs) in India, identified by the Government for special attention and development interventions.
- **Identification**: In 1973, the Dhebar Commission (1960–61) recommended a special category for tribes with low development indicators. In 1975, the Government of India officially created the category **Primitive Tribal Groups (PTGs)**, renamed **PVTGs** in 2006.
- **Criteria for identification**:
    1. Pre-agricultural level of technology.
    2. Low level of literacy.
    3. Declining or stagnant population.
    4. Subsistence level of economy.
- **Current Status**:
    - There are **75 PVTGs** spread across **18 States and 1 UT (Andaman & Nicobar Islands)**.
    - They make up about **2.6 million people** (~10% of total ST population).
    - Examples: Jarawas, Sentinalese (A&N Islands), Sahariyas (Madhya Pradesh), Cholanaickans (Kerala), Birhor (Jharkhand), Baiga (Chhattisgarh, MP).
- **Policy Support**:
    - Covered under **Article 342 (Scheduled Tribes)**, **Fifth Schedule**, and **Sixth Schedule**.
    - **Development of PVTGs Scheme (Ministry of Tribal Affairs)** provides housing, livelihood, health, and education support.

CHALLENGES FACED BY PVTGS

- **Socio-economic Vulnerability**
    - Extreme poverty and **subsistence economy (hunting, food gathering, shifting cultivation)**.

- Dependence on forest produce but limited access to markets.
- Very low literacy (below 30% in most PVTGs).

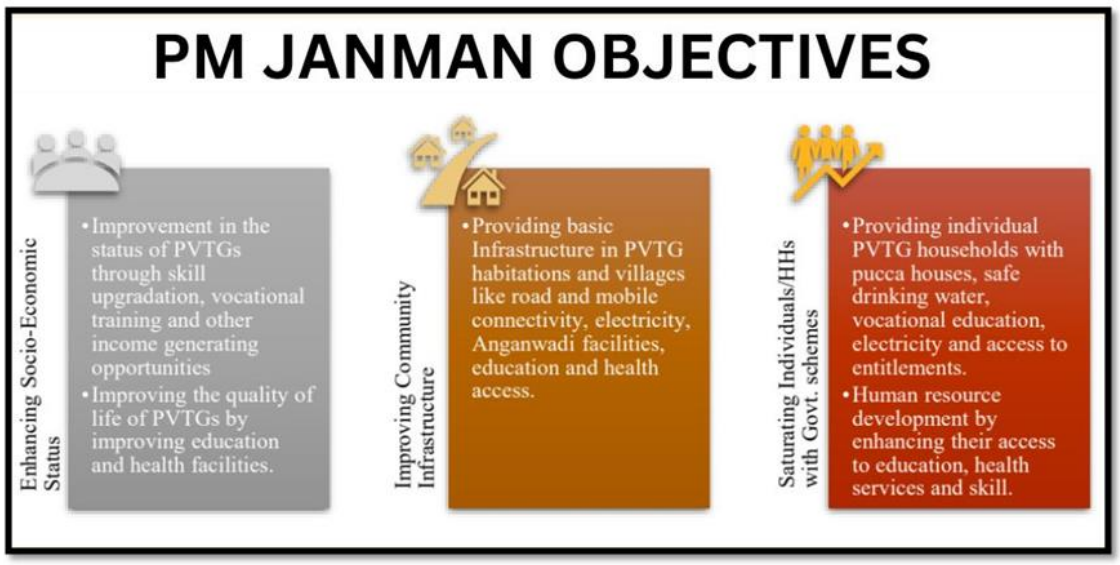
- **Health and Nutrition Issues**
  - High prevalence of **malnutrition, anaemia, sickle cell anaemia, malaria, and TB**.
  - High **infant and maternal mortality rates**.
  - Lack of access to healthcare, traditional medicine dominates.
  - COVID-19 further exposed their isolation from public health systems.
- **Loss of Habitat and Displacement**
  - Displacement due to **mining, dam projects, industries, and wildlife sanctuaries**.
  - Example: Baiga tribals displaced due to tiger reserves.
  - Alienation from forests despite **Forest Rights Act (2006)**.
- **Cultural Erosion**
  - Unique traditions, dialects, and customs threatened by mainstreaming.
  - Loss of traditional livelihoods (hunting banned in many areas).
  - In A&N Islands, outside contact threatens survival (Sentinalese, Jarawas).
- **Demographic Challenges**
  - Some groups have **very small populations (<1000)**, leading to survival threats.
  - Declining fertility and high mortality further reduce numbers.
- **Governance and Policy Gaps**
  - Lack of proper implementation of schemes.
  - Poor infrastructure in remote areas limits delivery of education and healthcare.
  - Weak institutional mechanisms for their participation in decision-making.
- **Exploitation and Rights Issues**
  - Land alienation, bonded labour, and exploitation by moneylenders and traders.
  - In many cases, rights under **PESA Act (1996)** and **FRA (2006)** remain unimplemented.

WHY THE CENSUS MATTERS?

- **Better Resource Allocation:** Helps the government to channel resources effectively for infrastructure, healthcare, and education.
- **Targeted Welfare Schemes:** It will enable the design and delivery of focused development programmes.
- **Improved Planning:** Provides data for long-term development strategies and policy decisions.
- **Support for Research and Governance:** Offers reliable information for the judiciary, policymakers, and scholars to study trends in migration, urbanisation, employment, and fertility.

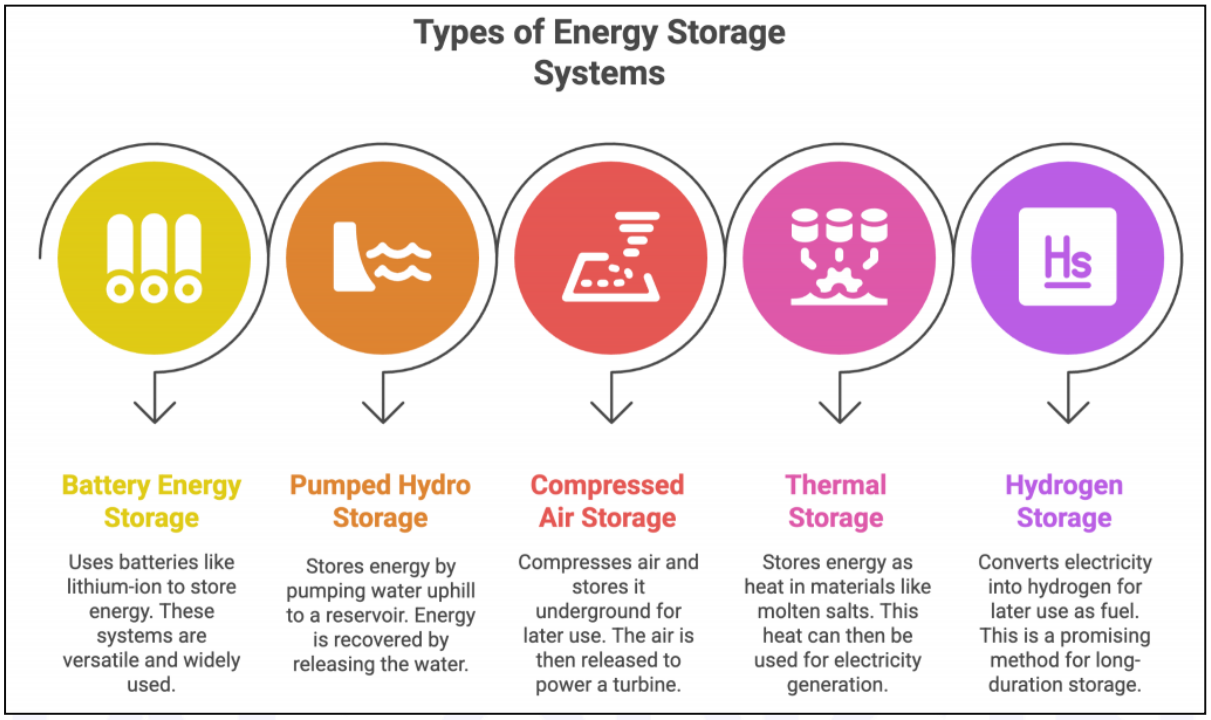
GOVERNMENT INITIATIVES

- **PM-JANMAN Scheme:** It was launched on the occasion of **Janjatiya Gaurav Divas** in 2023 in Jharkhand, targeting 75 PVTGs communities.
- **Particularly Vulnerable Tribal Groups (PVTGs) Development Program:** The PVTG program targets the most vulnerable tribal communities, focusing on improving access to healthcare, education, clean water, and electricity.
    - Around 7 lakh PVTG families across 22,000 habitations in 200 districts benefit from comprehensive development plans under this initiative.



38 INDIA REQUIRES $50 BILLION NEW INVESTMENT IN STORAGE BY 2032: REPORT

India has crossed 50% installed power capacity from non-fossil sources five years early. The next challenge is rapidly scaling up **Energy Storage Systems (ESS)** to meet rising demand, cut costs, and keep power affordable.



WHAT ARE ENERGY STORAGE SYSTEMS (ESS)?

- Energy Storage Systems store energy when supply exceeds demand and release it when demand peaks. They provide flexibility, reliability, and stability to the power grid, especially when renewable sources like solar and wind are intermittent.
- **States leading storage deployment:** Gujarat, Rajasthan, Maharashtra, Uttar Pradesh, Andhra Pradesh, and Telangana.

WHY IS ESS CRUCIAL FOR INDIA?

- **Round-the-clock Renewable Energy (RE):** Solar and wind are variable; storage balances supply-demand.
- **Peak Load Management:** Batteries can release power during evening peaks when solar declines.
- **Grid Stability:** Reduces frequency fluctuations and blackout risks.

- **Economic Gains**: According to a 2025 study by the India Energy & Climate Centre (UC Berkeley) and the Power Foundation of India, large-scale ESS could save consumers $7 billion (₹60,000 crore) annually by 2032.
- **Avoiding Stranded Assets:** With storage, coal plants can be used sparingly, reducing the risk of under-utilised capacity.
- **Climate Commitments:** ESS is key to achieving India's 500 GW non-fossil capacity by 2030 and Net Zero by 2070.

