NEXT IAS
THE CRUX

April Issue; 2025

Compilation of UPSC relevant news from 1st April to 30th April 2025

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NEXT IAS
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WAQF (AMENDMENT) ACT, 2025

Waqf (Amendment) Bill 2025, also known as the Unified Waqf Management, Empowerment, Efficiency, and Development (UMEED) Bill, has been passed by the parliament.

Meaning of Waqf:

- A **'Waqf'** is a permanent dedication of movable or immovable property for purposes recognized by Muslim law as pious, religious, or charitable.
- Once dedicated as Waqf, the property becomes **inalienable**—it cannot be sold, gifted, inherited, or otherwise transferred.
- The creator is a **wakif,** and the property is managed by a **mutawalli.**

Evolution of Waqf Administration in India

- **Privy Council Ruling (1894):** Declared **Waqf-alal-Aulad** (family waqf) invalid as waqf should serve **public religious or charitable purposes.**
- **The Mussalman Wakf Validating Act, 1913:** Legitimized waqfs made for **family and descendants**, provided they eventually serve a **charitable purpose.**
- **The Mussalman Wakf Act, 1923:** Introduced **accounting, registration**, and **management reforms** for better administration.
- **The Mussalman Wakf Validating Act, 1930:** Gave **retrospective effect** to the 1913 Act, reinforcing legal status of **family waqfs.**
- **The Wakf Act, 1954:** Established **State Waqf Boards (SWBs)** for systematic administration, supervision, and protection.
- **Amendments to the 1954 Act (1959, 1964, 1969, 1984):** Aimed at **improving governance and management** practices of waqf properties.
- **The Waqf Act, 1995:** Repealed the 1954 Act and amendments.
  - **Key features:** Formation of **Waqf Tribunals** for dispute resolution. Empowered **Central Waqf Council (CWC)** to supervise and issue directives to SWBs.
- **The Waqf (Amendment) Act, 2013:**
  - **Definition change:** Waqf can be created by **any person**, not just Muslims.
  - **Sect-specific representation:** Shia waqf to have Shia members; Sunni waqf to have Sunni members.
  - **Overriding legal status:** Waqf law to have **supremacy over other laws.**
  - **Role of District Magistrate:** Responsible for **implementing Board decisions.**

Objective of the Waqf (Amendment) Act, 2025

- Amends the Waqf Act, 1995 to address long-standing issues in the governance of waqf properties.
- Updates and clarifies key definitions such as **"waqf"**, **"mutawalli"**, and **"waqf property"** to remove ambiguities.
- Streamlines the registration process by introducing stricter timelines and clearer documentation requirements.
- Mandates digitization of waqf records to ensure transparency, prevent encroachments, and enable real-time monitoring.
- Strengthens the role and accountability of State and Central Waqf Boards, including provisions for better oversight.
- Introduces technology-driven mechanisms for dispute resolution and property mapping using GIS tools.
- Aims to safeguard waqf assets from illegal transfers, misuse, and encroachments through legal and administrative reforms.

Waqf Board

- A **Waqf Board** functions as a statutory body under the **state government**, entrusted with the **management and protection of Waqf properties** within the state.
- **Jurisdiction:** In most states, there are **separate Waqf Boards** for **Shia and Sunni communities. Major mosques and religious properties** across the country typically fall under the purview of the respective state Waqf Boards.
- **Composition:** The Board is led by a **Chairperson.**
  - It includes **nominees from the state government**, **Muslim legislators and MPs**, **Muslim members of the State Bar Council**, **recognized Islamic scholars**, and **mutawallis** (managers of waqf estates) with an **annual income of ₹1 lakh or more.**
- **Functions and Powers:**
  - The Waqf Board is empowered to **manage waqf properties**, ensure their **protection**, and initiate **recovery of encroached or lost assets.**
  - It may also **authorize the transfer** of immovable waqf properties—whether through **sale, gift, mortgage, exchange, or lease.**
  - However, such transactions can only be approved if **at least two-thirds of the Board members** vote in favour.

Need for Waqf (Amendment) Act, 2025

- **Irrevocability of Waqf Properties:** The principle **"once a Waqf, always a Waqf"** led to ownership disputes and complicated legal proceedings.
- **Poor Management of Waqf Properties:** The Waqf Act, 1995 could not prevent widespread misuse, mismanagement, and illegal encroachments.
- **Lack of Judicial Review:** Earlier, no appeals were allowed against Waqf Tribunal decisions, limiting accountability and fairness.
- **Misuse of Section 40:** Waqf Boards frequently declared private lands as Waqf without sufficient evidence, sparking legal battles.
- **Encroachment and Loss of Assets:** Many Waqf properties were illegally occupied due to lack of strong legal mechanisms for protection.

- **Outdated Record Management:** Manual and scattered property records made monitoring, auditing, and enforcement difficult.
- **Delay in Dispute Resolution:** Prolonged and unresolved disputes over Waqf properties slowed down developmental and charitable activities.

Key Provisions of the Waqf (Amendment) Act, 2025

- **Separation of Trusts from Waqf:** Muslim-created trusts under any other law will no longer be treated as Waqf, giving individuals full control over their trusts.
- **Eligibility for Waqf Dedication:** Only practising Muslims (for at least 5 years) can dedicate property as Waqf.
- **Protection of Existing Registrations:** Properties already registered with Waqf Boards will stay unless proven to be government land or legally disputed.
- **Women's Rights in Family Waqf:** Women must get their rightful inheritance before any property is made Waqf; special rules apply for widows, divorced women, and orphans.
- **Ending Arbitrary Property Claims:** Section 40 of the 1995 Act is removed, preventing Waqf Boards from unilaterally declaring private properties as Waqf.
- **Waqf Tribunals Setup:** Tribunals will have a district judge, a senior government officer, and a Muslim law expert; appeals can be made to the High Court within 90 days.
- **Disputes over Government Land:** Senior officers above the rank of Collector will check Waqf claims on government land to stop false claims.
- **Reduced Contributions:** Waqf institutions now need to contribute only 5% (down from 7%) to Waqf Boards, freeing more funds for charity.
- **Annual Audits:** Institutions earning more than Rs1 lakh must undergo audits by auditors appointed by the State government.

- **Technology and Central Portal:** A central online portal will manage Waqf properties digitally to improve transparency and record-keeping.
- **Role of Mutawallis:** Caretakers (Mutawallis) must register Waqf properties on the central portal.
- **Diverse Representation:** Waqf Boards will include two non-Muslim members and at least two Muslim women; different Muslim communities (Shia, Sunni, Bohra, Aghakhani, OBC Muslims) will also be represented.
- **Limitation Act Application:** The Limitation Act, 1963 will now apply to Waqf disputes, helping to avoid long, pending cases.

Issues with the Act

- **Greater Government Control:** Critics argue that shifting powers to government officials undermines the independence of Waqf Boards.
- **Dilution of Muslim Representation:** Including non-Muslims in Waqf Boards may infringe upon the Muslim community's right under Article 26 to manage its own religious affairs.
- **Ambiguity About "Practising Muslim":** Lack of a clear definition could result in arbitrary or biased interpretations by authorities.
- **Removal of "Waqf by User":** Eliminating the long-recognized principle of Waqf by continuous religious use may affect historic and traditional religious spaces.
- **Fear of Politicization:** Greater government involvement could politicize Waqf property management, impacting neutrality and religious autonomy.
- **Risk to Community Trust:** The Muslim community may perceive these changes as an erosion of their rights, leading to mistrust and resistance.
- **Potential Rise in Litigation:** Vague definitions and changes to existing protections may open the door to a surge in court disputes over property claims.

WAY FORWARD

- **Ensure Balanced Autonomy:** There is need to protect the independence of Waqf Boards while enabling government oversight only in cases of clear irregularities.
- **Frame Clear Definitions:** eed to clearly define key terms like **"practising Muslim"** and **"Waqf property"** to avoid confusion and future legal disputes.
- **Strengthen Judicial Safeguards:** Allow time-bound appeals against Tribunal decisions to High Courts to maintain transparency and judicial oversight.
- **Digitize and Audit Waqf Records:** Complete digital mapping, regular auditing, and public access to Waqf property records can improve trust and accountability.
- **Promote Community Participation:** Involve Muslim community leaders and stakeholders in Waqf management to ensure decisions reflect ground realities and preserve religious rights.

TAMIL NADU GOVERNOR CASE: SC VERDICT

The Supreme Court (SC) invoked Article 142 to pass 10 Bills pending with Tamil Nadu Governor effectively granting assent to them.

Background:

- **Before November 2023:** The Tamil Nadu Legislative Assembly passed 10 Bills and sent them to Governor R.N. Ravi for assent.
  - **No action taken:** The Governor delayed assent for several months without making a decision.
- **November 18, 2023:** The Assembly re-enacted all 10 Bills without amendments in a special session, exercising its legislative authority.
- **November 28, 2023:** The Governor referred all 10 re-passed Bills to the President, instead of taking a decision himself under Article 200.
- **President's response:** Assented to 1 Bill, withheld assent to 7, and remained silent on 2 Bills.
- **Constitutional challenge:** The Tamil Nadu Government moved the SC under Art. 131, invoking the Court's original jurisdiction in Centre–State disputes, alleging violation of constitutional provisions and federal principles by the Governor.

Reasons Behind Supreme Court Invoking Article 142:

- **Undue Delay by Governor:** Bills were kept pending for considerable period, causing legislative deadlock and hampering governance.
  - The Governor disregarded constitutional norms and Court precedents by not acting promptly.
- **Ensuring Complete Justice:** The Court invoked Article 142 to directly grant assent and uphold the democratic process.

ARTICLE 142 OF THE INDIAN CONSTITUTION

It grants the Supreme Court the power to pass any decree or order necessary to do **"complete justice"** in any case or matter pending before it, allowing it to transcend the limitations of existing laws and statutes.

Supreme Court Ruling on Tamil Nadu Governor's Action:

- **Unconstitutional:** The SC ruled that reserving 10 Bills for the President after Assembly reconsideration was unconstitutional.
- **Violation of Article 200:** Reservation is allowed only at the first presentation of the Bill, not after it is re-passed.
- **A Governor has a maximum of one month** to withhold assent on the aid and advice of the State Cabinet.
- **A maximum of three months** is given to return the Bill with a message specifying reasons if the Governor withholds assent contrary to the Cabinet's advice.
- **The Governor has three months** to reserve a Bill for the President's consideration against the advice of the Cabinet.
- **The Governor 'must' grant assent** to a Bill re-passed by the State Legislature under Art. 200 within a **maximum of one month**.

- **Presidential Action Invalid:** Since the Governor's referral was unconstitutional, the President's actions based on it were also invalid.

GOVERNOR'S POWER OVER BILLS (ARTICLE 200)

Receive Bill — The Governor receives a bill for consideration.

Assent — The Governor approves the bill, making it law.

Withhold — The Governor rejects the bill, preventing it from becoming law.

Reserve — The Governor reserves the bill for the President's consideration.

Return — The Governor sends the bill back for review, except for Money Bills.
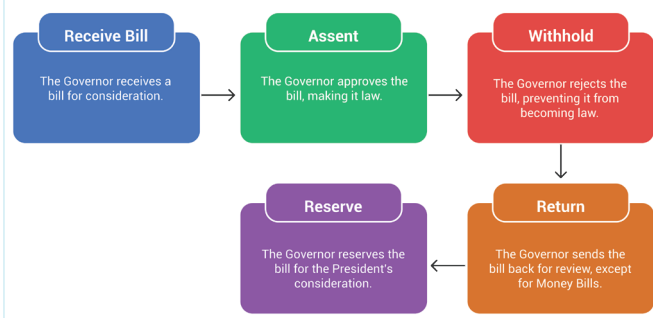
Concerns of the States:

- **Interference in State Autonomy:** States argue that the Governor's role in reserving Bills undermines the authority of state legislatures, especially for subjects in the State List.
- **Misuse of Discretion:** Governors are often accused of reserving Bills against the advice of the State Council of Ministers, leading to allegations of discretionary misuse.
- **Subordination to Union Executive:** States feel that referring Bills to the President weakens state legislative supremacy and strengthens the Union's control.
- **Delays in Decision-Making:** Long delays in the President's assent or rejection of reserved Bills hinder governance and disrupt legislative intent.
- **Lack of Clear Guidelines:** Absence of codified norms for reserving Bills leaves room for arbitrary decisions by the Governor and the Union Executive.
- **Impact on Federalism:** The power of reservation under Articles 200 and 201 is seen as diluting the spirit of cooperative federalism envisaged in the Constitution.

Way Forward:

- **Time-Bound Action by Governors:** A fixed deadline (4–6 weeks) must be established for the Governor to act on Bills.
- **Clarity and Accountability:** Clear guidelines should define the Governor's powers to minimize misuse and ensure executive-legislative balance.
- **Judicial Review Mechanism:** Provision for judicial scrutiny of Governor's decisions on reservation could be strengthened to prevent abuse.
- **Codification of Conventions:** Constitutional conventions guiding the Governor's role must be formally codified to ensure transparency and consistency.

ENERGY STATISTICS INDIA, 2025

Recently, the Ministry of Statistics and Programme Implementation (MoSPI) has unveiled 32nd edition of its annual publication, 'Energy Statistics India 2025', through the National Statistics Office (NSO).

India's Energy Scenario in 2025

- In the Financial Year 2023-24, India has experienced a steady and healthy growth in both, energy supply and consumption by overcoming the shock of global Pandemic.
- **Total Energy Supply and Demand:** India's Total Primary Energy Supply (TPES) continued its steady growth post- COVID-19, with a 7.8% increase in FY 2023-24, amounting to 9,03,158 KToe over the previous year.
    - India's **per capita energy consumption** increased from 14,682 Megajoules per person in 2014-15 to 18,410 Megajoules per person in 2023-24, growing at 2.55% CAGR, a **25%** rise in 10 years.
    - India's **per capita primary energy consumption** increased from **22,434 Mega joules/person** in 2014-15 to **27,574 Mega joules/person** in FY 2023-24(P), indicating a growing demand for energy.

> **Per capita primary energy consumption** refers to the average amount of primary energy consumed by each person in a given region or country over a specific period, usually one year.

- **Improved Energy Efficiency:** Electricity losses due to transmission and distribution decreased significantly from 23% in 2014-15 to 17% in 2023-24.
    - **Coal remains dominant**, with 79% of total domestic energy supplied and 60.21% share in TPES followed by Crude Oil (29.83%) and Natural Gas (6.99%).
    - **Renewable Energy potential** reached **21,09,655 MW**, with wind and solar leading.
    - **Supply:** Approximately 1,800 Million Tonnes of Oil Equivalent (MToE), reflecting an **annual increase of 4.5%** compared to 2024.
    - **Demand:** It is driven primarily by industrial growth (40%), transportation (25%), and residential consumption (20%).

Fossil Fuel Reserves and Production:

- **Coal Reserves and Production:** As on March 31, 2024, the reserves of Coal stood at 389.42 billion tonnes of which Odisha, Jharkhand and Chhattisgarh together account for about 70% and almost **80%** of the coal found in India is **Bituminous Coal.**
- India, with the **fifth-largest coal reserves** and being the **second-largest consumer,** heavily depends on coal.
    - India remains the second-largest coal producer globally, after China.

India's Coal Boom

India achieved a historic milestone as it crossed 1 BT of coal production in March in 2024-25, surpassing last fiscal year's 997.83 MT.

Growth in Coal Production and Dispatch

- India's coal production has reached **1047.57 MT** (Provisional) in FY 2024-25.
- Coal dispatch has also crossed the **One BT milestone,** with total dispatch reaching 1024.99 MT (Provisional).
- **Coal imports fell 8.4%** to 183.42 MT in April-December 2024 in the same period of FY 2023-24, saving **$5.43 billion** in foreign exchange.

Government initiatives

- **Commercial Coal Mining** opened the sector to private players to boost production, efficiency, and competitiveness.
- **Mission Coking Coal** aims to reduce import dependence by enhancing domestic coking coal availability.
- **Safety measures: Directorate General of Mines Safety** revamped the Coal Mines Regulations 1957 into **The Coal Mines Regulations 2017**, addressing modernisation, mechanisation, emergency response, and evacuation planning.
- **Coal Mitra Portal** developed for flexible coal allocation to power plants, ensuring better coal supply management.

- **Natural Gas Reserves: Largest** reserves of natural gas in India are located in the **Western Offshore region** (approximately 31% of the total natural gas reserves).
- It is **followed by the Eastern Offshore** (approx 24% of the reserves).

Global Classification of Energy Reserves

The classification of energy reserves is guided by the *United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources (UNFC 2009)*. This framework evaluates resources based on:

- Economic and Social Viability
- Field Project Status and Feasibility
- **Geological Knowledge:** The System of Environmental Economic Accounting (SEEA)-Energy groups the detailed categories of UNFC into three aggregated classes characterizing the commercial recoverability of the resources as follows:
    - **Class A:** Commercially recoverable resources.
    - **Class B:** Potentially commercially recoverable resources.
    - **Class C:** Non-commercial and other known deposits.

- **Geographical Distribution of Renewable Energy Potential: More than half** of the potential for generation of renewable energy has been **concentrated within the four States** of India viz. *Rajasthan (20.3%), Maharashtra (11.8%), Gujarat (10.5%) and Karnataka (9.8%).*
- **Solar and Wind Power Expansion:** The **National Solar Mission and Wind Energy Development Programme** have played a crucial role in achieving these milestones:
  - **Solar Power Capacity:** 175 GW (up from 150 GW in 2024)
  - **Wind Power Capacity:** 50 GW (up from 45 GW in 2024)

SECTORWISE PERCENTAGE DISTRIBUTION OF INSTALLED GRID-INTERACTIVE RENEWABLE POWER CAPACITY AS ON 31.03.2024

- Solar Power 57%
- Small Hydro Power 3%
- Wind Power 32%
- Bio Power & Waste to Energy 8%
- Total Installed Capacity = 143645 MW
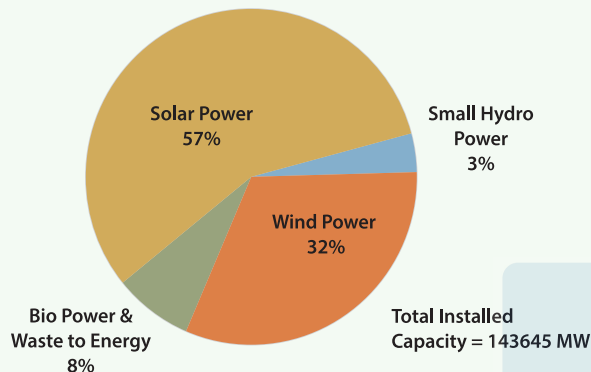
- **Hydro and Biomass Energy:**
  - **Hydropower:** 52 GW, providing 12% of total electricity generation.
  - **Biomass and Waste-to-Energy:** 15 GW, contributing to sustainable energy practices in rural areas.
- **Electricity Generation and Consumption Trends:** India's electricity availability showed a notable increase. The net electricity available for supply grew by 7.25%, over last FY reaching at 16,46,998 GWh during FY 2023-24.