CHALLENGES IN ESS DEPLOYMENT

- **High Upfront Costs:** Despite falling prices, large-scale projects need massive investment.
- **Policy Gaps:** Lack of clear storage obligations for discoms.
- **Revenue Models**: No clear rules for "revenue stacking" (multiple uses of batteries).
    - Revenue stacking means making money from one battery system in many different ways at the same time.
- **Domestic Manufacturing:** Dependence on imported lithium and other critical minerals.
- **Stranded Coal Assets:** 50–70 GW of thermal capacity may run below 30% PLF by 2032.

POLICY SUPPORT & GOVERNMENT INITIATIVES

- Production-Linked Incentive (PLI) Scheme for Advanced Chemistry Cells (ACC).
- **Viability Gap Funding (VGF):** To support early storage projects.
- **National Green Hydrogen Mission (NGHM):** Hydrogen as long-duration storage.
- **Battery Recycling Rules:** To ensure circular economy and reduce import dependence.
- **Critical Minerals Policy:** Securing lithium, cobalt, nickel supply chains.
- **Draft National Electricity Plan (NEP):** Identifies storage as key for renewable integration.

39 COMMITTEES FOR SARDAR PATEL, BIRSA MUNDA, AND ATAL BIHARI VAJPAYEE (1924–2024)

The Government of India has set up three separate high-level committees to oversee celebrations of the **150th Birth Anniversaries of Sardar Vallabhbhai Patel (1875–2025), Birsa Munda (1875–2025) and Birth Centenary of Atal Bihari Vajpayee (1924–2024).**

COMMITTEE FOR 150TH BIRTH ANNIVERSARY OF SARDAR VALLABHBHAI PATEL

BACKGROUND

- **Sardar Vallabhbhai Patel (1875–1950)**, known as the **"Iron Man of India"**, was India's first Deputy Prime Minister and Home Minister.
- He is credited with the **integration of 565 princely states** into the Indian Union after independence.
- His 150th birth anniversary fell in **2025** (since he was born on **31st October 1875**).

GOVERNMENT INITIATIVE

- The Government of India constituted a **National Committee** to commemorate the **150th Birth Anniversary of Sardar Patel**.
- **Prime Minister of India** is the Chairperson of the committee.
- Members include **Union Ministers, Chief Ministers of States, eminent scholars, historians, social workers, and representatives from cultural institutions**.

OBJECTIVES OF THE COMMITTEE

- **Nationwide Celebrations** – To highlight Patel's role in national integration and unity.
- **Public Awareness** – Organizing seminars, exhibitions, publications, and digital outreach.
- **International Dimension** – Commemorative events in Indian embassies abroad.
- **Cultural Programs** – Folk art, cultural performances, and awareness campaigns.
- **Educational Activities** – Essay competitions, lectures, and school/university activities.

- **Integration with Ongoing Projects** – The **Statue of Unity** (world's tallest statue at 182m, Gujarat) as a focal point for celebrations.

SIGNIFICANCE FOR UPSC

- Reinforces **themes of national integration, federalism, and leadership during independence**.
- Emphasizes Patel's contribution as the **"Unifier of Modern India"**.
- Connects with topics under **Modern Indian History, Polity (State Integration), and National Symbols**.

COMMITTEE FOR 150TH BIRTH ANNIVERSARY OF BIRSA MUNDA

BACKGROUND

- **Birsa Munda (1875–1900)**, born on **15 November 1875** in present-day Jharkhand, was a tribal freedom fighter, social reformer, and folk hero.
- He led the **Munda Rebellion (Ulgulan Movement)** against the British and local exploiters, demanding **"Munda Raj"** and protection of tribal land rights.
- Died at just 25 in 1900, but became a symbol of **tribal assertion, anti-colonial struggle, and cultural pride**.
- His 150th birth anniversary falls in **2025**.

GOVERNMENT INITIATIVE

- The Union Government constituted a **National Committee** to commemorate the **150th Birth Anniversary of Birsa Munda**.
- **Prime Minister of India** is the Chairperson.
- Members include **Union Ministers, Governors and CMs of tribal-dominated states, representatives of tribal communities, historians, academicians, and social activists**.

OBJECTIVES OF THE COMMITTEE

- **Highlighting Tribal Freedom Fighters** – Integration with the **Azadi Ka Amrit Mahotsav** narrative.
- **Awareness Campaigns** – Cultural programs, folk festivals, and exhibitions across tribal belts.
- **Research and Documentation** – Promoting academic works on tribal history, oral traditions, and Birsa Munda's leadership.

- **Educational Initiatives** – Incorporating stories of Birsa and other tribal heroes in textbooks and public awareness.
- **Infrastructure and Memorials** – Strengthening **Birsa Munda Memorial Udyan & Museum (Ranchi)** as a knowledge and cultural hub.
- **Inclusive Development** – Using the anniversary as a platform to highlight tribal welfare schemes (Eklavya Model Residential Schools, Van Dhan Yojana, PM Janjatiya Vikas Mission).

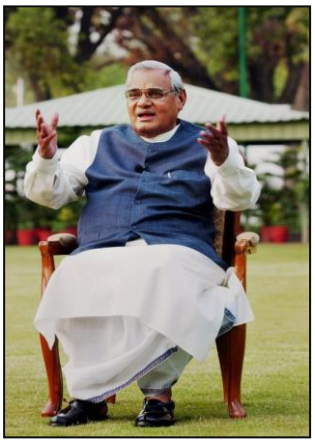
SIGNIFICANCE FOR UPSC

- Reinforces topics under **Modern Indian History (tribal revolts), Society (tribal issues), Governance (tribal policies), and Culture (folk traditions)**.
- Birsa Munda is also associated with **Jharkhand Foundation Day (15 November)** → Important for **State-specific UPSC prelims questions**.
- Connects with issues of **tribal rights, PESA, Forest Rights Act, and tribal welfare policies**.

COMPARISON TABLE

Aspect	Sardar Patel	Birsa Munda
Born	31 Oct 1875 (Gujarat)	15 Nov 1875 (Jharkhand)
Known as	Iron Man of India, Unifier of India	Bhagwan Birsa, Tribal Messiah
Role	Integration of princely states, building Indian Union	Led Ulgulan (Great Tumult) against British & exploiters
Committee Head	Prime Minister	Prime Minister
Focus of Celebration	National unity, integration, governance legacy	Tribal pride, freedom struggle, cultural identity
Institutions Linked	Statue of Unity, Sardar Patel memorials	Birsa Munda Museum, Tribal Freedom Fighter memorials

ATAL BIHARI VAJPAYEE (1924–2024)



EARLY LIFE AND EDUCATION

- **Born: 25 December 1924**, Gwalior, Madhya Pradesh.
- **Family:** Middle-class Brahmin family; father Krishna Bihari Vajpayee.
- **Education:** Attended **Victoria College, Gwalior**, and **DAV College, Kanpur**, studied Hindi literature.
- **Early Influences:** Nationalist environment, Mahatma Gandhi's ideology, and RSS exposure.

POLITICAL CAREER

- **Entry into Politics**: Joined **Rashtriya Swayamsevak Sangh (RSS)** as a pracharak; later joined Bharatiya Jana Sangh (BJS).
- **Member of Parliament (MP)**: Elected to **Lok Sabha for ten terms**, representing constituencies like Balrampur (Uttar Pradesh).
- **Janta Party & BJP**: Played a key role in **merging Jana Sangh into Janata Party (1977–80)** and later founding **Bharatiya Janata Party (BJP) in 1980**.
- **Prime Minister of India**: Served **three terms**:
  - **16 May – 1 June 1996** (13 days)
  - **19 March 1998 – 22 October 1999** (full term)
  - **13 October 1999 – 22 May 2004** (full term)

MAJOR ACHIEVEMENTS AS PRIME MINISTER

- **Economic Reforms**
  - Privatization and liberalization continued from 1991 reforms.
  - Promoted **infrastructure, telecommunications, and roads (Golden Quadrilateral Project)**.
- **Nuclear Policy & Security**
  - Conducted **Pokhran-II nuclear tests in 1998**, establishing India as a nuclear power.
  - Advocated **"India First" security doctrine** and modernization of armed forces.
- **Foreign Policy**
  - Improved relations with **USA, Israel, and ASEAN countries**.

- Attempted **peace talks with Pakistan**, including **Lahore Bus diplomacy (1999)**.

- **Social and Political Initiatives**
  - Initiated **Sarva Shiksha Abhiyan** for universal primary education.
  - Strengthened **democratic institutions** and promoted **consensus politics**.
- **Cultural & Symbolic Contributions**
  - Orator, poet, and writer; his speeches emphasized **unity, nationalism, and moderation**.
  - Received **Bharat Ratna in 2015** for public service.

PERSONAL TRAITS

- Known for **oratory skills, wit, poetry**, and conciliatory politics.
- Advocated **moderate, inclusive Hindutva**, balancing ideology with governance pragmatism.
- Remembered as **"People's Prime Minister"** due to charisma and simplicity.

DEATH AND LEGACY

- **Died: 16 August 2024** (aged 99).
- **Legacy:**
  - Symbol of **national integration, pragmatism, and consensus politics**.
  - Remembered for **economic reforms, nuclear deterrence, and infrastructural modernization**.
  - Inspired **BJP as a national party** and modern Indian political discourse.

40 DNIPROPETROVSK REGION

Russian forces have captured villages in the **region of Dnipropetrovsk.**

DNIPROPETROVSK REGION

- It is situated in southeastern Ukraine and is a key industrial and logistical hub.
- It borders conflict-prone regions like Zaporizhzhia and Donetsk.
- It is not among the five Ukrainian territories Russia officially claims to have annexed (Donetsk, Luhansk, Kherson, Zaporizhzhia, Crimea).

IMPORTANCE

- It is an important mining and **industrial hub for Ukraine** and deeper Russian advances into the region could have a serious knock-on effect for Kyiv's struggling military and economy.

41 SUDARSHAN CHAKRA MISSION

Prime Minister Narendra Modi announced the launch of "**Mission Sudarshan Chakra"**.