> **Do You Know?**
> - **Energy intensity** measures the amount of energy consumed to produce a unit of Gross Domestic Product (GDP).
> - A lower energy intensity indicates that less energy is needed to produce a specific amount of economic output, signifying better energy efficiency.

- **Installed Capacity and Generation:** India's total installed power generation capacity stands at 450 GW, an increase from 420 GW in 2024.
- **Total electricity generation:** 1,700 TWh (terawatt-hours).
- **Per capita electricity consumption:** 1,500 kWh per year, reflecting economic growth and urbanization.

Energy Efficiency and Sustainability Measures

- **Government Policies and Initiatives:**
  - **National Hydrogen Mission**: Promoting Green Hydrogen production for industrial use.
  - **Carbon Credit Trading Scheme (CCTS) – 2023 Onwards** to establish a domestic carbon market in India.
  - **Faster Adoption of Electric Vehicles (FAME-III):** Boosting EV sales and charging infrastructure.
  - **Note:** India achieved 100% electrification of villages by March 2022, based on 2011 Census figures.
- **Carbon Emissions and Climate Targets:** Commitment to net-zero emissions by 2070 remains a long-term goal.

Future Outlook

Future Energy Projections (2026-2030):

- Renewable energy share is expected **to reach 25% by 2030.**
- Energy demand will continue **growing at 5% annually,** driven by economic expansion.

Challenges Ahead

- **Dependence on Fossil Fuels:** India still relies heavily on coal and imported crude oil.
- **Energy Security Risks:** Geopolitical uncertainties affect oil and gas imports. India's dependency on the energy Imports has remained significant. During FY 2023-24, the Import-dependency of Crude Oil was close to 89%, whereas the same was 46.60% for Natural Gas and 25.86% for Coal.

ENERGY STATISTICS Highlights 2023-24

EXECUTIVE OVERVIEW

India's energy supply and consumption grew steadily post-pandemic in FY 2023-24.
Target: Support urbanization, industrialization, and „Viksit Bharat 2047" vision.

RESERVES AND POTENTIALS
- Coal reserves: 389.42 billion tonness
- Crude oil reserves 671.40 million tonnes
- Natural gas reserves 1.094.19 BCM
- Renewable energy potential: 2.109.655 MW

INSTALLED CAPACITY AND UTILIZATION
- Coal production 997.83 million tonness
- Electricity from renewables CAGR of 6.76% (10 years)
- Petroleum products and natural gas production rising frends

FOREIGN PRODUCTION
- Coal production: 997.83 million tonnes
- Electricity from renewables CAGR of 6.76% (10 years)
- 89% Petroleum products and natural gas production

ENERGY AVAILABILITY
- Electricity availaölity: up 7.25% YoY
- Transmission and Distribution losses 17.08%

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- Electricity availability: up 7.25% YoY
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ENERGY CONSUMPTION
- Total Final Consumption (TFC): 6.13.605 KToE in 2023-24
- Top energy-consuming sect-Industry ↑13.2% Transport ↑10.7% Commercial/Public Services ↑6.6%

DIGITAL THREAT REPORT

The Ministry of Electronics and Information Technology (MeitY) launched the first-ever Digital Threat Report 2024.

About the Digital Threat Report 2024

- A collaborative initiative between **MeitY**, **CERT-In**, **CSIRT-Fin**, and **Strategic Information Services Agreement (SISA)**.
- Provides a **comprehensive analysis** of **emerging cyber risks**, **attack tactics**, **vulnerabilities**, and **threat intelligence** within the BFSI sector.
- Built using **frontline incident data**, **real-world case studies**, and **predictive analytics** for future threat landscape analysis.

Strategic Information Services Agreement (SISA)

- **SISA is a global forensics-driven cybersecurity solutions** company for the digital payments industry, trusted by leading organizations for securing their businesses.
- SISA applies the power of forensic intelligence and advanced technology to **offer true security to over 2,000 customers across over 40 countries.**

Meaning of Cybercrime:

- Cybercrime refers to **criminal activities** that involve the use of **computers**, **networks**, or **digital technologies**.

COMMON TYPES OF CYBERCRIME	
Type of Cybercrime	**Description**
Hacking	Unauthorized access to **computer systems** or **networks** with the intent to **steal**, **alter**, or **destroy** sensitive data.
Phishing	Deceptive attempts to acquire **sensitive information** (such as **usernames**, **passwords**, and **financial details**) by impersonating **trustworthy entities** through **emails**, **messages**, or **websites**.
Malware	Use of **malicious software** like **viruses**, **worms**, **trojans**, **ransomware**, **spyware**, and **keyloggers** to **disrupt**, **damage**, or **gain unauthorized access** to computer systems.
Identity Theft	Stealing and misusing **personal information** (such as **Aadhaar numbers**, **social security numbers**, or **credit card details**) for **fraudulent transactions**.
Cyber Espionage	Covert cyber activities conducted to gain **unauthorized access** to **sensitive political**, **economic**, or **military information**, often carried out by **nation-states** or **organized groups**.
Cyberbullying	Use of **digital platforms** to **harass**, **threaten**, **intimidate**, or **humiliate individuals**, often resulting in **emotional distress**.
Online Fraud	Engaging in **fraudulent activities** such as **online scams**, **financial fraud**, **fake job offers**, **investment scams**, and **fake online marketplaces** to **deceive and exploit** victims for **monetary gain**.

CURRENT CYBERSECURITY FRAMEWORK IN INDIA	
Type	**Initiatives/Institutions**
Legislative Measures	Information Technology Act, 2000; Digital Personal Data Protection Act, 2023
Institutional Framework	CERT-In, NCIIPC, Indian Cyber Crime Coordination Centre (I4C), Cyber Swachhta Kendra
Strategic Initiatives	Bharat National Cybersecurity Exercise 2024, National Cyber Security Policy 2013
Other Cybersecurity Initiatives	**Cyber Fraud Mitigation Centre (CFMC):** Rapid response to online financial frauds; centralized system promoting cooperative federalism. **Cyber Commandos Programme:** Training specialized cyber investigators across States and UTs. **Samanvay Platform:** Unified cybercrime data repository for analysis, mapping, and investigation. **Cyber Suspect Registry:** Created through inputs from the National Cybercrime Reporting Portal (NCRP) to strengthen fraud detection.

Key Highlights of the Report

- **Rise in Cyberattacks and Data Breach Costs:** Global data breach costs rose to **USD 4.88 million** in 2024 (10% rise from 2023); in India, average breach cost reached **USD 2.18 million**.
  - BFSI's projected digital transaction volume to reach **USD 3.1 trillion** by 2028 increases cyber vulnerability.
- **Explosive Rise in Phishing Attacks: 175% increase** in phishing cases in India (June 2024 vs 2023).
- **AI-Powered Threats: AI** and **Large Language Models (LLMs)** (like **WormGPT**, **FraudGPT**) are used to create more convincing phishing emails, scams, and malware.
- **Social Engineering and Business Email Compromise (BEC): 54% of BEC attacks** involved pretexting.
  - AI and **deepfake technologies** are used to impersonate executives for financial fraud.
- **Stolen Credentials and Malware:** Cybercriminals bypass **Multi-Factor Authentication (MFA)** through **session hijacking**, **brute-force attacks**, and **BOLA vulnerabilities**.
  - Focus on **cloud-based SaaS platforms** as major attack targets.
- **Crypto Attacks:** Targeting of **crypto exchanges** and **wallets** by malware extracting private keys.
- **Supply Chain Breaches:** Growing risk from **third-party vendors** and **open-source vulnerabilities** emphasizes the need for **vendor risk management**.
- **Cloud Security Risks: 180% increase** in attacks exploiting misconfigured cloud environments.
- **Persistent Control Gaps:** Misconfigurations, over-privileged access, and weak access controls remain major vulnerabilities even in security-conscious firms.

Additional Information

- **MFA (Multi-Factor Authentication):** A security system requiring two or more verification methods to access an account, enhancing protection beyond just a password.
- **Session Hijacking:** An attack where a hacker takes over a user's active session, often by stealing session tokens or cookies.
- **BOLA (Broken Object Level Authorization):** A vulnerability where users can access unauthorized data by manipulating object identifiers in Application Programming Interface (API) requests.

Key Recommendations

- **Human-Centric Cybersecurity:** Leadership-driven approach focusing on continuous employee training and cyber-awareness, especially against AI and deepfake phishing.
- **Multi-Layered Defense Strategy:** Implementing **Zero Trust Architecture**, endpoint protection, automated vulnerability scanning, and regular patching.
- **Adopting AI-Based Threat Detection:** Using **AI and machine learning tools** for proactive and predictive cyber threat detection.

- **Vendor Risk Management:** Strengthening checks and audits on third-party vendors to avoid supply chain breaches.
- **Network Segmentation:** Divide networks into **security zones** to contain potential breaches.
- **Encryption and Data Recovery:** Encrypt data at rest and ensure regular backups for quick recovery during cyberattacks.
- **Real-Time Threat Intelligence Sharing:** Promote faster information exchange between government agencies, BFSI institutions, and CERT-In.

Important International Frameworks

- **UN Group of Governmental Experts (GGE):** Promotes **responsible state behavior** and develops **norms** for peaceful use of **cyberspace**.
- **NATO's Cooperative Cyber Defence Centre of Excellence (CCDCOE):** Enhances **cyber defense capabilities** through **research**, **training**, and **international cooperation**.
- **Budapest Convention on Cybercrime:** First treaty to address **internet and computer crimes** and promote **international cooperation**; however, **India is not a signatory**.
- **United Nations Convention against Cybercrime:** It was adopted by the UN General Assembly on 24 December 2024, marking the first global treaty specifically aimed at combating cybercrime. The Convention seeks to enhance international cooperation, standardize legal frameworks, and facilitate the sharing of electronic evidence to address cyber-related offenses

Steps Needed to Strengthen Cybersecurity

- **Enhancing Network Security:** Deploy advanced firewalls, intrusion prevention systems (IPS), and network segmentation to isolate critical assets. This limits lateral movement in case of a breach and strengthens overall perimeter defense.
- **Implementing Malware Protection and Incident Management:** Use next-generation antivirus, anti-malware, and endpoint detection tools. Establish a Security Operations Center (SOC) for real-time threat monitoring, detection, and coordinated incident response.
- **Strengthening User Education and Awareness:** Conduct regular training on recognizing phishing, social engineering, and suspicious activity. Educated users act as a strong first line of defense against many cyber threats.
- **Adopting Information Risk Management and Threat Assessments:** Develop formal risk management frameworks to identify, assess, and mitigate potential cyber risks. Perform frequent threat assessments to stay ahead of evolving attack vectors.
- **Enforcing Data Encryption and Secure Communication:** Encrypt sensitive data at rest using secure algorithms and ensure end-to-end encryption for data in transit. Secure communication channels like HTTPS, VPNs, and secure email protocols are essential.

INDIA-CHILE RELATIONS

The President of Chile visited to India, marking 76 years of diplomatic ties.

Key Outcomes of recent meet:

➲ **Launch of CEPA Talks:** Initiated **Comprehensive Economic Partnership Agreement** negotiations to boost trade, jobs, and growth.

➲ **Critical Minerals Cooperation:** Partnership in **lithium and copper** mining, processing, and investment for clean energy and manufacturing supply chains.

➲ **Counter-Terrorism & Global Security:** Reaffirmed commitment to **UNSC Resolution 1267**, **FATF**, and **No Money for Terror (NMFT)** initiatives.

➲ **Space & Digital Technology:** Joint **Space Executive Committee** with ISRO and IN-SPACe; Chile interested in India's **Digital Public Infrastructure (DPI)** and **AI** tools.

➲ **Pharmaceuticals & Traditional Medicine:** Chile to ease market access for Indian **pharma**; promote **Ayurveda, Homeopathy, and Yoga.**

➲ **Multilateral & Climate Cooperation:** Chile backs India's **UNSC permanent seat**, leadership in **International Solar Alliance (ISA)** and **Coalition for Disaster Resilient Infrastructure (CDRI).**

Significance of the Relations

➲ **Historical Ties:** Diplomatic relations were established in **1949**. Chile was among the **first Latin American countries** to sign a **trade agreement with India** in **1956**, laying the foundation for strong bilateral cooperation.

➲ **Strategic Cooperation:** Both countries share a commitment to **multilateralism**, **South-South cooperation**, and a **rules-based international order**, supporting freedom of navigation and global governance reforms.

➲ **Political Engagements:** High-level visits have strengthened ties, including **President Pranab Mukherjee's visit** to Chile in **2014** and **Chilean President Michelle Bachelet's visits** to India in **2009 and 2015**.

➲ **Defence and Security Ties:** Chile has **procured defence equipment** from India and Indian naval ships have conducted **goodwill visits** to Chilean ports, enhancing military-to-military cooperation.

➲ **Economic and Trade Relations:** Bilateral trade crossed **$3.5 billion** in 2024, with India exporting **pharmaceuticals, IT services, automobiles**, while Chile exports **copper, lithium, pulp, and wine**.

➲ **Collaboration in Critical Minerals and Renewable Energy:** India is partnering with Chile on **lithium exploration** for battery technology and **green hydrogen production**, aligning with India's **clean energy goals**.

➲ **Education, Culture, and People-to-People Exchanges** Academic partnerships, **ITEC scholarships**, cultural festivals, and the teaching of **Spanish in India** and **promotion of Yoga in Chile** have fostered deeper societal ties.

Challenges in India-Chile Relations

➲ **Geographical Distance and Connectivity:** The vast geographical distance and **lack of direct air connectivity** limit trade volume, business exchanges, and tourism growth between the two countries.

➲ **Limited Trade Basket:** Bilateral trade remains concentrated in **few commodities** like copper, lithium, pharmaceuticals, and wines, requiring **diversification** into new sectors.

➲ **Low Awareness Among Businesses:** There is **limited knowledge** among Indian and Chilean businesses about each other's market opportunities, leading to **under-explored investment potential**.

➲ **Logistical and Regulatory Barriers:** High shipping costs, regulatory hurdles, and **customs procedures** delay trade flows and add to operational costs for exporters and importers.

➲ **Competition from Other Global Players:** India faces **strong competition** from China, the US, and EU nations, which already have **deeper economic linkages** with Chile.

➲ **Language and Cultural Differences:** Despite growing cultural exchanges, **language barriers** (Spanish in Chile, limited English fluency) and **cultural unfamiliarity** act as soft constraints.

Way Forward

➲ **Fast-tracking CEPA Negotiations:** Early conclusion of the **Comprehensive Economic Partnership Agreement (CEPA)** will diversify trade, lower tariffs, and unlock new market opportunities.

➲ **Expanding Cooperation in Critical Minerals and Renewable Energy:** Joint ventures in **lithium mining**, **battery manufacturing**, and **green hydrogen production** should be prioritized to secure India's future energy needs.

➲ **Enhancing Maritime and Air Connectivity:** Launching **direct shipping lines** and **air cargo routes** will facilitate faster movement of goods and improve people-to-people exchanges.

➲ **Promoting Business-to-Business Engagements:** Organizing **business summits, trade fairs, and startup collaborations** can bridge the information gap and encourage two-way investments.

➲ **Leveraging Digital and Fintech Cooperation:** India can assist Chile in building **Digital Public Infrastructure (DPI)** models, offering expertise in **fintech, digital payments, and AI innovations**.

BIMSTEC SUMMIT 2025

PM Modi attended the 6th BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) Summit, hosted by Thailand, which is the current chair.

About

- **Theme:** "BIMSTEC: Prosperous, Resilient, and Open"
- **Focus on** shared growth amid global uncertainties.
- **The BIMSTEC Summit** is the first in-person meeting **in seven years**.
- The **chairmanship** of the regional grouping was **handed over to Bangladesh.**

Key Highlights of the 6th BIMSTEC Summit

- **Vision 2030 Document:** The Summit adopted the Bangkok Vision 2030 and a declaration outlining a plan for regional prosperity through stronger economic integration, better infrastructure, technology collaboration, and resilience against global challenges.
- **Rules of Procedure for BIMSTEC:** This sets clear rules for how BIMSTEC will work, helping the group to function more smoothly and efficiently.
- **Report by the BIMSTEC Eminent Persons' Group**: This report gives helpful suggestions for how BIMSTEC should move forward, in line with the 2030 vision.
- **BIMSTEC Centres of Excellence:** India announced new Centres of Excellence focusing on Disaster Management, Sustainable Maritime Transport, Traditional Medicine, and Agriculture Research and Training.
- **Digital and Energy Cooperation:** India proposed linking its UPI system with BIMSTEC payment networks, operationalizing the BIMSTEC Energy Centre in Bengaluru, and launching a pilot study on Digital Public Infrastructure (DPI) for better governance.
- **BODHI Program:** India launched the BODHI Program to offer training, scholarships, and capacity-building opportunities for professionals across BIMSTEC countries.
- **Cancer Care Initiative:** India proposed a program to build capacity in cancer care services across the BIMSTEC region.
- **BIMSTEC Chamber of Commerce and Business Summit:** India proposed creating a BIMSTEC Chamber of Commerce and holding an annual Business Summit to boost trade and regional economic ties.
- **Key Action Plans by India (21-Point Agenda):** India put forward a 21-point action plan, with major initiatives to strengthen cooperation in sectors like culture, economy, technology, and youth engagement.
- **People-to-People Linkages:** India announced programs like the BIMSTEC Athletics Meet (2025), BIMSTEC Games (2027), a Traditional Music Festival, a Young Leaders' Summit, a Hackathon, and a Young Professional Visitors Program to deepen cultural ties.
- **Space Sector:** Build nano-satellites for the BIMSTEC member nations and also explore the setting up of ground stations and promote the use of remote sensing data.
- **Sustainable Maritime Transport Centre:** Proposed the establishment of a Sustainable Maritime Transport Centre in India to enhance coordination in capacity building, research, innovation and maritime policies.

About BIMSTEC

- Initially known as BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation), the organisation is now known as BIMSTEC and comprises **seven Member States** with the admission of Myanmar on 22 December 1997, and Bhutan and Nepal in February 2004.
- **Current Members (7):** Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.
- The BIMSTEC member countries, home to about **1.7 billion people (roughly 22% of the global population)**, together account for a combined GDP of approximately **USD 5.2 trillion as of 2023.**
- **Objective:** To help countries in their economic growth, to support social development, and to encourage development in other areas, like science, technology and economic development.
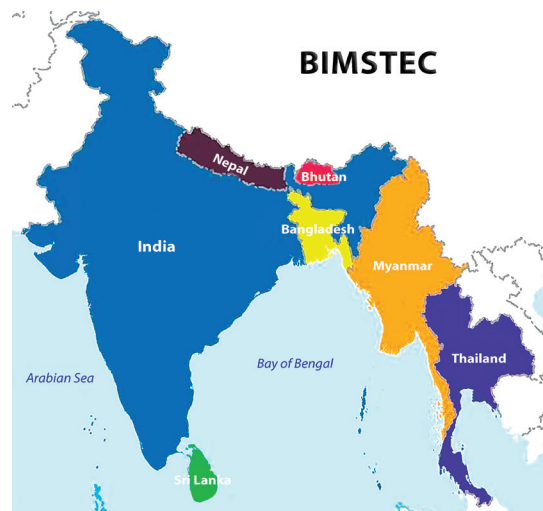
Significance of BIMSTEC

Geopolitical Significance:

- **Alignment with Act East Policy:** BIMSTEC strengthens India's outreach to Southeast Asia, enhancing trade, connectivity, and security links across the Indo-Pacific.

- **Alternative to SAARC:** It provides an effective platform for regional cooperation, especially as SAARC remains largely stalled.
- **Balancing China's Influence:** It offers a regional mechanism to counterbalance China's Belt and Road Initiative (BRI) through collective infrastructure and connectivity efforts.
- **People-to-People Engagement:** Cultural exchanges, youth programs, and sports initiatives under BIMSTEC strengthen grassroots regional integration and goodwill.

Geoeconomic Significance:

- **Trade and Economic Integration:** BIMSTEC promotes negotiation of free trade agreements (FTA) and infrastructure connectivity projects to enhance regional trade.
- **Boost to Blue Economy:** BIMSTEC supports cooperation on sustainable use of marine resources, aligning with India's focus on developing the Blue Economy.
- **Energy Security Collaboration:** The grouping fosters energy cooperation, including renewable energy sharing and the newly operational BIMSTEC Energy Centre.

Geostrategic Significance:

- **Strengthening Maritime Security:** BIMSTEC members work together on maritime security, anti-piracy operations, and disaster management in the Bay of Bengal.
- **Platform for Regional Cooperation:** BIMSTEC enables collaboration in security, disaster relief (HADR), technology, and economic development across South and Southeast Asia.

Promotion of Intangible Culture:

- Initiatives like the Centre for Bay of Bengal Studies promote cultural preservation and strengthen soft power ties among members.

Challenges to BIMSTEC

- **Slow Progress and Inefficiency:** BIMSTEC struggles with irregular meetings, slow decision-making, and limited financial and human resources at its Secretariat.
- **Low Intra-Regional Trade:** Despite an FTA signed in 2004, only two of seven constituent agreements are finalized; intra-BIMSTEC trade remains very low.
- **Connectivity Gaps:** Key projects like BBIN Motor Vehicles Agreement are yet to be fully implemented, hampering physical connectivity in the region.
- **Dependence on External Trade:** BIMSTEC nations trade more with countries outside the group than among themselves, reducing regional economic integration.
- **Challenges in Maritime Trade and Fisheries:** Illegal, Unreported, and Unregulated (IUU) fishing remains rampant in the Bay of Bengal, affecting marine biodiversity and livelihoods.
- **Political Tensions:** Issues like the Rohingya refugee crisis (Bangladesh-Myanmar), India-Nepal border disputes, and Myanmar's internal instability post-coup create mistrust.

- **Limited Institutional Development:** Unlike ASEAN or SAARC, BIMSTEC lacks strong institutions, research centers, or specialized agencies to drive its agenda.
- **Resource Constraints:** Lack of sustained funding and dedicated personnel for common projects weakens implementation and cooperation.
- **Uneven Commitment:** Some member states prioritize other regional groups (like ASEAN or SAARC) over BIMSTEC, leading to divided attention.
- **Geopolitical Pressures:** External influences, especially from China's growing presence in South and Southeast Asia, complicate regional cooperation.

Way Forward

- **Finalize the BIMSTEC Charter:** Providing a strong legal identity to BIMSTEC will ensure clearer roles, accountability, and stability in operations.
- **Implement the Master Plan for Transport Connectivity:** Speeding up infrastructure projects in roadways, railways, ports, and air links will unlock regional economic growth.
- **Strengthen Legal Cooperation:** Ratifying and implementing the BIMSTEC Convention on Mutual Legal Assistance in Criminal Matters will help tackle organized crime and terrorism.
- **Control IUU Fishing:** Swift implementation of initiatives like the **Bay of Bengal Large Marine Ecosystem (BOBLME) project** will promote sustainable fishing practices.
- **Operationalize Technology Transfer Facility:** The Technology Transfer Facility (TTF) in Sri Lanka should be made fully functional to bridge technological gaps and promote innovation sharing.
- **Build Institutional Networks:** Set up permanent regional institutions like a BIMSTEC Development Bank or Research Centres to deepen collaboration.
- **Enhance Diplomatic Training Cooperation:** Regular exchanges among diplomatic academies and officials will foster mutual understanding and build trust.
- **Promote Citizen-Level Engagement:** Launch initiatives like a BIMSTEC Parliamentarians' Forum, youth summits, student exchange programs, and easier business visa schemes.
- **Boost Blue Economy Cooperation:** Develop joint ventures in shipping, port development, marine conservation, and tourism across Bay of Bengal countries.
- **Focus on Disaster Management Cooperation:** Strengthen early warning systems, joint drills, and disaster relief protocols to build resilience against natural disasters.
- **Encourage Private Sector Involvement:** Greater engagement with industries, startups, and chambers of commerce can drive trade, investment, and innovation.

INDIA-UAE RELATIONS

The Crown Prince of the UAE paid an official visit to India,

reinforcing the growing strategic partnership between the two nations.

Key Outcomes of the Meet

➲ Both sides discussed deepening the **India-UAE Comprehensive Strategic Partnership** across trade, investment, defence, energy, technology, education, sports, and people-to-people ties.

➲ **Educational Collaboration:** Plans announced to set up an **IIM campus** and an **Indian Institute of Foreign Trade (IIFT)** campus in Dubai.

➲ **Healthcare Initiative:** Land granted for establishing the **UAE-India Friendship Hospital** in Dubai, focusing on affordable healthcare for the Indian blue-collar workforce.

➲ **Maritime Cooperation:** Agreement to develop **ship-repair clusters** at **Kochi** and **Vadinar** to strengthen maritime capabilities.

➲ **Defence Cooperation:** Decision to increase **defence industry collaboration** and explore opportunities in **joint defence manufacturing** and technology partnerships.

About United Arab Emirates (UAE)

➲ **UAE** is situated in the southeast of the **Arabian Peninsula, bordering Oman and Saudi Arabia.**

➲ Prior to independence, **the seven Emirates** were part of a **British protectorate called the Trucial States.**

➲ In 1971, the **UAE became a federation of six emirates -** Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al-Quwain, and Fujairah, while the seventh emirate, Ras Al Khaimah, joined the federation in 1972.

➲ The capital city is **Abu Dhabi,** located in the **largest and wealthiest** of the seven emirates.

Broader Significance of India-UAE Relationship

Geostrategic Partnership:

➲ **Diplomatic Ties:** Established in 1972, with a major boost in 2015, evolving into a Comprehensive Strategic Partnership in 2017.

➲ **Strategic Cooperation:** Both countries are key partners in I2U2 and IMEC, reinforcing mutual interests in the Indo-Pacific and West Asia.

➲ **Security Collaboration:** Enhanced dialogue on counter-terrorism, cybersecurity, and maritime security strengthens regional stability.

Geo-Economic Cooperation:

➲ **Trade Growth:** CEPA was signed in 2022, since the agreement, bilateral merchandise trade has nearly doubled from USD 43.3 billion in FY 2020-21 to USD 83.7 billion in FY 2023-24.

◆ UAE is the second largest export destination of India (after the US) with an amount of nearly US$ 31.61 billion for the year 2022-23.

◆ Bilateral trade is expected to surpass $97 billion, with targets to hit $100 billion in non-oil trade.

◆ The goal is to raise merchandise trade beyond USD 100 billion and services trade to USD 15 billion within five years.

I2U2 (India-Israel-UAE-USA Quadrilateral)

➲ **Formation & Purpose:** Launched in 2022, I2U2 focuses on economic cooperation, particularly in food security, clean energy, infrastructure, and technology.

➲ **Strategic Significance:** Enhances West Asian regional collaboration and links India's Act West policy with Abraham Accords-driven engagement.

➲ **Key Projects:** Includes initiatives like a hybrid renewable energy project in Gujarat and integrated food corridors in India supported by UAE and Israel.

I2U2 INITIATIVE

India   Israel   UAE   USA

Economic cooperation through joint investments

I2U2 aims to mobilize private sector capital and expertise to help:

Modernize infrastructure | Decarbonize industries | Enhance public health | Promote the development of green technologies

India-Middle East-Europe Economic Corridor (IMEC)

➲ **Launch & Objective:** Announced at the G20 Summit 2023, IMEC is a multimodal transport and energy corridor connecting India with Europe via the Middle East.

➲ **Geostrategic Aim:** Seen as a counter to China's Belt and Road Initiative (BRI), enhancing secure supply chains and trade flows.

➲ **Components:** Includes railways, ports, digital and energy infrastructure, with participation from India, UAE, Saudi Arabia, EU, and the US.

➲ **Industrial Cooperation:** Indian firms have set up manufacturing hubs in UAE's Special Economic Zones (SEZs) across various sectors.

➲ **Free Trade Agreements (FTAs):** UAE is a priority in India's FTA strategy under CEPA, fostering faster trade liberalization.

- **Energy Security:** UAE contributes to India's energy reserves, with strategic oil stored in Mangalore facilities.
- **Fintech and Currency Cooperation:** A Local Currency Settlement System (LCSS) is being developed for INR-AED transactions to boost financial integration.
- **Investment Collaboration:** UAE is a major investor in Indian infrastructure, startups, and renewable energy projects.

Cultural Relations:

- **Indian Diaspora:** Over 3.3 million Indians in UAE contribute to strong cultural and economic ties between the nations.
- **Cultural Exchange:** Active promotion of Indian art, cinema, and literature at global events like the Abu Dhabi International Book Fair.
- **Yoga and Soft Power:** Emiratis enthusiastically participate in the International Day of Yoga, promoting wellness and cultural bonding.

Diaspora and Remittances:

- **Migrant Contributions:** Major Source of Remittances: The UAE is one of the largest sources of remittances to India, contributing around 18–20% of India's total global remittance inflows.
- **Volume of Remittances:** In 2022, Indians in the UAE sent home approximately USD 22–23 billion, making the UAE second only to the United States as a remittance source.
- **Skill Development Initiatives:** Joint efforts focus on upskilling Indian workers in sectors like healthcare, hospitality, and IT.

Challenges in India-UAE Relations

- **Non-Tariff Barriers (NTBs):** Indian exports, particularly in the agri-food sector, face regulatory restrictions in the UAE like Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT).
  - Compliance with Halal certification and other standards often delays shipments and increases costs.
- **Declining Processed Food Exports:** India's processed food exports to the UAE have declined by nearly 30%, largely due to regulatory red tape, stricter inspection norms, and lack of mutual recognition agreements, impacting MSMEs and agri-exporters.
- **Chinese Economic Competition:** China's aggressive economic diplomacy, including low-interest loans and quick infrastructure delivery, provides the UAE with faster alternatives, reducing India's strategic economic space in the region.
- **Labor Rights Issues:** India's large expatriate population in the UAE suffers under the Kafala sponsorship system, which restricts job mobility.

- Issues like wage theft, contract substitution, and poor housing conditions continue to affect Indian migrant workers.
- **Geopolitical Apprehensions:** UAE's financial and strategic engagement with Pakistan, including aid and infrastructure projects, creates unease in India due to Pakistan's support for cross-border terrorism and military tensions.
- **Regional Instability:** Escalating tensions such as Iran-Saudi rivalry and Israel-Hamas conflict make it challenging for India to maintain a balanced diplomatic position while securing energy routes and diaspora safety in West Asia.
- **Dependency on Oil Trade:** Bilateral trade remains heavily skewed towards crude oil and petroleum products, making the relationship vulnerable to global oil price volatility and energy transition disruptions.
- **Limited UAE Investments in India's Manufacturing:** While UAE is a top investor in India, most investments are directed towards real estate and infrastructure, with limited FDI in manufacturing, which hinders the goals of Make in India and deeper economic integration.

Way Forward

- **Aggressively pursue the USD 100 billion non-oil trade target:** Leverage the Comprehensive Economic Partnership Agreement (CEPA) by actively addressing any implementation challenges.
- **Focus on trade diversification:** Move beyond traditional sectors like oil and gems & jewelry to boost trade in high-growth areas such as technology, renewable energy.
- **Enhance investment flows:** Encourage greater UAE investment in India's infrastructure, manufacturing, and technology sectors, and vice versa.
- **Support MSMEs and startups:** Actively involve Micro, Small, and Medium Enterprises (MSMEs) and startups in the bilateral trade and investment ecosystem through initiatives like Bharat Mart.
- **Strengthening Diaspora:** Strengthened ties through the large Indian diaspora in the UAE, facilitating cultural exchange and collaboration in various sectors.
- **Counter Chinese Influence:** Promote transparent, sustainable projects and enhance Indo-UAE collaboration in infrastructure and digital economy.
- **Protect Migrant Workers' Rights:** Work with UAE to reform the Kafala system, ensuring better wages, security, and living conditions for Indian workers.
- **Enhance Defence and Cybersecurity Cooperation:** Boost intelligence sharing and joint exercises to tackle new-age security threats.

LIBERATION DAY TARRIFS

Trump declared April 2, 2025, as 'Liberation Day' and introduced
reciprocal tariffs to address US trade imbalances.

Key Highlights of Reciprocal Tariffs

➲ **Baseline Tariff:** A universal 10% tariff was imposed on all imports, with higher rates applied to countries with significant trade surpluses with the USA.
  ◆ The tariffs **ranged from 10% to 50%** on its exports to the USA.
  ◆ Major sectors affected included textiles, chemicals, machinery, and electronics.
➲ **Country-Specific Tariffs:** India faced a *26% discounted reciprocal tariff,* while China was hit with 34%, the European Union with 20%, Japan with 24%, and Taiwan with 32%.
➲ **Economic Rationale:** The tariffs were calculated to balance trade deficits and address non-monetary trade barriers such as currency manipulation and regulatory differences.

Tariff

➲ It is a tax or duty imposed by a government on imported goods and services.
➲ It is used to regulate trade, protect domestic industries, generate revenue, correct trade imbalances, and exert economic leverage.

Reciprocal Tariff

➲ It refers to trade measures imposed by one country in response to tariffs or trade barriers set by another country.
➲ It aims to create a **level playing field by mirroring the duties** imposed on exports.

Discounted Reciprocal Tariff

➲ It is a trade arrangement between two countries (or economic blocs), where each agrees to reduce or eliminate import duties on goods or services from the other on a reciprocal basis, but at discounted rates compared to standard tariff commitments.
➲ It is a trade measure designed to counteract perceived trade imbalances.

Impact on India

➲ **Export Challenges:** India faced a 26% tariff on its exports to the US, affecting key sectors such as automobiles, textiles, and fisheries.
  ◆ It posed a challenge for Indian exporters, who had to navigate higher costs and reduced competitiveness in the US market.
➲ **Comparative Advantages:** Tariff on India (26%) is **lower than other Asian and South Asian countries** including Vietnam (46%), Thailand (37%), Bangladesh (37%), Sri Lanka (44%) and Pakistan (30%), which could give **India some 'comparative advantages'.**

➲ **Auto Parts & Aluminium:** Not impacted by the new 26% tariff, but still face an existing 25% tariff announced earlier by Trump.
➲ **Pharmaceuticals & Energy Products:** Approximately $9 billion in pharmaceutical exports are **exempt** from the latest tariffs.
  ◆ Energy products are also exempt.

INDIA-USA TRADE: Key Highlights

➲ **Total Trade:** The total goods trade between the U.S. and India was an estimated $129.2 billion in 2024.
  ◆ **US Exports to India:** $41.8 billion, up 3.4% from 2023.
  ◆ **US Imports from India:** $87.4 billion in 2024, up 4.5% from 2023.
➲ **Trade Deficit:** $45.7 bn in 2024, a 5.4% increase over 2023.

CASE STUDY: US Tariff Impact on Seafood Export

The US has imposed a 26% tariff on Indian seafood exports, compared to 10% for Ecuador, 46% for Vietnam, and 32% for Indonesia.

India's Market Share

➲ **India is the largest seafood exporter** to the U.S., holding a 35% share of the market.
➲ India exported 17.81 lakh tonnes of seafood in 2023-24, earning ₹60,523 crore. The bulk of these exports are frozen shrimp, with the U.S. being the largest importer, purchasing 2.97 lakh tonnes worth about $488 million.
➲ Frozen shrimp makes up over 40% of the quantity and 66% of the value of Indian seafood exports.

Impact of Tariff

➲ The tariff increase will significantly impact India's seafood exports to the US, potentially reducing its competitiveness in the US market.
➲ **Ecuador may replace** India as the **largest supplier of shrimps** to the US due to its lower tariff rate (10%). Ecuador currently holds an 18-19% share of the U.S. market.

Do you know?

➲ The U.S. previously banned Indian wild-caught shrimp imports, citing the lack of Turtle Excluder Devices (TEDs) to protect turtles during shrimp fishing.

Impact on the Rest of the World

➲ **Global Trade Tensions:** Fears of a global trade war. Several countries announced counter-tariffs on U.S. goods.
➲ **Market Volatility:** Triggered significant market fluctuations, with global stock indices experiencing sharp declines.

UNDERSEA CABLES

India is currently experiencing a significant boost in its digital backbone with the landing of new undersea cable systems, marking a pivotal step in enhancing its international bandwidth capacity and global internet connectivity.

About

➲ **2Africa Pearls** and **SEA-ME-WE-6 (Southeast Asia-Middle East-West Europe-6)—**have made their landing in India in 2024.