MISSION SUDARSHAN CHAKRA

- **It** is India's ambitious initiative to develop an indigenous, multi-layered air and missile defence system aimed at safeguarding both strategic and civilian infrastructure across the country.
- Announced by Prime Minister Narendra Modi on August 15, 2025, during the 79th Independence Day celebrations, the mission draws inspiration from Lord Krishna's Sudarshan Chakra, symbolizing protection and deterrence .

KEY FEATURES OF MISSION SUDARSHAN CHAKRA

- **Multi-Layered Defence Architecture**: The system integrates various defence technologies, including:
    - **Akash-NG**: Next-generation surface-to-air missile.
    - **QRSAM**: Quick Reaction Surface-to-Air Missile.
    - **MR-SAM**: Medium-Range Surface-to-Air Missile.
    - **XR-SAM**: Extended Range Surface-to-Air Missile.
    - **BMD Interceptors**: Ballistic Missile Defence interceptors for endo- and exo-atmospheric interception.

- **Directed Energy Weapons (DEWs)**: Including lasers and microwaves for neutralizing threats.
- **AWACS**: Airborne Early Warning and Control Systems for real-time surveillance.
- **Space-Based Sensors**: For early detection of hypersonic threats .

- **Command and Control Integration**: The system will be unified through the **Integrated Air Command and Control System (IACCS)**, enabling seamless coordination across various defence platforms.
- **Civilian Protection**: Unlike traditional defence systems, Sudarshan Chakra is designed to protect critical civilian infrastructure, including hospitals, religious sites, transportation networks, and energy hubs.
- **Offensive Capabilities**: The mission not only focuses on defence but also includes offensive strike capabilities to deter potential adversaries.

TIMELINE AND DEVELOPMENT PHASES

- **2025–2030**: Pilot implementations in major cities like Delhi, Mumbai, and Bengaluru, as well as strategic military bases.
- **2030–2035**: Expansion to cover critical infrastructure such as dams, refineries, and transportation networks.
- **2035**: Full nationwide deployment, establishing a comprehensive security shield.

STRATEGIC SIGNIFICANCE

- **National Security**: Provides a robust defence against a spectrum of aerial threats, including drones, cruise missiles, and hypersonic weapons.
- **Geopolitical Context**: Serves as a strategic countermeasure to regional threats, particularly from neighboring countries with advanced missile capabilities.
- **Aatmanirbhar Bharat**: Aligns with India's vision of self-reliance in defence, reducing dependency on foreign military technology and fostering indigenous innovation.

CHALLENGES AND CONSIDERATIONS

- **Integration Complexity**: Coordinating diverse technologies and platforms into a cohesive system poses significant technical challenges.
- **Cybersecurity**: Ensuring the protection of the IACCS and other critical components from cyber threats is paramount.
- **Resource Allocation**: The extensive infrastructure and research required demand substantial investment and resource management.

42 EARLY DETECTION OF PARKINSON'S DISEASE WITH TINY GOLD PARTICLES

Researchers at the Institute of Nano Science and Technology (INST), Mohali, have developed a nanotechnology-based biosensor that could **detect Parkinson's Disease (PD)** even before any symptoms appear.

WHAT IS PARKINSON'S DISEASE?

- Parkinson's Disease (PD) is a **progressive neurodegenerative disorder** affecting movement and motor control.
- It occurs due to the **loss of dopamine-producing neurons** in the brain.
- The disease is linked to the abnormal **misfolding and aggregation of a protein called α-synuclein**, which forms toxic clumps in the brain, leading to **neuronal damage.**
- **Symptoms include** tremors, rigidity, slowness of movement, and postural instability.

HOW DOES IT WORK?

- Scientists developed **gold nanoclusters (AuNCs),** which are ultrasmall glowing particles only a few nanometers wide.
    - These nanoclusters were coated with naturally occurring amino acids to give them selective binding ability.
- **Proline-coated clusters** attach to the normal (monomeric) α-synuclein protein, which is harmless.
- **Histidine-coated clusters** attach to the toxic aggregated (amyloid) form of α-synuclein, which causes Parkinson's disease.
- This selective interaction allows the **sensor to differentiate between healthy and harmful protein states,** enabling early detection of Parkinson's before symptoms appear.

43 OPERATION RAINBOW

The Directorate of Revenue Intelligence (DRI) has recently seized nearly 9 kilograms of narcotic substances in Delhi, under Operation Rainbow.

THE DIRECTORATE OF REVENUE INTELLIGENCE (DRI)

- The DRI was **founded in December 1957**, with the primary objective of gathering intelligence and combating smuggling activities at an all-India level.
    - While initially focused on addressing gold smuggling, its mandate has expanded significantly to counter a wide range of economic and narcotics-related crimes.
- **It operates** under the **Central Board of Indirect Taxes and Customs (CBIC)** within the **Ministry of Finance.**
- **Headquarters:** The DRI is headquartered in New Delhi and led by a Director General.
- **International liaison:** The agency maintains contact with foreign countries, and international bodies like INTERPOL to combat transnational smuggling.

Narcotic Drugs and Psychotropic Substances Act, 1985
It prohibits the production, sale, possession, transport, and consumption of narcotic drugs and psychotropic substances, except for medical or scientific purposes.

Scope:
1. Regulates operations from cultivation to distribution.
2. Provisions for forfeiture of property derived from drug trafficking.

Narcotics Control Bureau (NCB): The act led to the establishment of the NCB in **1986** to coordinate enforcement activities across central and state agencies.

44 AROGYAPACHA

Kuttimathan Kani, a member of Kani tribe in Kerala's Agasthya hills, who first revealed the medicinal plant Arogyapacha to researchers has passed away.

KANI TRIBE

- The **Kani tribe** is an indigenous **Scheduled Tribe** community residing in the **Western Ghats**, mainly in **Kerala (Thiruvananthapuram and Kollam districts)** and parts of **Tamil Nadu**.
- Known for their deep **knowledge of forest ecosystems and medicinal plants**.
- Traditionally **hunter-gatherers and shifting cultivators**, now mostly engaged in **agriculture, forest-related work, and eco-tourism**.

POPULATION & LANGUAGE

- Population: Approximately **35,000–40,000** (as per Census & tribal surveys).
- Language: **Kani language**, a Dravidian language with influences from **Malayalam and Tamil**.

SOCIAL STRUCTURE

- **Clan-based society**: Exogamous clans with **matrilineal elements** in inheritance in some regions.
- Leadership: Elders and traditional councils manage **community disputes and rituals**.

TRADITIONAL KNOWLEDGE

- Famous for **ethnobotanical knowledge**: identification and use of **medicinal plants**.
- Best known globally for **Arogyapacha (Trichopus zeylanicus)**, used to combat fatigue and enhance vitality.
- Practices **sustainable forest use**, maintaining biodiversity through traditional harvesting methods.

ECONOMY

- Subsistence economy: **agriculture, forest produce, and minor trade**.
- Modern shifts: Employment in **eco-tourism, herbal medicine, and government welfare programs**.

CULTURE

- Rich **oral traditions, folklore, and rituals** linked to nature worship.
- Celebrates festivals connected to **harvest, forest cycles, and ancestral spirits**.
- Folk dances and songs often depict **forest life, hunting, and medicinal plants**.

GOVERNMENT SCHEMES & DEVELOPMENT

- **Scheduled Tribe status** → eligibility for **education, health, and economic welfare schemes**.
- **Tribal Sub-Plan & Van Dhan Yojana** promote **income through forest produce and traditional knowledge commercialization**.
- Some disputes over **benefit-sharing**, e.g., royalties from Arogyapacha commercialization.

AROGYAPACHA (TRICHOPUS ZEYLANICUS)

BOTANICAL PROFILE

- **Scientific Name**: *Trichopus zeylanicus*
- **Family**: Dioscoreaceae (Yam family)
- **Common Names**: Arogyapacha, Jeevani, Sattithanpatchilai (Tamil)
- **Habitat**: Shaded, moist forests of the Western Ghats (Kerala & Tamil Nadu)
- **Plant Type**: Small, perennial herb with ovate-lanceolate leaves and slender rhizomes

TRADITIONAL USE

- Used by the **Kani tribe** for centuries to combat fatigue and increase stamina during forest work.
- Leaves and fruits are consumed as an **energy booster and adaptogen**.
- Popularly called the **"miracle plant" or "Jeevani"** due to its restorative properties.

SCIENTIFIC RECOGNITION

- Introduced to scientists in **1987 by Kani elders** to the Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRI).

- Recognized for **anti-fatigue, antioxidant, and immune-boosting properties**.

MEDICINAL PROPERTIES

- **Active Compounds**: Flavonoids, glycosides, glycolipids
- **Health Benefits**:
  - Enhances **energy and reduces fatigue**
  - Acts as an **adaptogen** improving stress response
  - **Antioxidant and anti-inflammatory** properties
  - Supports **immune function and vitality**

COMMERCIALIZATION

- Led to development of **polyherbal product Jeevani** in collaboration with JNTBGRI and Arya Vaidya Pharmacy.
- **Benefit-sharing issues**: Kani tribe did not receive full promised royalties.

CONSERVATION & ETHICAL CONCERNS

- Rare and **endemic to Western Ghats**, requiring **biodiversity conservation**.
- Highlights need for **ethical use of indigenous knowledge** and **fair benefit-sharing with tribal communities**.

45 'FOREIGNERS TOO HAVE THE RIGHT TO LIBERTY UNDER ARTICLE 21': HIGH COURT

The Punjab and Haryana High Court granted bail to a Bangladeshi woman accused of forgery and illegal stay, ruling that **Article 21's right to personal liberty applies to foreigners**.

RECENT RULING

- The Punjab and Haryana High Court emphasized that foreigners also have a right to personal liberty, and prolonged detention without the ability to furnish sureties would cause **"irreversible injustice."**
- The word **'person'** in Article 21 is wide enough to cover not only citizens but also foreigners.
    - The **State has an obligation to protect the liberty** of such foreigners and ensure that their liberty is not deprived except in accordance with the procedure established by law".
    - It also acknowledged the difficulty for undocumented migrants to furnish sureties and said bail conditions cannot be so harsh that they effectively deny freedom.