➲ **2Africa Pearls (backed by Meta):**
- ◆ The 2Africa Pearls project is an ambitious extension of the original 2Africa subsea cable system, spearheaded by a consortium that includes Meta, Bharti Airtel, and Saudi Telecom Company (STC).
- ◆ This initiative aims to enhance global internet connectivity by linking Africa, Europe, the Middle East, and Asia.

➲ **SEA-ME-WE-6:**
- ◆ The SEA-ME-WE 6 (South East Asia–Middle East–Western Europe 6) is a cutting-edge submarine fiber-optic cable system currently under development.
- ◆ Spanning approximately 21,700 kilometers, it aims to connect Singapore to France, traversing key regions in Southeast Asia, the Middle East, and Europe.

PROJECT WATERWORTH BY META

➲ Meta introduced its subsea cable project, **Project Waterworth**, which will span 50,000 km, becoming the **longest subsea cable project in the world**.

➲ The project aims to enhance global connectivity, focusing on locations such as the U.S., India, Brazil, South Africa, and others.

➲ The investment for the project involves billions of dollars and is set to span multiple years, with a focus on providing AI access to users worldwide.

Impact on India:

➲ Project Waterworth will help accelerate India's digital infrastructure growth and support the country's plans for its digital economy.

Technical Details:

➲ The cables will be laid at depths of up to 7,000 meters.

➲ Special measures will be implemented to protect cables in high-risk areas where damage is more likely.

What are Undersea Cables?

➲ Undersea cables connect global internet networks, providing vast data transfer capacity via fiber optic strands.
- ◆ These cables land at **designated points and are linked to terrestrial networks.**
- ◆ They connect internet service providers and telecom operators everywhere with those in other countries.

➲ **These cables are a few inches thick and are heavily padded** to withstand the hostile environment of the sea floor.

India's Cable Infrastructure

➲ India has two main cable hubs, **Mumbai and Chennai**, with 17 cable systems landing there.

➲ **India also has two domestic cable systems** — the **Chennai Andaman and Nicobar Islands (CANI) cable** to provide high-speed connectivity to the islands, and the **Kochi Lakshadweep Islands project.**

Concerns

➲ 570 global subsea cables handle about **90% of global data, 80% of world trade,** and key financial and government transactions rely on undersea cables.

➲ **Risks of Cable Disruptions:** If there's a disruption at the Red Sea, 25% of India's internet is affected.

➲ India lacks local vessels for cable repairs, leading to delays.

International Cable Protection Committee (ICPC)

➲ Founded in 1958, it is a global forum for governments and commercial entities in the submarine cable industry.

➲ Its mission is to improve the security of undersea cables by providing a platform for sharing technical, legal, and environmental information.

About

They are incredibly thin strands of very pure glass or plastic. They transmit information in the form of light pulses.

Working Mechanism

They work on the principle of **Total Internal Reflection (TIR)**.

➲ An optical fiber has a central core surrounded by a cladding layer. The core has a slightly higher refractive index than the cladding.

➲ When light enters the core at a certain angle, it keeps bouncing off the cladding due to TIR, traveling down the fiber with minimal loss.

Basic Operation of an Optical Fiber

Light entering the fiber within this angular range will undergo total internal reflection and travel down the fiber.

Optical fiber cross section

Lower index cladding

Light entering the fiber at higher angles will exit through the cladding.

Total internal reflection

Higher index core
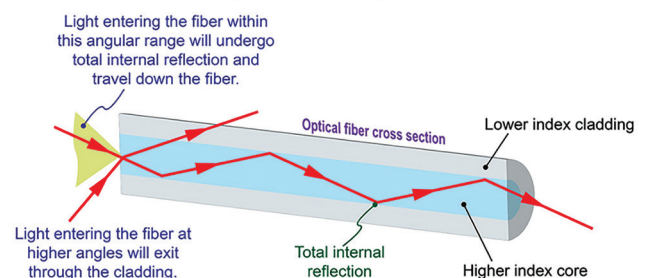
9 YEARS OF STAND-UP INDIA

The Stand-Up India Scheme, launched on 5th April 2016,
has completed nine years of its implementation.

About

- The Stand-Up India Scheme is an initiative of the **Ministry of Finance** aimed at promoting entrepreneurship among **Scheduled Castes (SC), Scheduled Tribes (ST), and women.**
- The scheme facilitates bank loans ranging from **₹10 lakh to ₹1 crore** for setting up **greenfield enterprises** in manufacturing, services, trading, or activities allied to agriculture.
- **Eligibility Criteria:** The borrower must be SC/ST and/or a woman entrepreneur, aged above **18 years.**
  - In case of non-individual enterprises, **at least 51%** of the shareholding and controlling stake must be held by either an SC/ST or a woman entrepreneur.

PROGRESS UNDER STAND-UP INDIA

Accounts Sanctioned: 2.69 Lakh
Amount Sanctioned: Rs. 61,020.41 Crore
Amount Disbursed: Rs. 35,745.20 Crore
Women Accounts: 2.01 Lakh
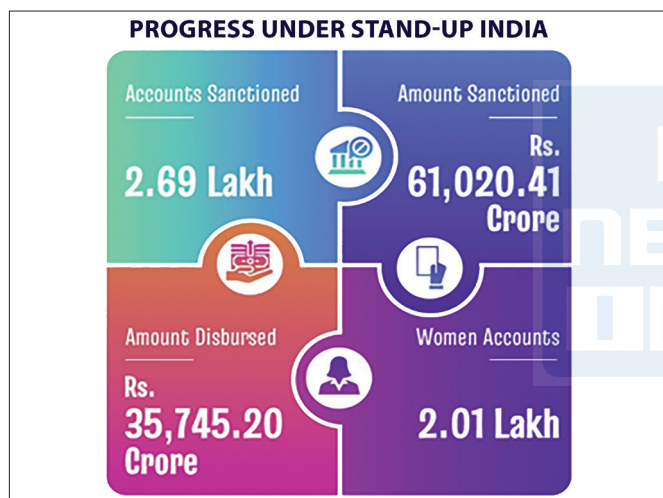
Significance of 9 Years of Stand-Up India

- **Empowering Marginalized Entrepreneurs:** Since its launch in 2016, Stand-Up India has promoted entrepreneurship among SCs, STs, and women, with loans sanctioned worth over ₹61,000 crore by 2025.
- **Growth in Beneficiary Accounts:** Between 2018 and March 2025, the number of SC, ST, and women beneficiaries rose sharply, with women's accounts crossing 2.01lakh and loan amounts tripling.
- **Support for First-Time Entrepreneurs:** The scheme provides loans between ₹10 lakh to ₹1 crore for greenfield projects, helping many first-time entrepreneurs establish businesses in new sectors.
- **Positive Societal Impact:** Independent studies show the scheme has generated employment and improved livelihoods in multiple states, particularly among marginalized groups.
- **Integration with National Initiatives:** Stand-Up India complements Startup India, Make in India, and Digital India, creating a stronger ecosystem for entrepreneurship and innovation.
- **Promoting Financial Inclusion:** By improving credit access for underserved communities, the scheme has strengthened financial inclusion and expanded participation in India's economy.

Issues

- **Limited Awareness:** Many potential beneficiaries, especially in rural areas, are unaware of the scheme's benefits and procedures.
- **Difficulties in Collateral and Documentation:** First-time entrepreneurs often struggle with meeting collateral requirements and completing complex documentation for loans.
- **Bank Reluctance:** Banks are sometimes hesitant to sanction loans to applicants from marginalized sections, citing risk of repayment defaults.
- **Urban-Rural Imbalance:** Most beneficiaries are concentrated in urban and semi-urban areas, with rural regions still lagging behind in access.
- **Low Utilization for Manufacturing Sector:** Although manufacturing is a focus, a majority of sanctioned loans are for trading and services, limiting industrial growth.
- **Monitoring and Handholding Gaps:** Post-loan support such as business mentoring, skill development, and timely grievance redressal remains inadequate for many entrepreneurs.

Way Forward

- **Enhance Awareness Campaigns:** Strengthen outreach programs through panchayats, NGOs, and digital platforms to educate potential entrepreneurs, especially in rural areas.
- **Simplify Loan Procedures:** Reduce paperwork, streamline the application process, and offer collateral-free or credit guarantee support to ease access for first-time borrowers.
- **Strengthen Bank Accountability:** Mandate regular monitoring of bank performance in loan sanctions and ensure no unjustified delays or rejections for eligible applicants.
- **Focus on Rural Outreach:** Special initiatives must be launched to target rural areas, ensuring balanced regional distribution of benefits across villages and small towns.
- **Promote Manufacturing Sector:** Provide additional incentives or support for manufacturing-based projects to diversify entrepreneurship beyond trading and services.
- **Improve Post-Loan Support:** Set up mentoring networks, incubation centers, and skill development programs to guide and support entrepreneurs after loan disbursement.

COASTAL SHIPPING BILL, 2024

The Lok Sabha has passed the Coastal Shipping Bill, 2024.

About

- The Bill **regulates vessels engaged in trade within Indian coastal waters,** which include territorial waters and adjoining maritime zones.
- The Bill is based on **global best practices and dedicated laws** of major maritime nations.
- It **consolidates and amends laws related** to coastal shipping, promotes coasting trade, and encourages domestic participation.

Major Highlights

- **Coastal Waters:** Territorial waters extend up to **12 NM (Nautical Mile)**, and adjoining maritime zones extend up to **200 NM.**
- **Repeal of Merchant Shipping Act:** The Bill seeks to **repeal Part XIV** of the **Merchant Shipping Act, 1958**, regulating ships in coastal trade.
- **Vessel Types Covered:** The Bill regulates all types of vessels, including ships, boats, sailing vessels, and mobile offshore drilling units.
- **Expansion of Coasting Trade Definition:** The Bill expands coasting trade to include services like exploration, research, and other commercial activities (except fishing).
- **Licence Requirements:**
  - Vessels wholly owned by Indian citizens don't need a licence for coasting trade.
  - Vessels not wholly owned by Indian citizens need a licence.
  - Overseas Citizens of India (OCIs) hiring vessels for operations outside India are exempt from the licence requirement.
- **Licence Issuance: The Director General of Shipping,** appointed by the central government, issues licences.
- **Increased Penalties:** The Bill raises the **maximum fine** for unlicensed coasting trade to **Rs 15 lakh or four times the gains from the unlicensed voyage.**
- **Replaces imprisonment penalties with civil penalties** (up to Rs 5 lakh or twice the gains from contravention).
- **National Strategy Plan:** The central government must prepare a National Coastal and Inland Shipping Strategic Plan within two years of the Act's commencement.
- **National Database:** Introduces a National Database for Coastal Shipping to enhance transparency and coordination.
- **Exemption Powers:** The central government has the power to exempt certain classes of vessels from the Bill's provisions.
- **Ease of Doing Business:** Removes the general trading license requirement for Indian ships and reduces compliance burdens.
- **Support for Indian Shipbuilding:** Encourages foreign vessels to support Indian shipbuilding and employment for seafarers.

India's Shipping Sector

- **Cargo Traffic Growth:** Coastal cargo traffic surged by **119% from 2014-2024,** with a **target of 230 million tonnes by 2030.**
- **Achievements:** Cargo handling capacity increased by **103% in the last decade**.
- **Port Ranking Improvement:** India's port ranking improved from **54th in 2014 to 38th in 2023,** with nine Indian ports now in the top 100 globally *(World Bank LPI)*.
- **Future Goals:** India has outlined investments of **US$ 82 billion in port infrastructure projects by 2035** to bolster the maritime sector. India plans to establish a new shipping company to **expand its fleet by at least 1,000 ships within a decade.**

Initiatives by Government

- **Sagarmala Programme:** Promoting port-led development.
- **Maritime India Vision 2030 (MIV 2030):** Aiming for India to become a top 10 shipbuilding nation by 2030 and create a world-class, efficient, and sustainable maritime ecosystem.
  - Includes 150+ initiatives across ten key maritime sectors.
- **Inland Waterways Development:** 26 new national waterways identified by the Inland Waterways Authority of India (IWAI).
  - Provides alternative, sustainable transport, easing road/rail congestion.
- **Green Tug Transition Program (GTTP):** Aims to replace fuel-based harbour tugs with eco-friendly, sustainable fuel-powered tugs. Transition to be completed by 2040 across major ports.
- **Sagarmanthan Dialogue:** An annual maritime strategic dialogue to position India as a global center for maritime conversations.
- **Maritime Development Fund:** ₹25,000 crore fund for long-term financing to modernize ports and shipping infrastructure, encouraging private investment.
- **Shipbuilding Financial Assistance Policy (SBFAP 2.0):** Modernized to help Indian shipyards compete with global giants.

Conclusion

- The Bill seeks to unlock the full potential of India's vast and strategic coastline, providing a dedicated legal framework for coastal trade.
- It will reduce our dependence on foreign vessels and significantly lower logistics costs, promote green transport, and create jobs in shipbuilding, port services, and vessel manning.
- The efforts will take India's maritime sector toward a sustainable, innovative, and future-ready ecosystem, ensuring its place as a central player in the global maritime landscape.

ANTIBIOTICS IN LIVESTOCK

A recent study by the Food and Agriculture Organization (FAO) projects that global antibiotic use in livestock could increase by 30% by 2040, highlighting the urgent need for interventions to curb this trend.

About:

- **Antibiotics** are medicines that treat bacterial infections by killing bacteria or inhibiting their growth, revolutionizing healthcare since the discovery of penicillin in 1928.
- **Antimicrobial Resistance (AMR)** is a medical condition wherein the microorganisms (bacteria, viruses, fungi, parasites) evolve to resist drugs, rendering treatments ineffective and posing a global health threat.

Use of Antibiotics in Livestocks

- Antibiotics are used for treating infections, and as growth promoters and preventive agents.
- The overuse and misuse of antibiotics in animal agriculture have accelerated the development of drug-resistant bacteria, posing risks to both animal and human health.
  - AMR could make common infections harder to treat, increasing healthcare costs and mortality rates.
- WHO called it a **'silent pandemic'**, as it poses a serious risk of exacerbating antimicrobial resistance, whereby bacteria evolve to resist antibiotic treatment. Drug-resistant infections already cause over 1.2 million deaths globally each year.
- Antibiotic use in livestock is expected to rise from 110,777 tons in 2019 to 143,481 tons by 2040, representing a 29.5% increase.

Role of Antibiotics in Livestock

- **Therapeutic Use:** Antibiotics are used to treat bacterial infections in animals, ensuring their health and productivity.
- **Preventive Use:** Prophylactic administration of antibiotics helps prevent diseases in healthy animals, particularly in intensive farming systems.
- **Growth Promotion:** In some regions, antibiotics are used to enhance growth rates and feed efficiency, although this practice is increasingly discouraged globally.

Key Drivers Behind the Surge

- **Intensive Farming Systems:** Large-scale industrial farms often rely on antibiotics to maintain animal health in crowded, high-stress environments.
- **Regulatory Gaps:** Many countries lack strict guidelines on antibiotic usage in animals, or fail to enforce them effectively.
- **Overuse of Antibiotics as Growth Promoters:** Antibiotics can help animals grow faster and survive poor conditions, making them economically attractive in intensive systems.
- **Global Trade and Movement:** International trade in livestock, meat products, and feed can spread resistant strains across borders. Antimicrobial Resistance (AMR) genes can spread through mobile genetic elements like plasmids.

Policies and Commitments

- **UN General Assembly AMR Declaration (2024):** Governments worldwide have pledged to reduce antimicrobial use in agrifood systems by 30–50% by 2030. UNGA recognizes AMR as a major challenge to human health, food security, economic development, and global stability.
- **RENOFARM Initiative:** It was launched by FAO, providing policy guidance and technical assistance to help countries curb antibiotic use.
- **One Health Approach:** It integrates human, animal, and environmental health — to address the issue of AMR, as emphasised by FAO, WHO and the **World Organisation for Animal Health (WOAH)**.
- **Optimizing Livestock Productivity:** Improving animal health, management practices, and production efficiency could cut antibiotic use by up to 57%. Investing in vaccination programs, biosecurity measures, and improved animal nutrition can reduce the need for antibiotics.
- **India's National Action Plan on AMR:** It aims to reduce antibiotic dependency in agriculture.
- **Standard Veterinary Treatment Guidelines (SVTG):** It was introduced by the **Union Ministry of Animal Husbandry** to regulate the use of antibiotics in livestock and poultry while incorporating Ayurvedic and ethnoveterinary practices.

RELATED INITIATIVES AND FACTS

- **Red Line Campaign:** MoHFW launched Red Line awareness campaign on Antimicrobials Resistance, urging people not to use medicines marked with a red vertical line, including antibiotics, without a doctor's prescription.
- **Indian Council of Medical Research (ICMR)** has released treatment guidelines for antimicrobial use in common syndromes which contain guidelines for use of antibiotics for viral bronchitis and low-grade fever.
- Antibiotics are included in **Schedule H and H1 of the Drugs Rules, 1945.** These drugs have specific caution labeling requirements and are sold only under the prescription of a Registered Medical Practitioner.
- The supply of a drug specified in Schedule H1 are recorded in a separate register at the time of the supply and such records are maintained for three years and are open for inspection.
- Central Drugs Standard Control Organisation (CDSCO) has placed **24 hi-end antimicrobials under schedule H1** by issuing notification.

SHIFTING CHEETAHS FROM KUNO N.P. TO GANDHI SAGAR

Cheetahs being shifted from Kuno National Park (Madhya Pradesh) as original plan
to bring new cheetahs from South Africa to Gandhi Sagar delayed.

About:

➲ The move aims to establish a metapopulation of 60–70 cheetahs across the Kuno-Gandhi Sagar landscape, spanning Madhya Pradesh and Rajasthan.

Project Cheetah

➲ It began in 2022 with introduction of 8 cheetahs from Namibia and 12 from South Africa.

◆ However, since then, 8 adult cheetahs and 5 cubs have died.

➲ It is being implemented by **National Tiger Conservation Authority (NTCA)**, a statutory body under Ministry of Environment, Forest and Climate Change (MoEF&CC) in collaboration with Madhya Pradesh Forest Department, Wildlife Institute of India (WII) and Cheetah experts from **Namibia** and **South Africa**.

Do You Know?

➲ Cheetahs are the **world's fastest land animals**, reaching speeds of 60–70 mph, aided by their slender build, long limbs, long tail, and semi-retractable claws for balance and traction.

➲ Historically widespread across Africa and Asia, cheetahs now occupy only about **10% of their original range**, mainly in southern and eastern Africa, with a critically endangered population in Iran.

◆ The cheetah was declared extinct in India in 1952.

Gandhi Sagar Wildlife Sanctuary

➲ Located in the **eastern part of Madhya Pradesh**, India.

➲ Lies in the catchment area of **Gandhi Sagar Dam on the Chambal River.** The Chambal River flows through the sanctuary.

➲ It belongs to the **Khathiar-Gir Dry Deciduous Forests** eco-region, known for its mixed dry deciduous vegetation.

➲ Home to the **Chaturbhuj Nala rock shelters**, known for prehistoric cave paintings and archaeological relevance.

ASIATIC CHEETAH vs. AFRICAN CHEETAH		
Aspect	**Asiatic Cheetah (Acinonyx jubatus venaticus)**	**African Cheetah (Acinonyx jubatus, e.g., A. j. jubatus)**
Physical Traits	➲ **Size:** Smaller, leaner (110-135cm body length, 30-45kg). ➲ **Coat:** Paler, tawny with fewer, lighter spots; less pronounced tear marks. ➲ **Legs:** Shorter, suited for rocky terrains.	➲ **Size:** Larger, robust (112–150 cm, 35–65 kg). ➲ **Coat:** Bright golden-yellow, dense black spots, bold tear marks. ➲ **Legs:** Longer, optimized for savanna sprints.
Habitat	➲ **Historical Range:** India, Pakistan, Afghanistan, Iran. ➲ **Current:** Iran's arid deserts (Dasht-e-Kavir, Kavir National Park), sparse vegetation. ➲ **Preference:** Rocky, semi-arid with gazelles as prey.	➲ **Current Range:** Sub-Saharan Africa (Namibia, Botswana, Kenya), some in North Africa (Algeria). ➲ **Preference:** Open savannas, grasslands with abundant prey (impalas, springboks).
Population (2025)	➲ **Estimate:** 40–50 individuals (IUCN). ➲ **Status:** Critically endangered. ➲ **Trend:** Declining, near extinction.	➲ **Estimate:** ~6,600 individuals (IUCN). ➲ **Status:** Vulnerable. ➲ **Trend:** Stable but fragmented.
Conservation Status	➲ **Threats:** Poaching, habitat fragmentation, prey depletion, and human-wildlife conflict in Iran. ➲ **Efforts:** Iran's conservation programs (e.g., CACP) focus on breeding, habitat protection. Low success due to small population. ➲ **India:** Extinct; no reintroduction due to genetic scarcity.	➲ **Threats:** Habitat loss, poaching, conflict in unprotected areas. ➲ **Efforts:** Thriving in African reserves; India's reintroduction (24 cheetahs in Kuno, 2025) uses Namibian/South African stock, with 15 cubs born. ➲ **Success:** Stable populations, scalable reintroduction.

PARTICULATE MATTER TRADING SCHEME IN GUJARAT

A study found that the Surat Emission Trading Scheme (ETS) in Gujarat, delivered both environmental and economic benefits.

About

➲ The **Emission Trading Scheme (ETS)** in Surat, launched in **2019,** is the **world's first market-based trading system for particulate matter (PM)** emissions and India's first pollution trading scheme of any kind.

➲ It represents a **cap-and-trade system**, where total emissions are capped and emission permits can be traded among industrial units.

➲ It was developed by the **Gujarat Pollution Control Board (GPCB),** in collaboration with the Energy Policy Institute at the University of Chicago.

Significance of the Programme

➲ **Environmental Innovation:** being the first cap-and-trade system globally for PM emissions it showcases India's leadership in market-based environmental regulation.

➲ **Data-Driven Policy:** The use of real-time CEMS data allowed for evidence-based regulation and gradual tightening of caps to match actual emissions levels.

➲ **Scalability:** The success in Surat paves the way for similar schemes in other Indian cities and for other pollutants, including NOx and SO2.

Emission Trading Schemes (ETS)

➲ Emission Trading Schemes (ETS), or carbon markets, are market-based policy tools designed to reduce greenhouse gas (GHG) emissions by setting a cap on emissions and allowing entities to trade allowances.Operating on the cap-and-trade principle, ETS incentivizes cost-effective decarbonization, making it a cornerstone of global climate strategies.

➲ **Cap-and-Trade:** A fixed emission limit is reduced annually, creating scarcity. Entities reducing emissions below their cap can sell surplus allowances, while those exceeding buy more, incentivizing low-cost reductions.

➲ **Baseline-and-Credit:** Entities reducing emissions beyond a baseline earn credits to sell, without a fixed cap, though verifying "additionality" is challenging.

What is Particulate Matter (PM)?

➲ Particulate matter (PM) refers to the wide variety of tiny substances that float in the air in the form of either solid particles or liquid droplets or both.

➲ Based on particle size, PM is divided into four groups:
- **PM10,** known as the coarse particulate matter, which is ≤10 μm in size;
- **PM2.5,** known as the fine particulate matter, which is ≤2.5 μm in size;
- **PM0.3** particles with a diameter of <0.3 μm are known as quasi-ultrafine particles;
- **PM0.1,** known as the ultrafine particulate matter, which is ≤0.1 μm in size.

Particulate Pollutants

Sources of Particulate Matter

➲ **Natural Sources:** Dust storms, Forest fires, Volcanic eruptions

➲ **Anthropogenic Sources:** Vehicle exhaust, Industrial emissions, Construction activities and Biomass and fossil fuel burning.

Health Impacts of PM

➲ **Respiratory diseases:** Asthma, bronchitis, chronic obstructive pulmonary disease (COPD).

➲ **Cardiovascular issues:** Increased risk of heart attacks and hypertension.

➲ **Neurological disorders:** Cognitive decline and neurodevelopmental issues in children.

➲ **Premature mortality:** Prolonged exposure increases the risk of early deaths due to lung and heart diseases.
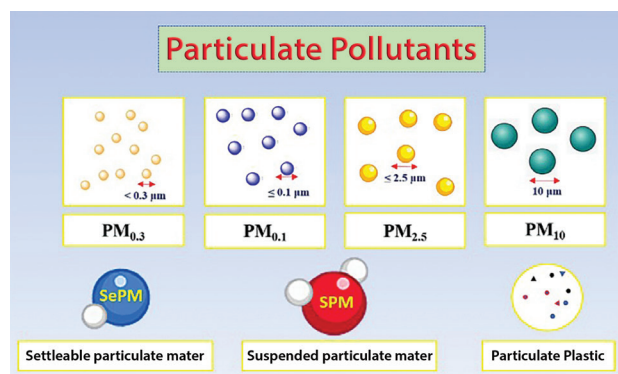
ELECTRONIC SURVEILLANCE SYSTEM ALONG THE J&K BORDER

Union Home Minister Amit Shah announced that the entire India–Pakistan border
will be brought under electronic surveillance within the next four years.

Key Announcements:

- **Electronic Surveillance Trials:** Two advanced surveillance models—capable of detecting infiltrators and underground tunnels—are under trial along the **Jammu border**.
  - Full-scale deployment along the **India-Pakistan border** is planned over the next **four years.**
- **Security in Jammu & Kashmir:** While terrorism has been significantly reduced, it persists in parts of the region.
  - Since **2021**, there have been **30+ terror-related incidents** reported in the **Jammu area.**
- **Support for Martyred Policemen's Families:** Union Home Minister Amit Shah met families of police personnel killed in terrorist attacks and assured **compassionate job appointments** and continued **government support.**
- **Technology-Driven Security Measures:** The government is testing **over 26 technologies**, including **anti-drone systems** and **tunnel detection tools**, to strengthen border security and reduce casualties.
- **Border Infrastructure Development:** Inaugurated new facilities worth **₹47.22 crore**, including **women's barracks** and **observation towers**, to enhance operational efficiency and living conditions for border personnel.

Additional Information

Border Management using Electronic Surveillance refers to securing and monitoring international borders through advanced technologies such as drones, radars, sensors, CCTV cameras, satellite imagery, and thermal imaging systems.

Need of Enhanced Border Management for India:

- **Cross-Border Terrorism:** Persistent threats from Pakistan-based terror groups like **Lashkar-e-Taiba** and **Jaish-e-Mohammed** require constant vigilance, particularly along the **Line of Control (LoC)**.
  - **Example:** 2016 Uri Attack, 2019 *Pulwama* Attack and *Pahalgam* attack in 2025. Over 30 terrorist incidents have been reported from Jammu since 2021.
- **Smuggling and Narco-Terrorism:** Porous borders are exploited for smuggling **arms**, **narcotics**, and **counterfeit currency**.
  - **Example: Punjab Police** busted a cross-border drug cartel in **March 2025**.
  - The **Death Crescent** (Afghanistan-Iran-Pakistan) remains a major source of heroin entering India.

- **Development of Border Areas:** Strengthening infrastructure helps implement schemes like the **Vibrant Villages Programme** and counters China's expansion along the **Line of Actual Control (LAC)**.
- **Sovereignty and Strategic Deterrence:** Visible, secure borders symbolize **national sovereignty**, deter infiltration, and reinforce India's control over contested territories (e.g., **Arunachal Pradesh**, recently claimed by China).

INDIA'S INTERNATIONAL LAND BORDERS
- Indo-Afghanistan (106 km)
- Indo-China (3488 km)
- Indo-Pak (3323 km)
- Indo-Bhutan (699 km)
- Indo-Nepal (1751 km)
- Indo-Myanmar (1643 km)
- Indo-Bangladesh (4096.7 km)
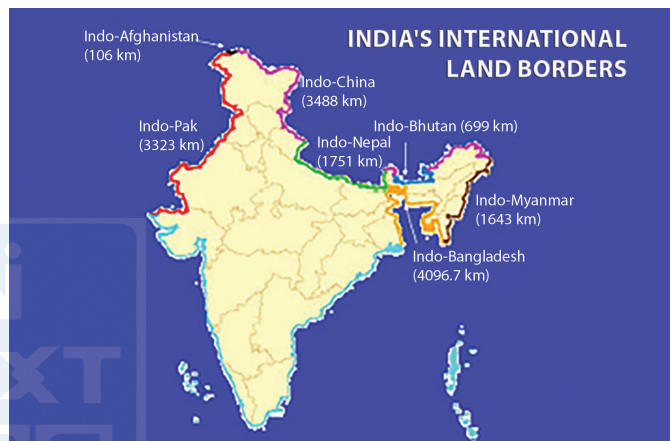
Key Border Management Initiatives

- **Comprehensive Integrated Border Management System (CIBMS):** Integration of **manpower**, **sensors**, **networks**, and **command-control systems** for enhanced situational awareness and real-time response.
- **Border Infrastructure and Management (BIM) Scheme:** Central Sector Scheme aiming to build **border roads**, **fencing**, **outposts**, and **helipads** in strategic areas.
- **Smart Fencing Initiatives:** Use of **infrared sensors**, **thermal imagers**, and **automated alert systems**, including a **100-km smart fencing pilot** along the India-Myanmar border.
- **Integrated Check Posts (ICPs):** Facilitating efficient and secure cross-border movement of goods and people.
- **Vibrant Villages Programme (VVP-I and II):** Focuses on **self-reliance**, **connectivity**, and **economic development** of strategic border villages.
- **Border Area Development Programme (BADP):** Supports community infrastructure in remote border areas to enhance local participation in national security.

Challenges in Border Management

- **Terrain Complexity:** Borders cover **deserts**, **marshlands**, **hills**, and **dense forests**, requiring customized surveillance models for different sectors.

- **Inter-Agency Coordination Gaps:** Lack of real-time information sharing among BSF, Army, IB, and Police leads to slower responses during infiltration or drone intrusions.
- **Technological Maintenance Challenges:** Advanced systems like drones and sensors need constant maintenance and are vulnerable to **harsh weather** (e.g., snow in J&K, heat in Rajasthan).
- **Financial and Logistical Burden:** Establishing and maintaining surveillance infrastructure such as fences, drones, and sensors over vast, rugged terrains demands significant financial investment.
  - Additionally, the recurring costs of manpower, equipment maintenance, and logistics create long-term sustainability challenges for border management.
- **Environmental and Privacy Concerns:** The Forest (Conservation) Amendment Act, 2023 permits infrastructure development within 100 km of international borders without environmental clearances.
  - This has sparked fears of widespread deforestation, loss of biodiversity, and displacement of indigenous communities, compromising both environmental integrity and civil rights.
- **Porosity and Smuggling:** Unfenced and poorly monitored stretches of the border are exploited for unauthorized crossings and criminal activities.

- These vulnerable areas serve as corridors for drug trafficking, arms smuggling, and human migration, undermining national security and law enforcement efforts.

Way Ahead

- **Accelerated Deployment in Critical Zones:** Focus first on vulnerable areas like **Jammu**, **Punjab**, and **Rajasthan**, where infiltration risks are higher.
- **Promoting Indigenous Innovation:** Boost development through **iDEX startups** like **ideaForge**, supplying drones and surveillance technologies to security forces.
- **Use of AI and Data Analytics:** Expand AI-based projects like **Project Himshakti** to predict infiltration patterns using satellite imagery and optimize patrolling.
- **Unified Border Command:** Create an integrated command system similar to the **US Customs and Border Protection (CBP)** model for better synergy across forces.
- **Satellite and GIS Integration:** Leverage **Cartosat series satellites** and **GSAT-7 (Rukmini)** to enhance real-time border monitoring and secure communications.
- **Community Engagement:** Strengthen schemes like **Vibrant Villages Programme** to anchor local populations in border areas, fostering community-led surveillance.
- **Focus on Resilience and Sustainability:** Ensure long-term equipment maintenance, skilled manpower, and climate-resilient surveillance technology deployments.

GLOBAL BEST PRACTICES IN BORDER SURVEILLANCE		
Country	**Model**	**Key Features**
United States	Integrated Fixed Towers (SBInet)	- Thermal imaging cameras for night detection - Mobile radars to monitor movement - Ground sensors to detect footfalls and vehicle intrusion
Israel	Smart Fence Technology	- Artificial Intelligence (AI) for threat detection - Underground sensors to detect tunneling - Facial recognition for real-time identification
China	BeiDou Satellite Surveillance	- Smart surveillance towers with long-range monitoring - Satellite-linked tracking systems using BeiDou Navigation Satellite System
European Union	EUROSUR (European Border Surveillance System)	- Integration of drones and satellites - AI-based real-time data analysis - Coordinated intelligence sharing among EU states
South Korea	DMZ Smart Surveillance System	- Heat and motion sensors to detect infiltration - Seismic detectors for underground movement - 24/7 automated monitoring in the Demilitarized Zone (DMZ)
Russia	SOVA Border Surveillance	- Electro-optical systems and unmanned aerial vehicles (UAVs) - Integrated radar and acoustic sensors - Harsh climate monitoring capability
Australia	Northern Border Monitoring	- Use of long-range drones and satellite imagery - Real-time threat analytics with AI - Coordination with indigenous patrol units in remote areas

WORLD HERITAGE DAY, 2025

World Heritage Day, also known as the International Monuments and Sites Day, is observed on 18 April every year.

About

➲ This year's theme is "Heritage under Threat from Disasters and Conflicts: Preparedness and Learning from 60 years of ICOMOS Actions."

Background

➲ In **1982**, The **International Council on Monuments and Sites (ICOMOS)** proposed that April 18 should be observed as the World Heritage Day.

➲ Later, the date was approved by the **United Nations Educational, Scientific, and Cultural Organization (UNESCO)** at the 22nd General Conference in **1983.**

World Heritage List

Cultural Sites — 952
Mixed Sites (having both cultural and natural value) — 40
Natural Sites — 231
Sites around the world — 1,223

By October 2024, 196 Countries had signed the World Heritage Convention

World Heritage Sites

➲ **World Heritage** is the designation for places on Earth that are of outstanding universal value to humanity and as such, have been inscribed on the World Heritage List to be protected for future generations to appreciate and enjoy.

  ◆ These can be **cultural, natural, or a mix of both.**
  ◆ They are protected under an international agreement led by **UNESCO.**

➲ **The World Heritage Convention, 1972** was adopted by UNESCO's member countries.

  ◆ The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them.

◆ India became part of this Convention in **1977.**

List of UNESCO world heritage sites in India

Complexe du Capitole, Red Fort Complex, Qutb Minar and its Monuments, Humayun's Tomb, The Jantar Mantar, Keoladeo National Park, Hill Forts of Rajasthan, Champaner-Pavagadh Archaeological Park, Rani-ki-Vav (the Queen's Stepwell) at Patan, Chhatrapati Shivaji Terminus, Ajanta Caves, Elephanta Caves, Ellora Caves, Victorian Gothic and Art Deco Ensembles of Mumbai, Churches & Convents of Goa, Historic City of Ahmedabad, Dholavira: A Harappan City, Jaipur City, Group of Monuments at Pattadakal, Group of Monuments at Hampi, Great Himalayan National Park Conservation Area, Fatehpur Sikri, Nanda Devi and Valley of Flowers National Parks, Archaeological Site of Nalanda Mahavihara at Nalanda, Mahabodhi Temple Complex at Bodh Gaya, Taj Mahal, Agra Fort, Khajuraho Group of Monuments, Buddhist Monuments at Sanchi, Group of Monuments at Mahabalipuram, Great Living Chola Temples, Khangchendzonga National Park, Manas Wildlife Sanctuary, Kaziranga National Park, Sundarbans National Park, Sun Temple, Konârak, Rock Shelters of Bhimbetka, Kakatiya Rudreshwara (Ramappa) Temple

CATEGORY OF SITE
CULTURAL SITE- 35
NATURAL SITE- 7 = 43
MIXED SITE- 1

● Mountain Railways of India ● Western Ghats

India on the World Heritage Map

➲ Total World Heritage Sites (2024): **43**
  ◆ **Cultural:** 35
  ◆ **Natural:** 7
  ◆ **Mixed:** 1 (Khangchendzonga National Park, Sikkim)

➲ More on UNESCO's Tentative List: **62**

➲ **Latest Addition:** Moidams (2024), Sacred Ensembles of the Hoysala (2023) and Santiniketan (2023).

➲ **First Inscribed Sites (1983):** Agra Fort, Taj Mahal, Ajanta Caves and Ellora Caves.