ARTICLE 21 OF THE INDIAN CONSTITUTION

- Article 21 of the Constitution of India guarantees the fundamental right to protection of life and personal liberty except by a procedure established by law.
- It ensures certain safeguards against arbitrary deprivation of life and liberty.

- It protects the right to life, which includes living with dignity, the right to livelihood, and a healthy environment, as well as personal liberty, such as the freedom to move, reside, and work lawfully.

INTERPRETATION OF ARTICLE 21 BY SUPREME COURT JUDGMENTS

- **Early Interpretation:** In **A.K. Gopalan v. The State of Madras**, the Supreme Court held that personal liberty means the **'liberty of the body,'** which is freedom from arrest and detention, from false detention.
- **Broadening of Scope:** In the case of **R.C. Cooper v. Union of India (1970),** the court held that the word personal liberty would not only include **Article 21 but also include the 6 Fundamental Freedoms given under Article 19 (1).**
    - In **Maneka Gandhi v. Union of India (1978),** the Supreme Court held that the right to life and personal liberty under Article 21 is not limited to mere animal existence but includes the **right to live with dignity.**
- **Right to Livelihood & Shelter: In Olga Tellis v. Bombay Municipal Corporation (1985),** the court recognized the right to livelihood as an integral part of the right to life under Article 21.
    - It held that the eviction of pavement dwellers without providing alternative arrangements would violate their right to life and personal liberty.
- **Right to Dignity & Safe Environment: In Vishaka v. State of Rajasthan (1997**), the court held that the right to a safe and secure working environment is a fundamental right flowing from Article 21.
- **Right to Privacy: In K.S. Puttaswamy v. Union of India (2017)** judgment, the Supreme Court recognized the right to privacy as a fundamental right protected under Article 21.
- **Right to Die with Dignity: In Common Cause v. Union of India (2018)**, the court legalized passive euthanasia and recognized the right to die with dignity as a fundamental right under Article 21.

46 PRITHU RAE OF THE KHEN DYNASTY

The Assam Cabinet decided that a new flyover being constructed in the heart of Guwahati would be named after **Prithu, a 13th-century Kamrup ruler.**

ABOUT

- **Bakhtiyar Khilji/Khalji (c. 1200 CE) was a** Turko-Afghan military general under **Muhammad of Ghor.**
- **In 1206 CE**, he launched an expedition into Kamrup (present-day Assam), but suffered defeat.
- His forces were reportedly annihilated, but the **identity of the local ruler remains disputed.**
- Later historians (esp. **Kanak Lal Barua, 1933**) linked this victory to a ruler named **Prithu of Kamarupa.**

BACKGROUND OF THE KHEN DYNASTY

- The **Khen dynasty** ruled over the **Kamata kingdom** in present-day **western Assam and northern Bengal** during the **15th century**.
- The dynasty is known for consolidating power in **Kamrup-Kamata region** after the fall of the **Kamarupa dynasty**.
- Capital: **Kamatapur** (near present-day Cooch Behar, West Bengal).

PRITHU RAE (PRITHVIRAJ KHEN)

- One of the **notable rulers of the Khen dynasty**, succeeded or followed rulers like **Nilambar and Chakradhwaj** (depending on historical records).
- Known for consolidating the **Khen dynasty's authority in western Assam and northern Bengal**.
- Strengthened administration and maintained control over **frontier regions against neighboring kingdoms and tribal groups**.

ADMINISTRATIVE & CULTURAL CONTRIBUTIONS

- **Administration:**
    - Maintained law and order in the **Kamata kingdom**.

- Delegated authority to **local chieftains and feudal lords** to ensure stability.

- **Culture**:
  - Patronized **local art, architecture, and temples**, contributing to cultural consolidation.
  - Supported **Brahmin settlements and religious institutions**, helping legitimize his rule.

CHALLENGES AND CONFLICTS

- **External threats**: Faced repeated attacks from **neighboring Ahom and Bengal sultans**.
- **Internal stability**: Needed to maintain loyalty of frontier chiefs and tribal groups.

HISTORICAL SIGNIFICANCE

- **Kamata consolidation**: Played a role in **uniting western Assam and northern Bengal under one authority**.
- **Precursor to Koch Dynasty**: The Khen dynasty, under rulers like Prithu Rae, laid foundations that were later consolidated by the **Koch dynasty** (Biswa Singha).
- **Regional politics**: Represents the **transitional phase in medieval Assam** between Kamarupa and Koch hegemony.

47 NUAKHAI FESTIVAL

Prime Minister Narendra Modi extended heartfelt wishes to the people of India on the occasion of Nuakhai.

- **Nuakhai** is a **harvest festival** celebrated primarily in **Western Odisha, Chhattisgarh, Jharkhand, and parts of Chhattisgarh-Odisha border areas**.
- Marks the **first consumption of the new rice crop** (Nuakhai literally means "new food").
- Observed mainly by **agricultural communities**, including **Odia, Chhattisgarhi, and tribal populations**.

TIMING

- Celebrated in **Shravana month (August–September)** according to the **Hindu lunar calendar**, generally **on the day after Ganesh Chaturthi**.

CULTURAL SIGNIFICANCE

- **Agricultural significance**: Expresses **gratitude to the deity for a good harvest**.
- **Social significance**: Strengthens **community bonds**; families and relatives gather to celebrate.
- **Religious significance**: Devotees offer **newly harvested rice to the presiding deity** before consuming it themselves.

RITUALS AND CUSTOMS

- **Preparation of Pitha and Pakhal** (traditional rice-based dishes).
- **Offering to deities**: New rice, fruits, and vegetables are offered to **local presiding deities or village gods**.
- **Community gatherings**: Includes **dance, music (Dalkhai, Rasarkeli), and folk performances**.
- **Worship of ancestors**: Some communities also perform rituals honoring **ancestral spirits**.

SOCIAL IMPORTANCE

- **Unity and bonding**: Promotes harmony among **family, clan, and village members**.
- **Cultural preservation**: Folk songs, dances, and customs are preserved through the festival.
- **Youth participation**: Encourages young people to engage with **traditional agricultural practices and rituals**.

GOVERNMENT RECOGNITION

- Odisha Government declared **Nuakhai as a state festival** to **preserve cultural heritage**.
- Celebrated officially with **cultural programs, competitions, and public events**.

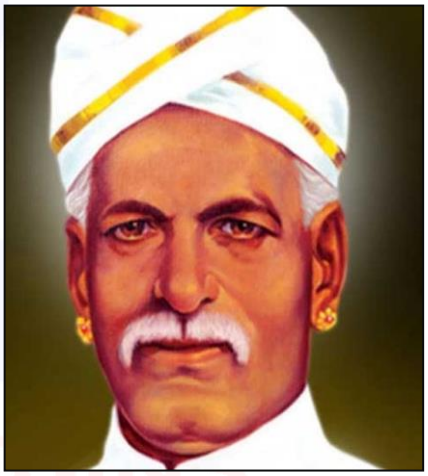
48 MAHATMA AYYANKAL

The Prime Minister of India paid **tribute to Mahatma Ayyankali,** commemorating his birth anniversary and honoring his enduring legacy as a champion of social justice and empowerment.

EARLY LIFE AND BACKGROUND

- **Born**: August 28, 1863, in **Venganoor**, Thiruvananthapuram, Kerala (then part of the princely state of Travancore).
- **Community**: Belonged to the **Pulayar** caste, one of the most oppressed and excluded groups in Kerala.
- **Family**: Parents were Ayyan and Mala; the family led a marginally better life compared to other Pulayars, owning 5 acres of land given by a landlord.

SOCIAL REFORMATION AND ACTIVISM



- **Caste Discrimination**: Faced severe caste-based discrimination; denied access to temples, schools, and public spaces.
- **Villuvandi Yatra (1893)**: Led a historic ox-cart procession on caste-restricted roads, challenging untouchability and asserting Dalit rights.
- **Education Advocacy**: Emphasized the importance of education for Dalits, leading to the establishment of schools for marginalized communities.
- **Labour Rights**: Fought for the rights of agricultural labourers, advocating for better wages and working conditions.

POLITICAL AND INSTITUTIONAL CONTRIBUTIONS

- **Sree Moolam Popular Assembly**: Appointed as a member, becoming one of the first Dalits to hold such a position.
- **Community Courts**: Played a role in establishing community courts to address local disputes, promoting justice among marginalized communities.

LEGACY AND RECOGNITION

- **Statues and Memorials**: Statues erected in his honour, including a prominent one in Thiruvananthapuram.
- **Public Holiday**: His birthday, August 28, is observed as a public holiday in Kerala.
- **Educational Initiatives**: The University Grants Commission instituted a fellowship scheme named after him for marginalized students pursuing higher education.
- The **first school admission** for a Dalit girl, Panchami, which sparked widespread resistance but ultimately catalyzed reform.
    - The establishment of **Ayyankali Panchami Memorial School**, commemorating his fight for inclusive education.
- Ayyankali's contributions have been honored through:
    - A commemorative postal stamp (2002);
    - Statues and memorials across Kerala;
    - Inclusion in school curricula and public discourse.

49 FREE MARKET CAPITALISM & STATE CAPITALISM MODELS

Recently, the US decided to acquire about a 10% equity stake in Intel, using funds originally allocated under the **CHIPS and Science Act of 2022.**

FREE MARKET CAPITALISM & STATE CAPITALISM MODELS

- **Free Market Capitalism** is characterized by **private ownership of resources**, voluntary exchange, and limited state regulation.
    - The **role of government** is largely confined to enforcing contracts, protecting property rights, and ensuring market competition.
    - It aligns with **Adam Smith's 'invisible hand' theory,** where self-interest inadvertently promotes societal welfare.
    - **Examples**: The United States and historically the UK, where deregulation and privatization have been central policies.
- **State Capitalism**: It is defined as a system where the state **owns or controls significant parts of the economy** but still operates within global capitalist markets.
    - In this model, the state acts as both regulator and participant, often investing in industries deemed vital for national security or long-term growth.

- State-owned enterprises (SOEs), sovereign wealth funds, and government-led industrial policies play crucial roles.
- **Examples**: China, Singapore, and certain Middle Eastern economies where governments dominate finance, energy, or infrastructure.

FRANCE'S DIRIGISME: STATE-LED INDUSTRIAL STRATEGY

Dirigisme refers to **France's post-war economic model** characterized by a strong state direction of the economy. It has key features like:

- State ownership of key industries such as energy, transport, and telecommunications.
- Strategic investment in sectors deemed vital for national competitiveness, including aerospace, nuclear energy, and computing.

However, by the 1980s and 1990s, dirigisme faced criticism for fostering inefficiency, stifling innovation, and creating bloated bureaucracies.

BRITAIN'S 'NATIONAL CHAMPION' STRATEGY

It is Britain's version of state capitalism by promoting 'national champions'—large firms supported by the government to compete globally. It included:

- Public subsidies and protection for companies like British Leyland (automobiles), and Rolls-Royce (aerospace).
- Political backing for mergers and acquisitions aimed at creating scale and global reach.
- State bailouts during periods of financial distress to preserve strategic capabilities.

The intent was to **close the 'technology gap' with the US,** but most of the firms struggled with **inefficiency and failed to innovate**, **leading to privatization** waves in the **Thatcher era.**

STRENGTHS AND WEAKNESSES

- **Strengths of State Capitalism:** Ability to shield domestic industries during crises (IMF, 2020).
  - Strategic investment in critical sectors (e.g., renewable energy, defense, health, infrastructure).
  - Reduces exposure to speculative bubbles.

- **Weaknesses of State Capitalism:** Risks of corruption, inefficiency, and lack of innovation.
    - Political interference may distort long-term economic goals.
- **Strengths of Free Market Capitalism:** Encourages innovation and competition.
    - Attracts foreign investment through deregulation and open markets.
    - Efficient in resource allocation when markets function properly.
- **Weaknesses of Free Market Capitalism:** Prone to inequality and social exclusion.
    - Vulnerable to financial crises and boom-bust cycles.
    - Weak regulation can lead to monopolies.

CONTEMPORARY GLOBAL RELEVANCE

- **China vs. US rivalry** embodies the clash between state-led and free-market approaches.
- **India follows a hybrid approach:** partial privatization, and strong state control in banking and infrastructure.
- Many traditionally **free-market economies adopted state-capitalist measures** (subsidies, bailouts, industrial policies), blurring the boundary between the two models, in the wake of COVID-19.

50 USA'S 50% TARIFFS ON INDIAN EXPORTS AND ITS IMPLICATIONS

The United States has imposed 50% tariffs on a wide range of Indian merchandise exports starting August 27, 2025.

KEY SECTORS AFFECTED

The tariffs impact several labor-intensive and export-critical sectors:

- **Textiles & Apparel**: India's textile sector, which constitutes approximately 28–33% of its total textile and apparel exports, faces the highest tariff among key exporters, significantly affecting its competitiveness in the U.S. market.
- **Gems & Jewelry**: The industry, heavily reliant on U.S. exports, faces challenges in maintaining market share due to increased costs.
- **Seafood (Shrimp)**: Andhra Pradesh's shrimp farming industry is experiencing a downturn, with significant declines in orders from U.S. buyers.
- **Leather Goods & Furniture**: These sectors are also adversely affected, leading to potential job losses and reduced export volumes.

GOODS SUBJECT TO 50% U.S. TARIFF

Product Group	Exports to US in 2024-25
Textiles and apparel	$10.9 bn
Diamonds, gold and jewellery	$10 bn
Machinery and mechanical appliances	$6.7 bn
Agriculture, meat and processed food	$6.0 bn
Steel, aluminium, copper	$4.7 bn
Organic chemicals	$2.7 bn
Shrimps	$2.4 bn
Handicrafts	$1.6 bn
Carpets	$1.2 bn
Leather and footwear	$1.2 bn
Furniture, bedding, mattresses	$1.1 bn

Source: Ministry of Commerce & Industry, GTRI analysis

ECONOMIC IMPLICATIONS FOR INDIA

- **Export Decline**: India's exports to the U.S. could decrease from $87 billion in FY25 to $49.6 billion in FY26, a 43% drop.
- **GDP Impact**: Analysts warn that the tariffs could shave off approximately 0.5% from India's GDP growth.

- **Job Losses**: Millions of jobs, particularly in MSMEs that constitute 45% of India's total exports, are at risk.
- **Currency Volatility**: The Indian rupee has experienced fluctuations, briefly appreciating to 87.99 against the U.S. dollar, though concerns persist about potential depreciation if tariffs remain in place.

STRATEGIC AND DIPLOMATIC RESPONSES

- **Indian Government's Stance**: India has condemned the tariffs as "unfair, unjustified, and unreasonable," while exploring avenues to mitigate the impact through financial aid and diversification of export markets.
- **Diversification Efforts**: Exporters are seeking to expand into alternative markets to reduce dependence on the U.S., though challenges persist due to existing trade agreements and market saturation.
- **Global Trade Dynamics**: Countries like Vietnam, Bangladesh, and Cambodia, which face lower tariffs, are poised to capture India's lost market share in the U.S.

WTO AND GLOBAL TRADE CONSIDERATIONS

India is contemplating challenging the U.S. tariffs at the **World Trade Organization (WTO)**, arguing that the measures violate international trade norms.

However, the effectiveness of such a move remains uncertain, given the geopolitical context and the U.S.'s stance on trade sovereignty .

IMPACT ON INDIA'S ECONOMY

- **Trade Impact:** India's exports to the US could fall from **$87 billion in FY25** to $49.6 billion in FY26, a decline of **43%**.
    - The US accounts for **20 per cent of merchandise exports** from India and **2 per cent** of the GDP.
- **Domestic Concerns and Industry Demands:**
    - **Gems & Jewellery Council (GJEPC):** Demanding a duty drawback/ reimbursement scheme covering 25–50% of tariffs to protect competitiveness.
    - **Textile Industry** is seeking Immediate cash support, Loan moratoriums, Fast-tracking FTAs with the EU and other partners to diversify export markets.

- **Job Protection:** Industries fear widespread layoffs in labour-intensive export hubs like Surat (diamonds), Tiruppur (textiles), and Andhra Pradesh (shrimp farming).

- **Competitors Benefiting:** Countries such as Vietnam, Bangladesh, Cambodia, Pakistan, and China face lower tariff rates and are expected to capture India's lost market share.

INDIA INITIATIVES TO MITIGATE THE IMPACT

- **E-Commerce Export Hubs (ECEHs):** Proposed to provide integrated logistics, warehousing, and customs clearance facilities for online exporters.
- **Consultations with Industry Stakeholders:** Ongoing dialogue with MSMEs, global e-commerce giants, and retailers to balance regulatory reforms.
- **Exploring Inventory-Based E-Commerce:** Discussions underway to assess whether this model can reduce compliance burden for MSMEs.
- **Tariff Negotiations:** Efforts are being made to ensure India's sensitive export sectors remain competitive despite global protectionism.

WAY AHEAD

- **Short-Term Relief Measures:**
  - Targeted subsidies, duty drawback, or reimbursement schemes for heavily hit sectors.
  - Temporary financial support packages to prevent job losses.
- **Diversification of Export Markets:**
  - Accelerate FTA negotiations with EU, UK, and Gulf nations.
  - Explore African and Latin American markets for textiles, gems, and marine products.
- **Enhancing Competitiveness:** Promote technology adoption, product innovation, and value addition in textiles and gems.

51 UNGA LAUNCHES TWO NEW INITIATIVES TO STRENGTHEN GLOBAL COOPERATION ON AI

The United Nations Secretary-General has praised a decision by the **UN General Assembly** to create **two new institutional mechanisms** to enhance global cooperation on AI governance.

ABOUT

- These are the **United Nations Independent International Scientific Panel on AI and the Global Dialogue on AI Governance.**
- The panels aim to address AI's benefits and risks, fostering international collaboration and informed policymaking.

THE TWO MECHANISMS

- **Global Dialogue on AI Governance:**
  - **Purpose:** An inclusive UN platform for states and stakeholders.
  - **Function:** Forum to discuss critical AI issues humanity is facing today.
- **United Nations Independent International Scientific Panel on AI:**
  - **Purpose:** Designed as an inclusive multi-stakeholder forum within the United Nations where member states, civil society, academia, and the private sector can engage in discussions on key AI challenges and governance issues.
  - Annual sessions are scheduled for **July 2026 in Geneva and July 2027** in New York.

SIGNIFICANCE

- Called a "pathbreaking milestone" by the United Nations Secretary-General.
- Aims to balance AI benefits and risks, while fostering international collaboration.
- Ensures AI development aligns with humanity's collective good.

ARTIFICIAL INTELLIGENCE

- Artificial intelligence (AI) is a **wide-ranging branch of computer science** concerned with **building smart machines** capable of performing tasks that typically require human intelligence.
- Artificial intelligence allows machines to model, or even improve upon, the **capabilities of the human mind.**

- From the development of self-driving cars to the proliferation of generative AI tools like ChatGPT, AI is increasingly becoming part of everyday life — and an area every industry is investing in.

WHY DO WE NEED RULES ON AI?

- **Ethical Concerns:** AI systems can make decisions and take actions that impact individuals and society.
    - Establishing rules helps address ethical concerns related to the use of AI, ensuring that it aligns with human values and respects fundamental rights.
- **Privacy:** AI often involves the processing of large amounts of data. Rules can help protect individual privacy by specifying how data should be collected, stored, and used.
- **Security:** This includes safeguarding against potential vulnerabilities and protecting against malicious uses of AI technology.
- **Transparency:** Rules can mandate transparency in AI systems, requiring developers to disclose how their algorithms work.
- **Competition and Innovation:** Establishing a regulatory framework provides a level playing field for businesses, preventing the abuse of market dominance and encouraging responsible innovation.
- **Public Safety:** In cases where AI is used in critical domains such as healthcare, transportation, or public infrastructure, rules are essential to ensure the safety of individuals and the general public.

REGULATION OF AI IN INDIA

- **India does not have a dedicated AI law yet.** AI is governed indirectly through existing legal frameworks:
    - **IT Act, 2000:** Covers cybercrimes, intermediary liability.
    - **Digital Personal Data Protection Act, 2023:** Ensures data privacy and consent.
    - IPR laws (Copyright & Patents Acts): Relevant for AI-generated works and innovation.
- **Global Partnership on Artificial Intelligence**: India is a member of the GPAI. The 2023 GPAI Summit was held in New Delhi, where GPAI experts presented their work on responsible AI, data governance, and the future of work, innovation, and commercialization.