➲ **UNESCO Tentative List:** India currently has 62 sites on its UNESCO Tentative List, which is a prerequisite for future nomination to the World Heritage List. These sites span diverse cultural, historical, and natural themes across the country. For example:

  ◆ Temples at Bishnupur (West Bengal)
  ◆ Ancient Buddhist Site, Sarnath (Uttar Pradesh)
  ◆ Sri Harimandir Sahib (Golden Temple) (Punjab)
  ◆ River Island of Majuli (Assam)

ADDITIONAL INFORMATION

Government's Initiatives to Promote India's Cultural Heritage

➲ **Retrieval of Antiquities:** Archaeological Survey of India is committed to the protection of cultural property.
   ◆ The government has retrieved **655** antiquities from foreign countries from the year **1976 to 2024.**
➲ **Adopt a Heritage' Scheme:** The programme was launched in **2017** and revamped as "Adopt A Heritage 2.0" in **2023.**
   ◆ It allows private and public groups to help develop facilities at protected monuments using their **Corporate Social Responsibility (CSR)** funds.
➲ **46th Session of the World Heritage Committee:** Archaeological Survey of India, hosted the 46th Session of the World Heritage Committee in 2024.
➲ **Must See Portal:** The Archaeological Survey of India (ASI) has created a portal to showcase "Must-See Monuments and Archaeological Sites of India."
➲ **Digitization of Cultural Heritage in India:** The National Mission on Monuments and Antiquities **(NMMA)**, set up in **2007,** works to digitize and document India's heritage and antiquities.

Monuments of National Importance (MNI) of India

➲ The MNIs are officially conserved by the **Archaeological Survey of India (ASI),** which functions in accordance with **The Ancient Monuments and Archaeological Sites and Remains Act of 2010 (AMASR Act 2010).**
➲ There are **3697** ancient monuments and archaeological sites and remains declared as of national importance in the country.

BHAGAVAD GITA AND NATYASHASTRA ADDED TO UNESCO'S MEMORY OF THE WORLD REGISTER

The manuscripts of the Bhagavad Gita and Bharat Muni's Natyashastra have been inscribed in UNESCO's Memory of the World Register.

What is UNESCO's Memory of the World Register?

➲ **Establishment:** 1992 by UNESCO.
➲ **Purpose:** To preserve rare manuscripts, archival holdings, and other documentary heritage of universal value against neglect, decay, and destruction.
➲ **Criteria for Inclusion:** Outstanding universal value, Historical, cultural, or social significance and Authenticity, integrity, and rarity.
➲ As of 2025, the register includes 570 collections from 72 countries and 4 international organizations.

About the Inscriptions

➲ **Bhagavad Gita:**
   ◆ **Meaning:** "The Song of the Lord."
   ◆ **Attributed to:** Sage Vyasa.
   ◆ **Content**: A 700-verse dialogue between Lord Krishna and Arjuna from the Mahabharata.
   ◆ **Themes:** Dharma (duty), Karma (action), Bhakti (devotion), Jnana (knowledge).
   ◆ **Significance:** Central to Indian philosophy, ethics, and spirituality; global influence on thinkers like Gandhi, Einstein, and Aldous Huxley.
➲ **Natyashastra**
   ◆ **Author**: Bharat Muni.
   ◆ **Date**: Circa 200 BCE – 200 CE.
   ◆ **Content**: Foundational Sanskrit treatise on drama, dance, music, and performance.
   ◆ **Key Concepts:**
      ◦ **Rasa theory**: Aesthetic experience (e.g., Shringara, Karuna, Veera, etc.). Detailed analysis of stage design, acting, gestures (mudras), costumes, and musical instruments.
      ◦ **Impact:** Basis for classical Indian dance forms (Bharatanatyam, Kathak, etc.) and traditional theatre.

India's Inclusion to Memory of the World

➲ India now has 14 entries in the prestigious register. Recent additions to the 2024 MOWCAP (Memory of the World Committee for Asia and the Pacific) Regional Register include: Ramcharitmanas, Panchatantra and Sahrdayaloka-Locana.

HOUSE PANEL SUGGESTS RAISING CREAMY LAYER LIMIT FROM ₹8 LAKH

Context

A parliamentary committee on the welfare of Other Backward Classes recommended raising the ₹8 lakh income limit for "creamy layer" within OBCs.

Key Recommendations

- **Income Limit for Creamy Layer:** Raising the income limit for determining the creamy layer among OBCs after consulting stakeholders.
  - This is to ensure **more backward class people benefit** from reservation policies and welfare schemes.
  - The income limit for creamy layer was introduced in **1993 at ₹1 lakh** and has been raised several times, **last in 2017 to ₹8 lakh.**
- **Data Transparency in Job Quotas:** Recommended the government to make data on Central job quota implementation publicly available, ensuring transparency.
  - The DoPT has created a portal (RRCPS) for monitoring this data, but currently, it is accessible only to concerned ministries.
- **Uniform Formula for Income Calculation:** The committee highlighted that different states calculate the creamy layer income limit differently and recommended the **Centre establish a uniform formula.**
- **Equivalence of Posts in Autonomous Bodies:** The committee called for the quick establishment of equivalence of posts in autonomous bodies with those in Central and State governments. This delay has caused OBC candidates who cleared UPSC exams to miss service allocations.
- **Scholarship Income Limit:** The committee recommended raising the **current ₹2.5 lakh income limit for OBC scholarships.**
  - It suggested doubling the income limit for pre- and post-matric scholarships and raising limits for top-class scholarships for school and college education.
- **Expansion of Scholarship Coverage:** The committee suggested extending the pre-matric scholarship for OBCs to include students from Class V onwards (currently available for Class IX and X).
- **Increase in Top-Class Scholarships:** The committee proposed increasing the number of slots (currently 15,000) for top-class school education **scholarships for OBCs, EBCs, and DNTs, based on demand.**

Creamy Layer Principle

- It is a concept used to ensure that reservations in educational institutions and government jobs are extended to those **who are economically and socially disadvantaged within a certain group.**
  - It aims to **prevent the more affluent or advantaged members** of a reserved category from availing themselves of these benefits.
- **Origin:**
  - The concept was first articulated by the **Supreme Court of India** in the **Indra Sawhney case (1992),** also known as the **Mandal Commission case.**
  - The Court's ruling emphasized that within the OBC (Other Backward Classes) category, those who are **relatively more privileged should not benefit from reservations.**
- **Impact:** By applying the creamy layer principle, the government aims to make its affirmative action policies more effective and equitable, ensuring that those who are most in need receive the support intended for them.

Constitutional Provisions

- **Article 16:** It provides for **equality of opportunity** for all citizens but as an exception the State can provide for reservation of appointments or posts in favour of any backward class that is not adequately represented in the state services.
- **Article 16 (4A):** Provides that the State can make any provision for reservation in matters of promotion in favour of the Scheduled Castes and the Scheduled Tribes if they are not adequately represented in the services under the State.
- **Article 335:** It recognises that special measures need to be adopted for considering the claims of SCs and STs to services and posts, in order to bring them at par.
- **103 Amendment of the Constitution of India:** Introduced **10% reservation** for Economically Weaker Sections (EWS) of society.

NITI-NCAER PORTAL ON STATE FINANCES

Context

Finance Minister Nirmala Sitharaman launched the "NITI NCAER States Economic Forum" portal.

About

- **Portal:** Developed by NITI Aayog and **National Council of Applied Economic Research (NCAER).**
- It is **a comprehensive repository of data on state finances** covering the **period 1990-91 to 2022-23.**
- **Purpose:** The portal will act as a **research hub,** offer a historical and real-time data analysis to track state progress, identify trends, and help formulate evidence-based policies for development.
- **Main Components:**
  - **State Reports:** Summarizes macro and fiscal data of 28 states, covering demography, economic structure, and fiscal indicators.
  - **Data Repository:** Provides access to a complete database categorized across five verticals: Demography, Economic Structure, Fiscal, Health, and Education.
  - **State Fiscal and Economic Dashboard:** Offers graphical representations of key economic variables and quick access to data through appendices and summary tables.
  - **Research and Commentary:** Includes extensive research on state finances and fiscal policy at both state and national levels.

CAPE TOWN CONVENTION

Context

The Rajya Sabha passed 'The Protection of Interests in Aircraft Objects Bill, 2025', a landmark legislation that seeks to implement the Cape Town Convention and Aircraft Protocol within the Indian legal system.

Background

- Although **India signed** the Cape Town Convention and Aircraft Protocol in **2008**, the absence of **parliamentary ratification** and enabling legislation had rendered their provisions **unenforceable** in Indian courts.
- **This legal gap led to:**
  - **Higher risk premiums** for leasing aircraft to Indian carriers.
  - **Uncertainty** during insolvency cases (e.g., the **Go First crisis**).

About Cape Town Convention

- **About:** Adopted in 2001, the Cape Town Convention on International Interests in Mobile Equipment and its Aircraft Protocol were designed to create a uniform legal framework to facilitate asset-based financing and leasing of high-value mobile equipment like aircraft, helicopters & aircraft engines.
- **Objectives of the Convention:**
  - Safeguard the rights of lessors and creditors

- Provide legal remedies in cases of default
- Reduce cross-border legal complexities
- Enable quick repossession and deregistration of aircraft in case of payment failures
- **Ratification:** India ratified the Convention in 2007, but until now, had no domestic legislation to operationalize its provisions.

Objective of the 'The Protection of Interests in Aircraft Objects Bill, 2025':

- The Bill aims to **strengthen legal protections** for aircraft financiers and lessors by **harmonizing Indian laws** with international conventions.
- It specifically seeks to **align domestic regulations** with the **Cape Town Convention and Aircraft Protocol.**

Key Provisions of the Bill:

- **Supremacy of International Obligations:** The Bill grants **overriding authority** to the Cape Town Convention and Aircraft Protocol over conflicting Indian laws, including the **Insolvency and Bankruptcy Code (IBC)**.
  - It also enables the use of **international arbitration mechanisms** for dispute resolution, in accordance with the Convention.
- **Scope and Coverage:** The legislation applies to **Aircraft airframes, Aircraft engines, Helicopters and** other **high-value aviation equipment** as defined by the Aircraft Protocol.
- **Streamlined Repossession Procedures:** The Bill allows **aircraft lessors** to **repossess leased aircraft and equipment** in case of default **without requiring court intervention.** This ensures **faster resolution** and **efficient asset recovery** for creditors.
- **Improved Compliance Score:** By strengthening its legal framework, India aims to **enhance its score** on the **Cape Town Convention Index (AWG)**.
  - A higher compliance score would make Indian airlines eligible for **8–10% discounts** on aircraft lease costs under the Convention framework.

FISCAL HEALTH INDEX (FHI), 2025

Context

NITI Aayog, in collaboration with the Press Information Bureau, has released the Fiscal Health Index (FHI) 2025.

About

- FHI initiative assesses the **fiscal health of states in India.**
- **The analysis covers 18 major states** that contribute significantly to India's GDP, demography, public expenditure, revenues, and fiscal stability.
- **Sub Indices:** Quality of Expenditure, Revenue Mobilisation, Fiscal Prudence, Debt Index, and Debt Sustainability.

➲ Data for the index is sourced from the **Comptroller and Auditor General of India (CAG) for the 2022-23 financial year.**

States have been classified on the basis of the FHI score as per below categories.

FHI Score Range	Category
Above 50	Achiever
Greater than 40 & less than or equal to 50	Front Runner
Greater than 25 & less than or equal to 40	Performer
Less than or equal to 25	Aspirational

Findings

➲ **Odisha ranks 1st in the FHI**, followed by Chhattisgarh, Goa, Jharkhand, and Gujarat.

➲ States account for about two-thirds of public spending and one-third of total revenue, influencing the nation's economic stability.

➲ **Debt Concerns:** West Bengal and Punjab face growing debt burdens and increasing debt-to-GSDP ratios.

Achiever	Front Runner	Performer	Aspirational
Odisha (1)	Maharashtra (6)	Tamil Nadu (11)	Kerala (15)
Chhattisgarh (2)	Uttar Pradesh (7)	Rajasthan (12)	West Bengal (16)
Goa (3)	Telangana (8)	Bihar (13)	Andhra Pradesh (17)
Jharkhand (4)	Madhya Pradesh (9)	Haryana (14)	Punjab (18)
Gujarat (5)	Karnataka (10)		

150TH ASSEMBLY OF INTER-PARLIAMENTARY UNION (IPU)

Context

Lok Sabha Speaker, Shri Om Birla led a Parliamentary Delegation to the 150th Assembly of Inter-Parliamentary Union which was held in Tashkent from 5 to 9 April, 2025.

About

➲ The theme of the assembly focussed on *"Parliamentary action for social development and justice,"* addressing issues like poverty eradication, decent work promotion, social inclusion, and the participation of marginalized groups in decision-making.

The Inter-Parliamentary Union (IPU)

➲ It is a global organization of national parliaments, founded in 1889 with 181 Members and 15 Associate Members.

➲ It promotes peace, democracy, and sustainable development by facilitating parliamentary diplomacy and empowering parliaments to address global issues.

➲ Its mission is to support democratic governance, human rights, gender equality, youth empowerment, climate action, and sustainable development through political dialogue and cooperation.

➲ It is funded mainly by its Members and has **headquarters in Geneva, Switzerland, with offices in New York and Vienna.**

State of the Aviation Sector in India

➲ **India ranks as the 3rd largest domestic aviation market** in the world, accounting for **69% of South Asia's air traffic**.

➲ In recent years, **passenger traffic** has surged to approximately **196.91 million**.

➲ The aviation industry **contributes 1.5% to India's GDP**, **supports 7.7 million jobs** (direct and indirect), and **generates an economic output of USD 53.6 billion**.

➲ The number of **operational airports** has expanded significantly from **74 in 2014** to **157 by 2024**, with an ambitious target of reaching **350–400 airports by 2047**.

➲ **Aircraft movements** have recorded a **compound annual growth rate (CAGR) of 3.85%** between **FY17 and FY24**.

➲ Numerous **greenfield airports and new terminals** are under development, including key projects like the **Bagdogra Civil Enclave** and the **new terminal at Dehradun**.

TELANGANA SCHEDULED CASTES (RATIONALISATION OF RESERVATIONS) ACT, 2025

Context

The Telangana govt. has notified the implementation of the Telangana Scheduled Castes (Rationalisation of Reservations) Act 2025 for categorisation of Scheduled Castes (SC) into three groups.

About

➲ Telangana has become the **first State to operationalise** the classification of the Scheduled Castes after the Supreme Court's landmark judgment.

  ◆ The judgement upheld the **constitutionality of sub-classifying the SCs and Scheduled Tribes (STs) to grant separate quotas** for the most marginalised groups within these communities.

➲ **Methodology Used for Categorisation:** As per the SC's verdict, empirical data, social, economic, educational, employment and political status of the SC communities was considered.

- **Categorisation:** 59 SC communities in the state will be divided into three categories – Group I, II and III.
  - **Group I:** 15 sub-castes categorised as most backward have been classified as Group-I with 1 per cent reservation, these groups constitute just 0.5% of the population.
  - **Group II:** 18 sub-castes of the total 59 which received marginal benefits have been placed under Group-II with 9 per cent reservation.
  - **Group III:** 26 sub-castes that were relatively better placed in Group III in terms of opportunities with 5 per cent reservation.

ABOUT SC/ST RESERVATION

- **Article 341** of the Constitution empowers the **President to designate certain 'castes, races, or tribes' as SCs** based on **historical injustice**.
- **According to Census 2011**, Schedule Castes (SCs) approximately 16.6%, and Schedule Tribes (STs) approximately 8.6% of India's population.
  - SC groups collectively receive 15% reservation in education and public employment.
  - Over time, some SC groups have been underrepresented compared to others.
  - States have attempted to extend additional protection to these marginalised groups, but such efforts faced judicial scrutiny.

Related Constitutional Provisions:
- **Article 14:** Guarantees equality before law.
- **Article 15 (4):** The state is empowered to make any special provision for the advancement of any socially and educationally backward classes of citizens or for the scheduled castes.
- **Article 16(4), 16 (4A) and 16 (4B):** Provide for reservation in posts and services.
- **Article 335:** Mentions maintaining administrative efficiency while considering SC/ST claims in public employment.

Supreme Court's Judgement in State of Punjab *vs* Davinder Singh case (2024)

- In the **2024 State of Punjab *vs* Davinder Singh case**, **a seven-judge bench** upheld the **constitutional validity of sub-classification** within SC/ST categories.
  - This judgment has overruled the earlier decision in the **EV Chinnaiah v. State of Andhra Pradesh case (2004)**, which held that 'Scheduled Castes' notified under **Article 341** form one homogeneous group and that sub-categorization is not permissible.
- **Sub-classification within the Scheduled Castes** does **not violate Article 341(2)** because the castes are not per se included in or excluded from the List.

- Historical and empirical evidence demonstrates that Scheduled Castes are a socially heterogeneous class.
- Thus, the State, in the exercise of its power **under Articles 15(4) and 16(4)**, can further classify Scheduled Castes if (a) there is a rational principle for differentiation; and (b) the rational principle has a nexus with the purpose of sub-classification.

JUSTICE B.R. GAVAI: 52ND CJI

Context

Chief Justice of India (CJI) Sanjiv Khanna has recommended Justice B.R. Gavai — next in line by seniority — to the Union Law Ministry for appointment as the 52nd Chief Justice of India.

About

- The **Constitution of India does not mention** any procedure for appointment of the CJI.
- **Article 124 (1)** of the Constitution merely says, "there shall be a Supreme Court of India consisting of a Chief Justice of India."
- **Clause (2) of Article 124** of the Constitution says that every Judge of the Supreme Court shall be **appointed by the President.**
- Thus, in the **absence of a constitutional provision**, the procedure to appoint CJI relies on **convention.**

About the Convention

- The outgoing **CJI recommends his successor** a practice, which is **based on seniority.**
- **Seniority at the apex court**, however, is **not defined by age**, but by the **date a judge was appointed to the SC.**
- If two judges are elevated to the Supreme Court on the same day,
  - the one who was **sworn in first** as a judge would trump another;
  - if both were sworn in as judges on the same day, the one with **more years of high court service** would 'win' in the seniority stakes;
  - an appointment **from the bench** would 'trump' in seniority an appointee from the bar.

Roles and Powers of CJI

- **Master of the Roster:** The CJI has the exclusive authority to allocate cases to different benches of the Supreme Court. This power includes determining the schedule and priority of hearings.
- **Appointment of Judges:** The CJI, along with the collegium (comprising the four senior-most Supreme Court judges), plays a crucial role in recommending judges for appointment to the Supreme Court and High Courts.

- ◆ The President consults with the CJI and the collegium during this process.
- ➲ **Appointment of Ad-hoc Judges:** Under Article 127 of the Constitution, the CJI can appoint ad-hoc judges to the Supreme Court when necessary.
- ➲ **Changing the Seat of the Supreme Court:** With the President's approval, the CJI can relocate the Supreme Court from Delhi to another location.

SUPREME COURT ON SPEAKER'S ROLE IN ANTI-DEFECTION CASES

Context

Recently, the Supreme Court of India addressed petitions regarding the delayed disqualification proceedings of 10 Telangana MLAs who defected to the ruling Congress party.

Supreme Court's Observations:

- ➲ **Court's Power Over Speaker's Inaction:** The SC held that it is not powerless if a Speaker delays decisions on disqualification petitions.
- ➲ **Right to Set a Reasonable Timeframe:** Courts can mandate that Speakers decide disqualification petitions within a reasonable period, though they cannot influence the decision's outcome.
  - ◆ **Example:** In *Keisham Meghachandra Singh v. Speaker, Manipur Legislative Assembly* (2020), the SC stressed timely adjudication.
- ➲ **If the Speaker Fails to Act:** The SC can exercise its extraordinary powers under **Article 142** to ensure justice.

> **ADDITIONAL INFORMATION**
>
> - ➲ The **Tenth Schedule was introduced in 1985** through the **52nd Constitutional Amendment**, was designed to curb political instability caused by defections of legislators, which often led to the collapse of elected governments.
> - ➲ The law mandates the disqualification of legislators who voluntarily leave their party or vote against their party's instructions.
> - ➲ Initially, the Schedule allowed exceptions, such as if one-third of a party's members split or if a party merged with another with the approval of two-thirds of its members. However, the provision allowing splits (para 3) was removed by the 91st Constitutional Amendment Act of 2003 to strengthen the law.

Other Important SC Observations:

- ➲ **Judicial Review of Speaker's Decisions:** Courts can review and intervene if a Speaker unjustifiably delays disqualification matters (*Kihoto Hollohan v. Zachillhu*, 1992).

- ➲ **Need for Speaker's Impartiality:** The Speaker must act as a neutral authority, not a political actor (*Ravi S. Naik v. Union of India*, 1994).
- ➲ **Proposal for Independent Tribunal:** There is a growing view to shift disqualification powers from the Speaker to an independent tribunal for greater impartiality (*Karnataka MLAs' Disqualification Case*, 2020).

DEATH SENTENCES AND EXECUTIONS REPORT: 2024

Context

Amnesty International has released its report, Death Sentences and Executions, 2024

Major Findings

- ➲ **Global Execution Statistics:** In 2024, 1,518 people were executed **across 15 countries,** marking the **highest number since 2015.**
  - ◆ It is an increase by **32%** in recorded executions **compared to 2023.**
  - ◆ **Reason for Spike:** Weaponization of the death penalty to silence dissent, punish minorities, and crack down on drug-related offences.
- ➲ **Key Countries Leading the Surge:** Iran, Saudi Arabia, and Iraq were responsible for 91% of global executions.
- ➲ **Death Penalty as a Tool of Fear:** The report condemned the use of the death penalty as a political tool rather than for justice.
- ➲ **China topped the global list for executions,** followed by Iran, Saudi Arabia, Iraq, and Yemen.
  - ◆ The authorities of China continued to balance secrecy on information on the death penalty with occasional disclosures around certain types of cases.
- ➲ **Drug-Related Executions:** Over 40% of global executions in 2024 were for drug-related offences.
- ➲ **Declining Global Use of the Death Penalty:** Despite the rise in executions, the number of countries carrying out executions remained low at 15 for the second consecutive year. 145 countries have abolished the death penalty in law or practice.

Death Sentence in India

- ➲ **In 2024, for the second consecutive year**, the Supreme Court of India **didn't confirm any death sentence,** revealed a report from **Project 39A of the National Law University Delhi.**
- ➲ In India, capital punishment, also known as the death penalty, is carried out by **"hanging by the neck until death".**
- ➲ **Several countries like Portugal, the Netherlands, France and Australia** have moved towards **abolishing executions**, countries like the **US, Iran, China and India** have retained a **legal framework** to enable the death penalty.

➲ Prisoners on Death Row in India
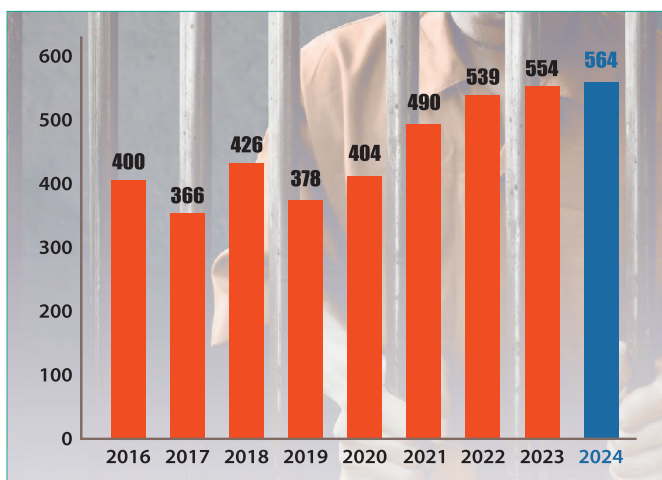
➲ Capital punishment, which the Supreme Court has repeatedly stated should be used only in the **rarest of rare cases,** was **last carried out in 2020 in the Nirbhaya case.**

'Rarest of rare' Doctrine in India:

➲ **1972 - Jagmohan Singh vs. State of U.P.:** The Supreme Court upheld the constitutionality of the death penalty.

➲ **1980 - Bachan Singh vs. State of Punjab:** The Court introduced the **'rarest of rare' doctrine,** stating the death penalty should be imposed only in exceptional cases.

➲ **1983 - Machhi Singh vs. State of Punjab:** The Supreme Court clarified the 'rarest of rare' doctrine and identified **five categories of crimes where the death penalty may be justified:**

  ◆ **Manner of committing the murder:** Extremely brutal and dastardly murders.

  ◆ **Motive of the murder:** Committed for a motive showing total depravity.

  ◆ **Socially abhorrent nature of the crime:** When a murder targets a minority community and raises social wrath.

  ◆ **Magnitude of the crime**.

  ◆ **Victim:** When the victim is particularly vulnerable, such as a child, woman, or elderly person.

SPECIAL ASSISTANCE TO STATES FOR CAPITAL INVESTMENT SCHEME

Context

UTs with legislatures – Delhi, J&K, Puducherry – are now included under the 'Special Assistance to States for Capital Investment' scheme, launched in 2020-21.

About

➲ Under this scheme, **the Central government provides financial assistance to states** in the form of a **50-year interest-free loan** for **capital investment projects**.

  ◆ Provisions are made for **infrastructure projects** like roads, flyovers, bridges, hospital buildings, development of tourism sectors and other capital projects.

➲ It was launched considering the **tough fiscal environment** faced by the State Governments **due to COVID-19 pandemic.**

➲ **Ministry:** Ministry of Finance.

➲ The Scheme was continued in financial years **2021-22, 2022-23 and 2023-24 and further in FY 2024-25.**

ODISHA TO LAUNCH UNIFIED HEALTH INSURANCE SCHEME

Context

The Odisha government launched a unified health coverage scheme combining Ayushman Bharat and 'Gopabandhu Jan Arogya Yojana'.

About

➲ The scheme will provide health coverage of **5 lakh rupees** per family per annum, with an additional **5 lakh rupees for women members.**

➲ Under the **Ayushman Vayo-Vandana Yojana**, all persons **aged 70 years and above,** regardless of income, will be eligible for coverage.

AYUSHMAN BHARAT SCHEME

➲ It was launched in **2018**, by the Government of India with the aim of achieving universal health coverage. It has two key components; Ayushman Bharat Pradhan Mantri- Jan Arogya Yojana and Ayushman Arogya Mandir.

Ayushman Bharat Pradhan Mantri- Jan Arogya Yojana (AB PM-JAY):

➲ **AB PM-JAY** it provides health cover of **Rs. 5 lakhs per family per year** for **secondary** and **tertiary care** hospitalization.

➲ **Coverage:** It covers up to **3 days** of pre-hospitalization and **15 days** of post - hospitalization expenses such as **diagnostics and medicines.**

  ◆ The beneficiary can visit any empanelled public or private hospital in India to avail cashless treatment.

  ◆ There is **no restriction** on the **family size, age or gender.**

➲ **Eligibility:** The inclusion of households is based on the deprivation and occupational criteria of the Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas, respectively.

  ◆ This number also includes families that were covered in the **Rashtriya Swasthya Bima Yojana (RSBY)** but were not present in the **SECC 2011** database.

➲ **Funding:** The funding for the scheme is shared by the Centre and the state in a **60:40 ratio.** However, for North-Eastern states, Himalayan states (such as Uttarakhand, Himachal Pradesh), and Union Territories, the **ratio is 90:10.**

NEW POLICY ON FOREIGN FUNDS

Context

The Ministry of Home Affairs (MHA) announced that foreign funds obtained through the prior permission route under the Foreign Contribution (Regulation) Act, 2010, will now be valid for four years.

Key Highlight of the New Policy

- Foreign funds received through **prior permission will now be valid for four years from the date of approval**, instead of the previous policy where the spending window remained open until the funds were fully utilized.
- **Violation of Time Limit**: Not adhering to the new time limit will be considered a violation of the Foreign Contribution (Regulation) Act, and punitive actions could be taken.
- **Existing Approved Applications:** If an organization already has prior permission and the approved project or activity still has more than three years left as of April 7, 2025, then the time limits (three years to receive funds and four years to use them) will start from April 7, 2025, instead of the original approval date.
- **Eligibility for Prior Permission:** If an NGO is not eligible for FCRA registration, it can still apply for prior permission to receive specific funds for projects, provided it is registered under statutes like the Societies Registration Act, 1860, Indian Trusts Act, 1882, or Section 25 of the Companies Act, 1956.

About Foreign Contribution (Regulation) Act (FCRA)

- It was first enacted in **1976** and later **amended in 2010 and 2020**.
- It **regulates the acceptance and use of foreign contributions** by individuals, associations, and NGOs working for **social, educational, religious, economic, and cultural purposes**.
- NGOs and other organizations must **register under FCRA** to legally receive foreign donations.
- **Registration is valid for five years** and must be **renewed** after that period.
- **Key Requirements under FCRA:** Registered organizations must **file annual returns** detailing the receipt and utilization of foreign funds, similar to **income tax filings**.
  - The **Ministry of Home Affairs (MHA)** oversees the process and ensures compliance with the Act.
  - In **2015**, additional rules were introduced to ensure that **foreign donations do not affect** India's **sovereignty** and **integrity**, **Communal harmony**, **National security**, and **Foreign relations**.
- **Scope of Application:** Apart from NGOs, the FCRA applies to **individuals, associations, and other groups** receiving foreign contributions. All must obtain either **registration** or **prior permission** from the MHA.

- **Exemptions and Restrictions**
  - **Certain individuals and entities** are **prohibited** from receiving foreign funds, including Members of the **legislature**, **Political parties**, **Government servants**, **Judges**, **Journalists** and media organizations.
  - A **2017 amendment** allowed **political parties** to receive donations from **foreign companies** if they have an **Indian subsidiary**, or **more than 50% of their shareholding** is Indian.
- **Suspension and Cancellation:** FCRA registration can be **suspended for up to 180 days** if an organization violates any provisions.
  - **During suspension:** The organization **cannot receive new foreign donations**. It can use **only up to 25%** of its available foreign funds, and that too **with prior approval of the MHA**.
  - **If registration is canceled:** The organization **cannot reapply** for registration or **seek prior permission** for **three years**.

P4 INITIATIVE

Context

Andhra Pradesh Chief Minister launched the 'Zero Poverty - P4' initiative under Swarnadra 2047 vision.

About

- **Aim:** To ensure poverty-free Andhra Pradesh by **2029**.
- **'P4' stands for 'Public, Private, People Partnership', and achieving 'zero poverty'** is one of the (10 principles) of Swarna Andhra-2047.
- **Key Benefits:**
  - House sites and house construction.
  - Sanitation facilities and 100% tap water connections.
  - LPG connections, reliable power supply, and rooftop solar incentives.
  - High-speed internet for all households.
  - Promotion of entrepreneurship in every family.
- **Target Beneficiaries:** Economically weaker families, termed 'Bangaru Kutumbam' (golden families).
- **Supporters:** Well-off contributors, called 'Margadarsis' (guides).
  - Priority is given to the 20 lakh most deprived families for adoption by the top 10% wealthier families.
- **Role of 'Margadarsis':**
  - Provide financial support or mentorship (e.g., education, career guidance, business support).
  - Engage in long-term support beyond financial help.
  - Contributions can include funding for education, medical expenses, and community development.
- **Expected Outcome:** Mobilize public-private participation, foster inclusive economic growth, and create a new poverty alleviation model in India.

HAMARI PARAMPARA HAMARI VIRASAT INITIATIVE

Context

The Union Ministry of Panchayati Raj, in collaboration with the Government of Jharkhand, organized a national-level event under the initiative 'Hamari Parampara Hamari Virasat' in New Delhi.

About:

- **Launched:** On **26th January 2025** by the Department of Panchayati Raj, Government of Jharkhand, with support from the Ministry of Panchayati Raj, the campaign has seen participation from over **3,000 villages** pledging to preserve traditional self-governance and cultural practices.
- **Objective:** To preserve, enhance, and transmit to future generations the cultural heritage, folk songs, festivals, and worship practices integral to the traditional governance systems of various Scheduled Tribe communities in Scheduled Areas.
  - The program aims to document the vibrant history and cultural practices of villages across Jharkhand.
- **Alignment with PESA Act (1996):** This initiative aligns closely with the Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA Act), which empowers Gram Sabhas in Scheduled Areas to safeguard tribal customs, traditions, and self-governance.

ACCREDITED SOCIAL HEALTH ACTIVIST

Context

Kerala's ASHA community has been staging protests demanding better remuneration and retirement benefits.

About ASHAs

- An Accredited Social Health Activist (ASHA) is a community health worker employed by the **Ministry of Health and Family Welfare (MoHFW)** as a part of **India's National Rural Health Mission (NRHM).**
- The mission began in 2005 and full implementation was targeted for 2012.
- The idea behind the Accredited Social Health Activist (ASHA) was to connect **marginalized** communities to the health care system to ensure awareness and timely access to health and family welfare services, to act as first responders in underserved areas with limited access to medical care etc.
- On an average, an ASHA worker earns around **₹6,000-10,000 per month**, including monthly honorarium from the Central and State governments, and incentives.

- ASHAs played a pivotal role during the **COVID-19 pandemic**, managing local surveillance, awareness, and care.
- In 2022, they received the **World Health Organization's (WHO) Global Leaders Award**, recognizing their unparalleled community service.

RASHTRIYA KARMAYOGI JAN SEVA PROGRAMME

Context

The Ministry of Ayush conducted a session of the Rashtriya Karmayogi Jan Seva Programme.

About

- **The objective** of the Programme is to **enhance the service orientation and professional skills of the employees** of the Ministry of Ayush.
- The initiative was held in collaboration with the **Capacity Building Commission** under the Mission Karmayogi framework.
- The programme included four focused sessions covering themes such as **self-awareness, motivation, and leadership.**
  - Case studies from ongoing initiatives in Ayurveda, Yoga, and other traditional medicine systems were shared to provide practical context.

CAPACITY BUILDING COMMISSION (CBC)

- CBC monitors and reviews the implementation of capacity-building programs, aligning them with the objectives of **Mission Karmayogi.**
- The CBC was **established in April 2021** and is uniquely staffed with representation from the private sector and the civil society.

NEW RULES TO GET EQUIVALENCE CERTIFICATES FOR FOREIGN DEGREES

Context

The University Grants Commission (UGC) has notified a new regulation to streamline the recognition and grant of equivalence degrees to academic qualifications obtained from foreign educational institutions.

About Equivalence Certificate:

- An equivalence certificate is a document issued to validate that a **foreign academic qualification (certificate, diploma, or degree) is comparable to an Indian qualification** of similar level and purpose.

➲ This certificate is essential for pursuing higher education or employment in India.

Conditions for Granting Equivalence:

➲ The degree must be from a foreign institution **recognised under the laws of its home country.**

➲ The academic programme must have **entry-level requirements** similar to corresponding programmes in India. This includes credit systems, thesis work, or internships.

➲ The candidate must have pursued the programme according to the **academic standards and norms** laid down by the foreign institution.

➲ Qualifications obtained from **off-shore campuses** will also be considered, provided:

  ◆ The academic programme complies with the regulations of both the host country (where the campus is located) and the country of origin of the institution.

PANCHAYAT ADVANCEMENT INDEX (PAI) BASELINE REPORT

> **Context**
>
> *Recently, the Ministry of Panchayati Raj has unveiled the first-ever Panchayat Advancement Index (PAI) Baseline Report for the fiscal year 2022–23.*

About Panchayat Advancement Index (PAI)

➲ It is a **composite Index** & has been compiled based on 435 unique local Indicators (331 mandatory & 104 optional) consisting of 566 unique data points **across 9 themes** of **Localization of Sustainable Development Goals (LSDGs).**

  ◆ It reflects India's commitment to achieving the **SDG 2030 Agenda** through participatory, bottom-up development.

➲ It is aligned with the **National Indicator Framework (NIF)** of the Ministry of Statistics and Programme Implementation (MoSPI).

➲ It is a collaborative effort of various **Union Ministries, State Governments and UN Agencies.**

Key Factors in Panchayat Advancement Index (PAI)

➲ **Infrastructure:** Availability of basic amenities like roads, electricity, water supply, sanitation facilities, etc.

➲ **Health and Education:** Access to healthcare services, educational institutions, literacy rates, and enrollment in schools.

➲ **Economic Indicators:** Income levels, employment opportunities, agricultural productivity, and economic activities.

➲ **Social Indicators:** Poverty rates, gender equality, social inclusion, and overall quality of life.

➲ **Governance and Administration:** Efficiency and transparency of local governance, delivery of public services and citizen participation.

➲ **Environmental Sustainability:** Measures related to ecological balance, conservation, and sustainable practices.

Key Features of the PAI

➲ **Localized SDG Themes:** The PAI evaluates Panchayats across **nine themes,** including poverty alleviation, health, child welfare, water sufficiency, environmental sustainability, infrastructure, social justice, good governance, and women's empowerment.