- **The National Strategy for Artificial Intelligence #AIForAll strategy, by NITI Aayog:** It featured AI research and development guidelines focused on healthcare, agriculture, education, "smart" cities and infrastructure, and smart mobility and transformation.
- **Principles for Responsible AI:** In February 2021, the NITI Aayog released Principles for Responsible AI**,** an approach paper that explores the various ethical considerations of deploying AI solutions in India.

CHALLENGES OF REGULATION

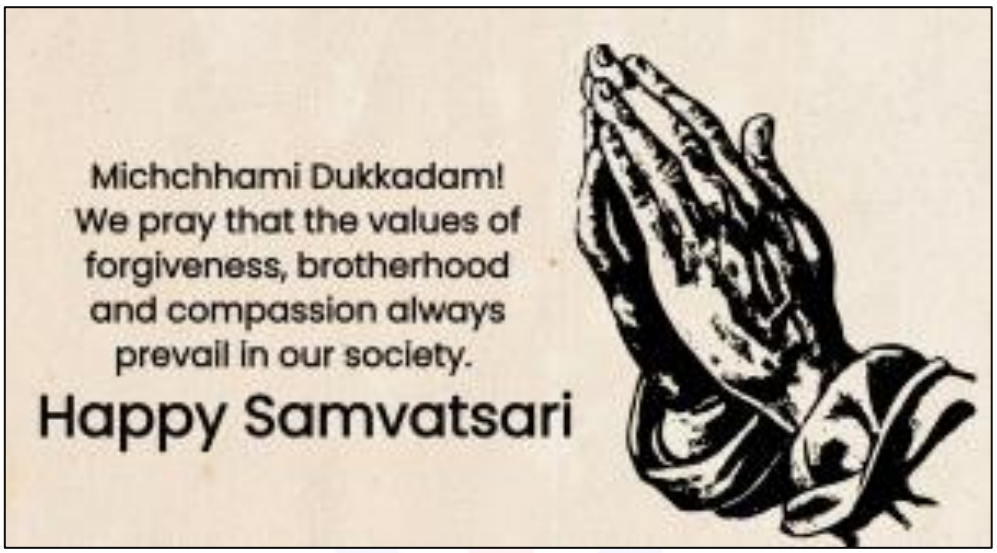
- **Rapid Evolution of AI:** The field is constantly evolving, making it difficult to write future-proof regulations.
- **Balancing Innovation and Safety:** Striking a balance between fostering innovation and ensuring safety is a challenge.
- **International Cooperation:** Effective AI regulation requires international cooperation to avoid a fragmented landscape.
- **Defining AI:** There's no universally agreed-upon definition of AI, making it difficult to regulate effectively.

WAY AHEAD:

- Artificial Intelligence (AI) is here to stay and possesses the capability to fundamentally change the way in which we work. It is a far greater force and needs to be regulated.
- By acknowledging the potential dangers of AI and proactively taking steps to mitigate them, we can ensure that this transformative technology serves humanity and contributes to a safer, more equitable future.

52 SAMVATSARI

Prime Minister Narendra Modi extended greetings to citizens on the **occasion of Samvatsari**, describing it as a festival that embodies the spirit of forgiveness and compassion.



INTRODUCTION

- **Samvatsari** is the **most important day of Paryushana**, the major annual festival of **Jainism**.
- Observed by **both Digambara and Śvētāmbara Jains**, it marks the **culmination of Paryushana**, a period of fasting, prayer, and spiritual reflection.
- The day is dedicated to **forgiveness, introspection, and moral renewal**.

TIMING

- Celebrated on the **8th day of Paryushana** for **Śvētāmbara Jains** and the **10th day of Paryushana (Samvatsari)** for **Digambara Jains**, usually in **August–September**.
- The exact date varies each year according to the **lunar calendar**.

RELIGIOUS SIGNIFICANCE

- **Forgiveness (Kshamavani)**: Jains **seek forgiveness from all living beings** for any harm caused, intentionally or unintentionally, during the past year.
- Promotes the Jain principle of **Ahimsa (non-violence)** in thought, word, and deed.
- Encourages **self-purification, humility, and spiritual growth**.

RITUALS AND CUSTOMS

- **Prayers and Fasting**: Devotees observe **fasts** of varying lengths and engage in **meditation, recitation of scriptures, and charitable acts**.
- **Forgiveness Ritual (Pratikraman)**: A formal ritual where Jains **confess sins and seek forgiveness** from everyone.
- **Community Practices**: People **visit family, friends, and religious leaders** to ask for forgiveness.
- **Charity and Service**: Many Jains engage in **donating food, clothes, or money** to the needy.

SOCIAL AND ETHICAL IMPORTANCE

- Promotes **social harmony, reconciliation, and non-violence**.
- Reinforces **ethical living, self-discipline, and moral accountability**.
- Encourages individuals to **reflect on past actions and start the new year spiritually cleansed**.

MICCHAMI DUKKADAM

- **Micchami Dukkadam** is a **Sanskrit and Prakrit phrase** used by Jains during **Paryushana and Samvatsari**, the most important Jain festivals.
- Literal meaning: **"If I have caused any harm, knowingly or unknowingly, in thought, word, or deed, may it be forgiven."**
- It reflects the **core Jain principle of forgiveness (Kshama)** and moral accountability.

CONTEXT OF USE

- Typically recited **at the end of Paryushana**, especially on **Samvatsari**, the day of forgiveness.
- Used **while seeking forgiveness from family, friends, colleagues, and all living beings**.
- Acts as a **moral and spiritual closure for the year**, allowing one to **begin anew with a pure heart**.

RELIGIOUS SIGNIFICANCE

- Upholds **Ahimsa (non-violence)** by recognizing the impact of one's actions.
- Encourages **self-reflection and moral cleansing**, aligning with Jain ethics.

- Strengthens **social harmony** by reconciling conflicts and repairing strained relationships.

RITUAL PRACTICE

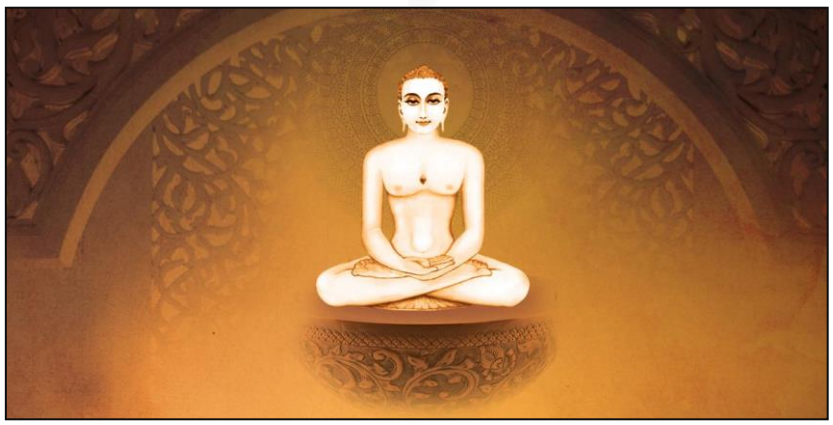
- Spoken **face-to-face** or in **letters/messages to others**, asking for forgiveness.
- Often accompanies the **Pratikraman ritual**, where Jains confess sins and seek pardon.
- Reinforced by **fasting, meditation, and charity**, which complement the spiritual practice.

JAINISM

- **Jainism** is one of the **ancient Indian religions**, emphasizing **non-violence (Ahimsa), truth (Satya), and self-discipline**.
- Originated in **India around 6th–5th century BCE** with the teachings of **Mahavira**, the 24th Tirthankara.
- Focuses on **liberation (Moksha) of the soul** from the cycle of birth and death (**Samsara**) through ethical living and spiritual practices.

CORE PRINCIPLES

- **Ahimsa (Non-Violence)**: Avoiding harm to all living beings, including animals and plants.
- **Satya (Truthfulness)**: Speaking the truth without harming anyone.
- **Asteya (Non-Stealing)**: Not taking anything that is not willingly given.
- **Brahmacharya (Celibacy / Self-Control)**: Practicing restraint in sensual pleasures.
- **Aparigraha (Non-Possessiveness)**: Minimizing material attachments and greed.



TIRTHANKARAS

- Spiritual teachers who **revive and teach Jain Dharma**.
- **Mahavira** (599–527 BCE) is the most prominent Tirthankara.
- Teachings emphasize **right faith (Samyak Darshana), right knowledge (Samyak Jnana), and right conduct (Samyak Charitra)**.

BELIEFS

- **Soul (Jiva) and Non-Soul (Ajiva)**: Reality is classified into conscious and non-conscious entities.
- **Karma Theory**: Karma binds the soul to cycles of birth; liberation occurs when all karma is destroyed.
- **Moksha**: Ultimate goal is liberation and eternal bliss.

PRACTICES

- **Meditation and Fasting**: Essential for spiritual purification.
- **Paryushana**: Annual festival for self-discipline, confession, and forgiveness.
- **Micchami Dukkadam**: Asking for forgiveness from all beings.
- **Vegetarianism**: Strict adherence due to Ahimsa.

SECTS

- **Digambara**: Emphasizes asceticism; monks traditionally **nude**; women cannot attain Moksha directly.
- **Śvētāmbara**: Monks wear **white robes**; women can attain Moksha.

COMPARISON BETWEEN ŚVĒTĀMBARA AND DIGAMBARA SECTS

Aspect	Śvētāmbara	Digambara
Meaning	"White-clad" – monks wear white robes	"Sky-clad" – monks practice nudity, representing non-attachment
Attire	White robes for monks and nuns	No clothes for male monks; female ascetics wear white or simple clothing

Views on Women	Women can achieve **Moksha** (liberation)	Women cannot achieve Moksha directly; must be reborn as men
Scriptures	Accept the **Agamas** (canonical texts) as authentic	Reject some Agamas; rely on **non-canonical texts** like Siddhantas
Monastic Practices	Less strict asceticism compared to Digambaras	Strict asceticism; emphasis on **total renunciation**
Iconography	Tirthankara statues often **clothed**, sometimes adorned	Tirthankara statues are **nude**, representing detachment from material world
Philosophical Differences	Belief in **gradual liberation through knowledge and conduct**	Emphasis on **extreme renunciation and self-discipline**
Geographical Distribution	Mainly in **Gujarat, Rajasthan, Maharashtra**	Mainly in **Karnataka, Tamil Nadu, Madhya Pradesh, Bihar**

53 NATIONAL DISASTER RESPONSE FORCE (NDRF)

A Supreme Court-appointed committee has given conditional approval for the construction of the National Disaster Response Force (NDRF) headquarters on an ecologically sensitive plot in the Morphological Ridge area of Delhi.

NATIONAL DISASTER RESPONSE FORCE (NDRF)

- NDRF is a specialized force under the **Ministry of Home Affairs (MHA)** dedicated to disaster response in India.
- It was constituted under the **Disaster Management Act, 2005**, following the establishment of the **National Disaster Management Authority (NDMA).**
- **Composition:** 16 battalions, drawn on deputation from the Central Armed Police Forces (CAPFs) such as BSF, CISF, CRPF, ITBP, SSB, and Assam Rifles.
- Mandate & Role:
    - It responds to **natural and man-made disasters**, such as **floods, earthquakes, and Chemical, Biological, Radiological, and Nuclear (CBRN)** emergencies.
    - Focus on "**proactive deployment" and "pre-positioning"** during imminent disasters to minimize loss of life and property.
- **Motto:** "Aapda Seva Sadaiv Sarvatra" (Disaster service always, everywhere).

54 RAJASTHAN PROPOSES NEW ANTI-CONVERSION BILL

The Rajasthan government has announced stringent provisions under its proposed **Rajasthan Prohibition of Unlawful Conversion of Religion Bill, 2025.**

KEY PROVISIONS OF THE BILL

- **Advance Notification**: Individuals wishing to convert must inform the **District Collector** at least **60 days in advance**.
- **Conversion Ceremony Notice**: A **30-day notice** is required before any conversion ceremony.
- **Post-Conversion Declaration**: The individual must submit an **affidavit** to the Collector within **60 days** after conversion.
- **Punishments**:
    - **General Cases**: Imprisonment ranging from **7 to 14 years** and a minimum fine of **₹5 lakh**.
    - **Mass Conversions**: Imprisonment from **20 years to life** and a minimum fine of **₹25 lakh**.
    - **Repeat Offenses**: Life imprisonment and a minimum fine of **₹50 lakh**.

- **Institutional Accountability**: Cancellation of registrations, cessation of government aid, and confiscation or demolition of properties used for illegal conversions.
- **Exemptions**: Re-conversion to one's ancestral religion is not classified as a conversion.
- **Legal Nature**: Offenses are **non-bailable** and **cognizable**, with the **burden of proof on the accused**.

POLITICAL REACTIONS

- **Support**: Rajasthan Chief Minister **Bhajan Lal Sharma** emphasized that the bill aims to protect vulnerable groups and prevent forced conversions.
- **Opposition**: Leader of Opposition **Tikaram Jully** criticized the bill, alleging it could disrupt communal harmony and divert attention from pressing issues like inflation, unemployment, and corruption.

LEGAL AND SOCIAL IMPLICATIONS

- **Legal Concerns**: The bill has raised questions about its compatibility with **Article 25** of the **Indian Constitution**, which guarantees **freedom of religion**.
- **Human Rights**: Organizations like **Citizens for Justice and Peace** argue that the bill could infringe upon **individual liberty and religious freedom**.
- **Social Impact**: Critics warn that the bill may lead to **discrimination** and **harassment**, particularly against women and marginalized communities.

55 MEDICAL TOURISM & NON-RESIDENT INDIANS (NRIS)

Tourism is increasingly driven by rising healthcare costs abroad and the promise of timely, high-quality treatment back home for millions of Non-Resident Indians (NRIs).

ABOUT MEDICAL TOURISM IN INDIA

- **Medical tourism** *(also called medical travel, health tourism or global healthcare)* is a term used to describe the rapidly-growing practice of travelling across international borders to seek healthcare services.
- **India's medical tourism sector** has evolved into a global phenomenon, attracting patients from across continents seeking affordable, high-quality healthcare.
- In 2023 alone, India welcomed **over 635,000 foreign medical tourists,** and is expected to grow exponentially.

WHY DOES INDIA STAND OUT?

- **Cost Efficiency:** A surgery costing over $100,000 in the US can be performed in India for just $10,000–$20,000.
    - NRIs save anywhere from **60–90%** on major procedures.
    - India's hospitals deliver advanced care at a fraction of global costs, from heart bypasses to kidney transplants.
    - Even medicines are up to **90% cheaper** compared with international markets.
- **Insurance & Financial Protection for NRIs:** Health insurance adoption among NRIs has surged by over 150% in the past year.
    - Young NRIs under 35 led this growth, with a 148% rise, while women buyers increased by 125%.
    - Notably, 60% of NRIs are purchasing health cover for elderly parents living in India.
    - Premiums in India are often 25–40 times cheaper than in the US or Gulf countries.
- **Expanding Access Beyond Metro Cities:** Medical tourism is no longer confined to Delhi, Mumbai, or Chennai.

- **Tier-2 cities** like Hyderabad, Kochi, and Ahmedabad and **Tier-3 towns** such as Thrissur, Kollam, and Thane are emerging as healthcare destinations.
- Improved flight connectivity and streamlined visa processes are making these cities more accessible to NRIs.

- **World-Class Infrastructure:** Indian hospitals are equipped with advanced diagnostic and surgical technologies, and many doctors are trained internationally.
- **Shorter Wait Times:** Procedures are scheduled faster than in many developed nations, reducing delays in critical care.
- **English Proficiency:** Most medical professionals speak fluent English, easing communication for international patients.

KEY CONCERNS & ISSUES IN MEDICAL & WELLNESS TOURISM IN INDIA

- **Quality Assurance & Regulation:**
  - **Unregulated Growth:** The mushrooming of wellness centers has raised concerns about inconsistent service standards.
  - **Accreditation Gaps:** While NABH and AYUSH have developed guidelines, not all centers adhere to them, risking patient safety and trust.
  - **Medical Ethics:** In some cases, aggressive marketing and lack of transparency in treatment outcomes have led to ethical concerns.
- **Accessibility:**
  - **Logistical Challenges:** International patients often face hurdles in navigating visa processes, hospital selection, and travel coordination.
- **Cost Transparency & Insurance:**
  - **Hidden Costs:** While India is known for affordability, lack of clear pricing structures can lead to unexpected expenses for foreign patients.
  - **Limited Insurance Integration:** Many international insurance providers do not cover treatments in India, creating financial uncertainty.
- **Patient Safety & Legal Recourse:**
  - **Limited Legal Protections:** Foreign patients may struggle to seek redress in cases of malpractice or negligence.
  - **Infection Control & Hygiene:** Inadequate sanitation in some facilities can pose health risks, especially for immunocompromised patients.

RELATED GOVERNMENT INITIATIVES

- **Heal in India Portal:** A digital platform to help international patients find hospitals, book appointments, and manage travel logistics.
- **E-Medical Visa:** Available to citizens of 167 countries, simplifying access to Indian healthcare.
- **Medical Value Travel Summits:** Organized by the **Ministry of Ayush** to foster collaboration between states, hospitals, and industry leaders.

WELLNESS TOURISM IN INDIA

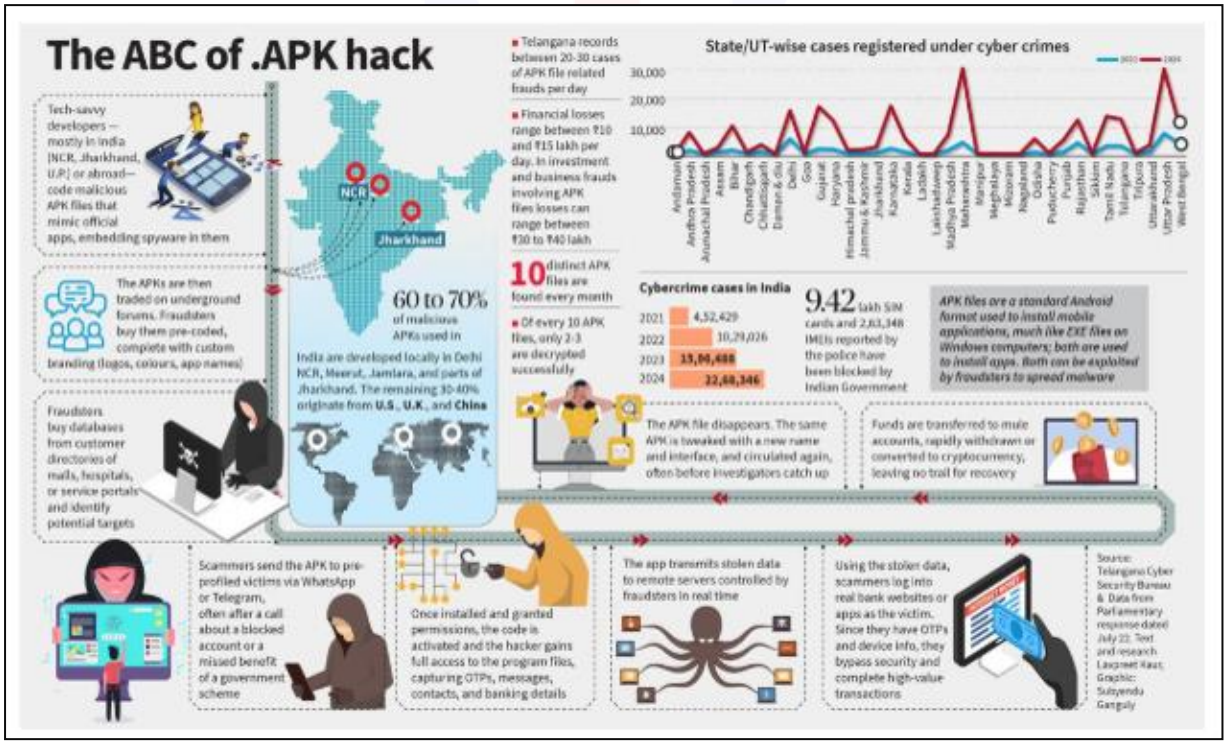
- India's ancient healing systems — **Ayurveda, Yoga, Siddha, and Naturopathy** — are now central to its wellness tourism strategy. The Ministry of Tourism promotes this through:
    - **Accreditation of Wellness Centers:** In partnership with NABH and AYUSH, ensuring quality and safety standards.
    - **Market Development Assistance (MDA):** Financial support for wellness service providers to participate in global events.
    - **Ayush Visa Category:** Introduced for those seeking traditional treatments under **Ayurveda, Yoga, Unani, Siddha, and Homeopathy** systems.
- It appeals to travelers seeking preventive care, rejuvenation, and spiritual healing.

56 RISE IN ANDROID PACKAGE KIT (APK) FRAUD

Banks have issued a new warning for customers to **stay vigilant against Android Package Kit (APK) frauds.**

ANDROID APPLICATION PACKAGE (APK) FRAUD

- APK fraud is a **phishing scam** where criminals send malicious Android Application Package (APK) files to **trick users into downloading and installing them**, often by impersonating trusted entities like banks or government officials.
- Once installed, these fraudulent apps **gain control of the user's device,** stealing financial information (including OTPs and PINs), and conducting unauthorized transactions without consent.
- Once in circulation, the same **APK file is reused with minor modifications** in the interface, allowing it to bypass detection even after earlier versions are blacklisted.



REASONS FOR INCREASE IN CYBERCRIME

- **Rapid Digitalization:** With a growing number of individuals and businesses relying on the Internet and digital technologies there are more opportunities for cybercriminals to exploit vulnerabilities.
- **Inadequate Cybersecurity Infrastructure:** In India the cybersecurity infrastructure is still developing. Many organizations, especially smaller

businesses, may not have robust cybersecurity measures in place, making them easy targets for cybercriminals.

- **Insider Threats:** Insider threats, where employees or individuals with access to sensitive information misuse it for malicious purposes, are a significant concern in India, particularly in the corporate sector.
- **Payment Systems Vulnerability:** With the rise of digital payments and online transactions, there is an increased risk of financial crimes such as phishing, credit card fraud, and online scams.
- **Low digital literacy:** Lower awareness among the general public and digital gaps amongst nations create an unsustainable environment in the cyber domain.
- **Vulnerable population:** Many senior citizens aren't aware of using UPI (features) and they fall prey to online scams.

GOVERNMENT STEPS FOR CYBERSECURITY

- **Information Technology Act, 2000:** Section 43, 66, 70, and 74 of the IT Act, 2000 deal with hacking and cybercrimes.
- **Indian Computer Emergency Response Team (CERT-In)** issues alerts and advisories regarding latest cyber threats/vulnerabilities and countermeasures to protect computers and networks on a regular basis.
- **National Cyber Coordination Centre (NCCC**) has been set up to generate necessary situational awareness of existing and potential cyber security threats and enable timely information sharing for proactive, preventive and protective actions by individual entities.
- **Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre)** has been launched for detection of malicious programs and provides free tools to remove the same.
- **Chakshu Facility:** It is a newly introduced feature on the **Sanchar Saathi portal** that encourages citizens to proactively report suspected fraudulent communications received via call, SMS, or WhatsApp.
- **Indian Cyber Crime Coordination Centre (I4C):** It was established in **2018** under the Central Sector Scheme within the Cyber and Information Security Division of the **Ministry of Home Affairs.**
- It provides a framework and eco-system for Law Enforcement Agencies (LEAs) to deal with Cybercrime in a coordinated and comprehensive manner.

International Measures Budapest Convention: It is the 1st international treaty to address cybercrime. India is not a signatory to the treaty.

Internet Corporation for Assigned Names and Numbers (ICANN): It is a US-based not-for-profit organization for coordinating & maintenance of several databases.

Internet Governance Forum: It is the **United Nations forum** for multi-stakeholder policy dialogue on Internet governance issues.

WAY AHEAD

- Enhance investment in **advanced threat detection systems**, AI-driven monitoring, and secure digital payment gateways to reduce vulnerabilities.
- Expedite implementation of the **Digital Personal Data Protection Act, 2023** to secure user information and reduce misuse of leaked databases.
- Conduct **large-scale public campaigns,** especially targeting vulnerable groups like senior citizens, to promote digital literacy and safe online practices.

57 EARTHQUAKE IN AFGHANISTAN

The recent earthquake in Afghanistan, with a 6.0 magnitude, resulted in over 800 deaths and 2,000 injuries due to shallow depth and poor building structures.

WHAT IS AN EARTHQUAKE?

- An **earthquake** is the **sudden shaking or trembling of the Earth's surface** caused by the **release of energy** in the Earth's crust.
- This energy release generates **seismic waves** that travel through the Earth, causing vibrations and sometimes severe destruction.

CAUSES OF EARTHQUAKES

Earthquakes occur due to several natural and, occasionally, human-induced factors:

A. TECTONIC CAUSES (MOST COMMON)

- **Movement of Lithospheric Plates**: Earthquakes primarily occur along **plate boundaries** due to **stress accumulation and release**.
- **Types of Tectonic Faults**:
    - **Normal Faults**: Occur in **tensional zones**, where the crust is being pulled apart.
    - **Reverse/Thrust Faults**: Occur in **compressional zones**, where the crust is being pushed together.
    - **Strike-Slip/Transform Faults**: Occur where plates **slide past each other horizontally**.

VOLCANIC EARTHQUAKES

- Occur due to **magma movement and volcanic eruptions**.
- Often localized near **volcanoes**.

INDUCED (MAN-MADE) EARTHQUAKES

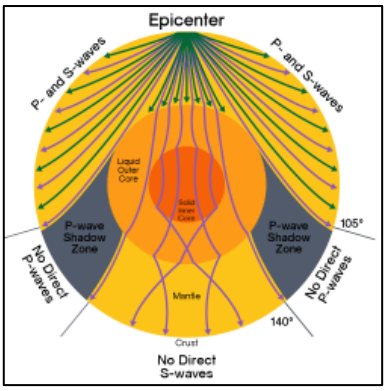
- Triggered by human activities like **mining, reservoir filling, geothermal drilling, and nuclear explosions**.

FOCUS (HYPOCENTER) AND EPICENTER

- **Hypocenter**: The **point within the Earth** where the earthquake originates.

- **Epicenter**: The point **on the Earth's surface directly above the hypocenter**. Most damage is concentrated near the epicenter.

SEISMIC WAVES

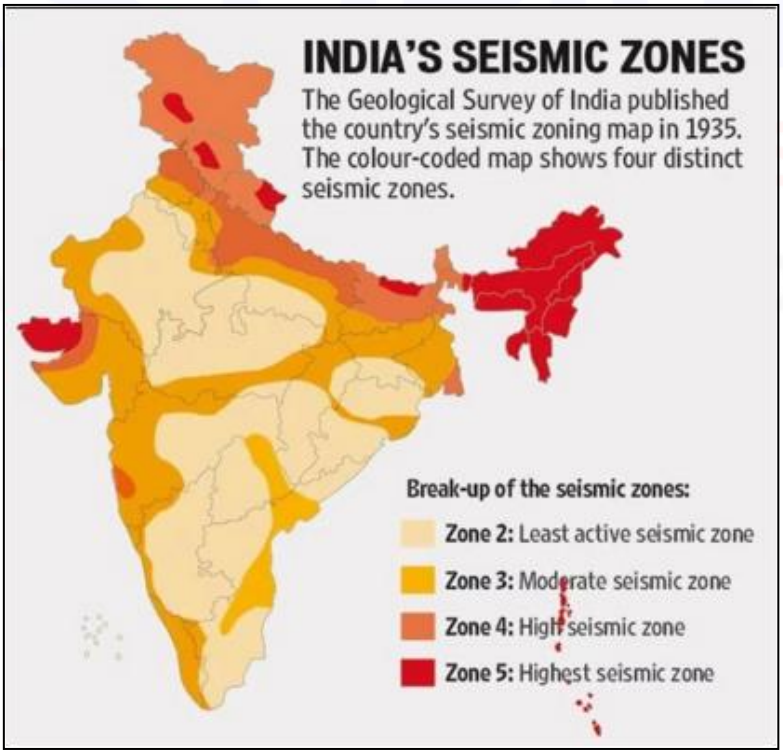


Earthquakes generate **seismic waves** that propagate through the Earth:

- **Primary Waves (P-Waves)**:
  - **Compressional waves**, travel **fastest**, and move through **solid, liquid, and gas**.
- **Secondary Waves (S-Waves)**:
  - **Transverse waves**, slower than P-waves, travel **only through solids**.
- **Surface Waves (Love & Rayleigh Waves)**:
  - Travel along the **Earth's surface**, cause **most destruction**.

MEASUREMENT OF EARTHQUAKES

- **Magnitude**: Measures the **energy released at the source**.
  - **Richter Scale**: Logarithmic scale from 1–10.
- **Intensity**: Measures the **effect or damage on the surface**.
  - **Modified Mercalli Intensity Scale**: Expressed in Roman numerals I–XII.



EFFECTS OF EARTHQUAKES

PRIMARY EFFECTS

- Ground shaking and rupture
- Structural collapse of buildings and bridges
- Injuries and loss of life

SECONDARY EFFECTS

- **Tsunamis**: If earthquakes occur under the sea.
- **Landslides and Avalanches**: Especially in hilly regions.
- **Fires**: From broken gas lines or electrical faults.
- **Flooding**: From damaged dams or rivers.

EARTHQUAKE ZONES IN INDIA

- **Highly Seismic Zones**: Himalayan region (Zone V)
- **Moderate Seismic Zones**: Indo-Gangetic plains, Peninsular India (Zone III & IV)
- **Low Seismic Zones**: Parts of Rajasthan, Deccan Plateau (Zone II)
- India's **Bureau of Indian Standards (BIS) classifies regions** into **four seismic zones (II–V)**.

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