Poverty-Free and Enhanced Livelihoods Panchayat | Healthy Panchayat | Child Friendly Panchayat | Water Sufficient Panchayat | Clean and Green Panchayat | Panchayat with Self-Sufficient Infrastructure | Socially Just and Socially Secured Panchayat | Panchayat with Good Governance | Women Friendly Panchayat
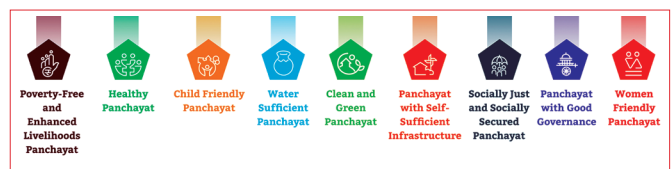
➲ **Performance Categories:** Panchayats are categorized into five tiers based on their scores:

  ◆ **Achiever (90+ points):** None qualified this year.
  ◆ **Front Runner (75–90 points):** 699 Panchayats (0.3%).
  ◆ **Performer (60–75 points):** 77,298 Panchayats (35.8%).
  ◆ **Aspirant (40–60 points):** 1,32,392 Panchayats (61.2%).
  ◆ **Beginner (below 40 points):** 5,896 Panchayats (2.7%).

➲ **Data Validation:** Out of 2,55,699 Gram Panchayats, 2,16,285 submitted validated data through the dedicated PAI portal.

State-Level Insights

➲ **Top Performers:** Gujarat led with 346 Front Runner Panchayats, followed by Telangana with 270 Front Runners.

  ◆ States like Maharashtra, Madhya Pradesh, and Uttar Pradesh recorded high numbers of Performer Panchayats.

➲ **Developmental Gaps:** States such as Bihar, Chhattisgarh, and Andhra Pradesh showed a larger share of Aspirant Panchayats, highlighting areas requiring focused developmental efforts.

Purpose and Impact

➲ **Evidence-Based Planning:** The PAI fosters transparency and accountability, enabling policymakers to identify developmental gaps and prioritize resource allocation.

➲ **Empowering Panchayats:** By providing a standardized framework, the index empowers Panchayats to craft effective development plans tailored to local needs.

➲ **Commitment to SDGs:** The initiative reflects India's dedication to achieving the 2030 SDG Agenda through participatory, bottom-up development.

➲ By promoting evidence-based planning and fostering competition among Panchayats, the PAI is set to transform grassroots development and empower rural communities across India.

NATIONAL PANCHAYATI RAJ DAY

Context

The Ministry of Panchayati Raj on the occasion of National Panchayati Raj Day 2025, presented the Special Category National Panchayat Awards- 2025.

About

- These awards include the **Climate Action Special Panchayat Award (CASPA), Atma Nirbhar Panchayat Special Award (ANPSA), and Panchayat Kshamta Nirman Sarvottam Sansthan Puraskar (PKNSSP).**
- The awards aim to recognize Gram Panchayats and institutions that have **demonstrated exemplary performance** in areas such as **climate resilience, fiscal self-reliance, and capacity building.**
- Awardees have been selected from States including Bihar, Maharashtra, Odisha, Karnataka, Andhra Pradesh, Telangana, Kerala, and Assam.
- **National Panchayati Raj Day:** India celebrates **National Panchayati Raj Day on April 24** every year to mark the foundation of the Panchayati Raj System, when the Constitution (73rd Amendment) Act, 1992, came into force.

Panchayati Raj System

- The word Panchayat comes from two words – "**Panch"** meaning five and "Ayat" meaning assembly.
  - It refers to a traditional system where a group of elders from a village would come together to solve problems or settle disputes.
- **The Balwant Rai Mehta Committee,** appointed in 1957, recommended the establishment of the Panchayati Raj system in India.
- The Panchayati Raj system has three levels – Village Panchayat, Panchayat Samiti and Zilla Parishad.
  - **The Village Panchayat:** It has around five members that includes a Sarpanch.
  - **The Panchayat Samiti:** It usually covers 20 to 60 villages. Its head is called the Pradhan and the deputy is the Up-Pradhan.
  - **The Zilla Parishad:** It includes members from Panchayat Samitis and government officials. Its main job is to guide and check the work done in the district.
- **The Ministry of Panchayati Raj was created in 2004** which handles all matters related to Panchayati Raj and is led by a cabinet minister.
- **Panchayat elections** are held **every five years** to choose new members.
- **Reservation: Article 243D** of the Constitution provides for reservation of seats in Panchayats for Scheduled Tribes, Scheduled Castes, Backward Class of citizens and women.

5 YEARS OF SVAMITVA SCHEME

Context

Recently, SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) Scheme completed 5 Years.

About

- SVAMITVA Scheme was launched on April 24, 2020 on National Panchayati Raj Day.
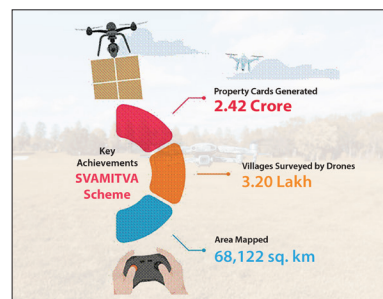
- It is a **Central Sector scheme** of the Ministry of Panchayati Raj.
- It aims to provide **legal ownership papers** for houses and land in villages using drones and mapping technology.
- This helps villagers **access loans, resolve disputes, and support better planning**.
- It is being implemented by the Survey of India with National Informatics Centre Services Inc. (NICSI) as the tech partner
- It has a budget of ₹566.23 crores from FY 2020-21 to 2024-25, with an extension to FY 2025-26.

OBJECTIVES OF THE SCHEME

- Creation of accurate land records for rural planning and reduce property related disputes.
- To bring financial stability to the citizens in rural India by enabling them to use their property as a financial asset for taking loans and other financial benefits.
- Determination of property tax, which would accrue to the GPs directly in States where it is devolved or else, add to the State exchequer.
- Creation of survey infrastructure and GIS maps that can be leveraged by any department for their use.
- To support in preparation of better-quality Gram Panchayat Development Plan (GPDP) by making use of GIS maps.

Progress

- Over 2.42 crore property cards have been created for 1.61 lakh villages under the scheme.
- Drone surveys completed in 3.20 lakh villages, covering 68,122 sq. km of the area.

INDIA-AUSTRALIA ECONOMIC COOPERATION AND TRADE AGREEMENT

Context

India-Australia Economic Cooperation and Trade Agreement (Ind-Aus ECTA) marked its third anniversary.

About Ind-Aus ECTA

➲ The agreement signed in April , 2022, has strengthened economic ties between India and Australia, fostering new trade pathways and business opportunities

➲ Total bilateral trade reached **USD 24 billion in 2023-24**, with a **14% increase in India's exports to Australia compared to 2022-23.**

 ◆ India's exports to Australia grew by 4.4% from April 2024 to February 2025 compared to the same period in the previous fiscal year.

➲ **Sectors benefiting** from ECTA include textiles, pharmaceuticals, chemicals, agriculture, electronics, and engineering.

 ◆ New export lines, such as Calcined Petroleum Coke, High-Capacity Diesel Generating Sets, and Air Liquefaction Machinery, show expanding trade opportunities.

➲ **Imports from Australia** include key raw materials like metalliferous ores, cotton, and wood products, supporting the growth of Indian industries.

BAKU TO BELEM ROADMAP

Context

India called upon BRICS nations to unite behind the 'Baku to Belem Roadmap', aimed at mobilizing USD 1.3 trillion to support the Nationally Determined Contributions (NDCs) of developing countries.

About:

➲ The **Baku to Belém Roadmap** is a strategic framework adopted at COP29 (2024) to guide negotiations and actions on:

 ◆ Defining a new collective quantified goal (NCQG) on climate finance post-2025.

 ◆ Ensuring greater predictability, adequacy, and accessibility of climate finance.

 ◆ Supporting low-carbon and climate-resilient development pathways in developing countries.

 ◆ Enabling the implementation of Nationally Determined Contributions (NDCs).

Importance of BRICS for Climate Action?

➲ The **BRICS bloc—Brazil, Russia, India, China, and South Africa** (recently expanded to include 6 new members)—represents **47% of the global population and 36% of the global GDP (PPP).**

➲ These emerging economies face similar environmental challenges and developmental aspirations, making their cooperation vital for achieving a just and equitable climate transition globally.

➲ The current climate finance goal of **$100 billion/year (set in 2009)** has consistently fallen short.

➲ Studies show that **developing countries need over $1.3 trillion annually by 2030** to meet their NDC targets.

OTTAWA CONVENTION

Context

Poland, Finland, and all three Baltic states have announced plans to withdraw from the 1997 Ottawa Convention banning anti-personnel landmines, citing growing security threats from Russia.

About:

➲ It is formally known as the Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and on their Destruction.

➲ It is an international agreement that **bans anti-personnel landmines**.

➲ It was adopted in 1997 during a diplomatic conference in Oslo and opened for signature in Ottawa later that year.

 ◆ The treaty came into force on March 1, 1999.

Progress

➲ It has significantly reduced the production and use of anti-personnel mines, leading to the destruction of over 40 million stockpiled mines.

➲ It has also **facilitated assistance for survivors** and **communities** affected by landmines, as well as the clearing of mine-contaminated areas.

➲ This has resulted in a substantial decline in casualties.

Importance

➲ It has been crucial in advancing global mine clearance efforts and framing victim assistance in the broader context of disability, contributing to safer, more productive land use in affected regions.

ADDITIONAL INFORMATION

- Anti-personnel landmines disproportionately affect civilians, with over 80% of victims being non-combatants.
- The UN reported that Ukraine became the most mined country in 2024, with over 1,200 civilian casualties. Some countries, such as Lithuania, are also considering withdrawing from the 2008 Convention on Cluster Munitions, which is another controversial weapon that has been used in Ukraine's defense.

50 YEARS OF INDIA-PORTUGAL DIPLOMATIC TIES

Context

President Droupadi Murmu's visit to Portugal marks the first in nearly 30 years, coinciding with 50 years of India-Portugal diplomatic ties.

Significance of Bilateral Relationship:

- **Historical Connections:** Relations date back over **500 years** when **Vasco da Gama** discovered a direct sea route to India in **1498**, enabling Portugal's rise as a major colonial trading power.
  - The Portuguese established trading centers like **Kollam (1502)** and later controlled enclaves such as **Goa, Daman, Diu, and Dadra & Nagar Haveli**.
  - Goa was liberated by India through **Operation Vijay** in **1961**, and Portugal officially recognized Indian sovereignty with a treaty signed in **1974**, enforced in **1975**.
- **Political Relations and Multilateral Cooperation:** Portugal has consistently **supported India's bid** for a **permanent seat in the UNSC** and membership in the **Nuclear Suppliers Group (NSG)**.
  - Portugal was the **first country to propose an India-EU Summit** in **2000**, strengthening India's engagement with Europe.
- **Economic Relations:**
  - Bilateral trade between India and Portugal reached **USD 1.5 billion** in FY23, showcasing growing economic ties.
  - Portugal was the **first European nation** to sign a **Migration and Mobility Agreement (2021)** with India, boosting labor cooperation.
  - A **Double Taxation Avoidance Agreement (DTAA)** exists to promote smooth investment flows between the two countries.
- **Other Areas of Cooperation:**
  - A **Cultural Cooperation MoU** enables frequent cultural, youth, and literary exchanges, deepening people-to-people ties.
  - The **Indian diaspora in Portugal** numbers over **1.25 lakh**, playing an active role in fostering bilateral relations.

- The **India-Portugal Startup Hub (2020)** acts as a bridge for collaboration between **startups, investors, and entrepreneurs** from both nations.

ABOUT PORTUGAL

- **Location**: Portugal is located on the **Iberian Peninsula** in **Southwestern Europe**.
- **Land Borders**: It shares borders with **Spain** to the **north and east**.
- **Water Boundaries**: It is bordered by the **Atlantic Ocean** to the **south and west**.
- **Islands**: The **Azores** and **Madeira** archipelagos, located in the Atlantic Ocean, are **autonomous regions** of Portugal.
- **Maritime Borders**: Portugal shares **maritime boundaries with Morocco**.
- **Capital**: The capital city of Portugal is **Lisbon**

MAURITIUS SIGNED ISA'S COUNTRY PARTNERSHIP FRAMEWORK

Context

Mauritius has become the first African country to sign a Country Partnership Framework (CPF) with the International Solar Alliance (ISA).

About

- It is also the **fourth country globally**, after Bangladesh, Bhutan, and Cuba, to **sign the CPF.**
  - This partnership **aims to provide a structured approach** for collaboration between ISA and Mauritius on solar energy initiatives, aligning with the country's national priorities.
- The CPF is a strategic initiative developed by ISA to **facilitate long- and medium-term cooperation with its member countries.**

The International Solar Alliance (ISA)

- It is a treaty-based intergovernmental organization, launched in **2015 by India and France at the COP21 summit.**
- **Aim:** Promoting solar energy as a sustainable solution for energy access and climate change, with the goal of **mobilizing USD 1 trillion in solar investments by 2030.**

➲ **Members:** Currently, 100+ countries are signatories, with 90+ countries having ratified to become full members.
  ◆ Initially focused on developing countries, the ISA's Framework Agreement **was amended in 2020 to allow all United Nations member states to join.**

➲ **Headquartered** in **Gurugram** India, the ISA is the first international organization established in the country.

WORLD PANDEMIC TREATY PROPOSAL FINALISED BY WHO

Context

Members of the World Health Organization (WHO) have finalized a proposal for the World Pandemic Treaty.

About

➲ The proposal was finalised by the Intergovernmental Negotiating Body (INB), established in December 2021 to draft and negotiate a convention, agreement or other international instrument, under the WHO Constitution, to strengthen pandemic prevention, preparedness and response.

➲ It would be presented in May at the 78th World Health Assembly for consideration.

Objective of the Treaty

➲ To ensure coordinated global response to pandemics while strengthening national and global:
  ◆ Prevention strategies
  ◆ Preparedness capacities
  ◆ Resilience of health systems
  ◆ Equitable access to pandemic-related resources

Need for the Treaty

➲ **Fragmented Global Response:** Countries responded in disconnected, uncoordinated ways—closing borders, hoarding supplies, and imposing export bans.
  ◆ The treaty would promote international cooperation and harmonised policy responses during public health emergencies.

➲ **R&D and Technology Gaps:** Disparity in research and production capabilities limited rapid response, especially in the Global South.
  ◆ The agreement promotes technology transfer, capacity building, and geographically diverse R&D.

➲ **Lack of Timely Information Sharing:** Delayed reporting of outbreaks and inadequate transparency in data sharing worsened the global spread of the virus.

➲ **Disruption in Global Supply Chains:** Shortages of essential medical supplies revealed the fragility of global supply chains.
  ◆ The agreement aims to establish a resilient global logistics and supply mechanism for future crises.

➲ **Unequal Access to Health Products:** During COVID-19, high-income countries secured vaccines and treatments disproportionately.
  ◆ Low- and middle-income nations faced delays in accessing diagnostics, vaccines, PPE, and treatments.

Key Provisions of the Draft Treaty

➲ **Pathogen Access and Benefit Sharing System:** It establishes a framework for sharing pathogens and ensuring equitable distribution of vaccines, diagnostics, and treatments derived from them.

➲ **Pandemic Prevention via One Health Approach:** Treaty encourages integrated surveillance of human, animal, and environmental health.

➲ **Technology Transfer and Capacity Building:** Promotes sharing of technology, knowledge, and skills to enhance R&D and production across diverse geographies.

➲ **Health Workforce Mobilisation:** Proposes a global pool of trained and multidisciplinary professionals for rapid pandemic response.

➲ **Coordinated Financial Mechanism:** Sets up a fund or mechanism to support preparedness and emergency response, especially in lower-income countries.

➲ **Resilient Health Systems:** Calls for strengthening core health infrastructure, preparedness drills, and public health communication systems.

➲ **Global Supply Chain and Logistics Network:** Establishes a coordinated mechanism for uninterrupted supply and distribution of essential health commodities.

Current Frameworks to Deal with Pandemics

➲ **International Health Regulations (IHR) (2005):** Legally binding international instrument coordinated by WHO.
  ◆ Requires countries to detect, assess, report, and respond to Public Health Emergencies of International Concern (PHEIC).
  ◆ **Example**: COVID-19 was declared a PHEIC under IHR in Jan 2020.
  ◆ **Limitations:** No enforcement power; countries can delay reporting or ignore WHO recommendations.

➲ **Global Outbreak Alert and Response Network (GOARN):** A network of over 250 institutions coordinated by WHO.
  ◆ Provides rapid deployment of experts during outbreaks.
  ◆ **Example:** Mobilized teams for Ebola, Zika, and COVID-19 responses.

INDIA'S TRADE DEFICIT WITH CHINA WIDENED

Context

India's trade deficit with China widened to a record $99.2 billion in the 2024-25 fiscal year.

About

- The trade deficit is **driven by a surge in imports** of electronics, batteries and solar components, even as exports fell sharply.
- **China remained India's second-largest trading partner in 2024-25,** with total bilateral trade amounting to **$127.7 billion**, behind the United States.
- **Total imports from China** for the financial year ending March climbed to $113.5 billion. In contrast, India's exports fell to $14.3 billion.

Reasons for India's Trade Deficit with China

- **Intermediate goods and raw materials:** India imports a significant volume of components and raw materials from China, especially in sectors like electronics, pharmaceuticals (APIs), chemicals, and textiles.
- **Consumer electronics and machinery:** China is a major exporter of mobile phones, electrical machinery, and telecom equipment to India.
- **Narrow export basket:** India's exports to China are primarily raw materials such as iron ore, cotton, and copper, which are low in value addition.
- **Barriers to market access:** Indian firms face regulatory hurdles, quality norms, and lack of demand for Indian goods in China's domestic market.
- **Cost and scale advantages:** China's well-established manufacturing infrastructure allows it to produce goods more cheaply and efficiently.
- **Global supply chain integration:** Chinese firms are deeply embedded in global value chains, providing a wider variety of goods at competitive prices.
- India's 'Make in India' initiative is still evolving, and local manufacturing isn't yet competitive enough to substitute Chinese imports, especially in electronics and industrial machinery.

Government Initiatives Taken to Curb it

- **The Directorate General of Trade Remedies (DGTR)** actively monitors unfair trade practices by foreign companies and recommends corrective remedial actions.
- **The Government is also encouraging Vocal for Local Campaign** by promoting awareness among consumers and businesses to buy Indian-made products, thereby aiming to reduce demand for imported goods.
- **Production Linked Incentive (PLI) Schemes** for 14 key sectors are under implementation to enhance India's manufacturing capabilities and exports.
- **Assistance provided through several schemes to promote exports**, namely, Trade Infrastructure for Export Scheme (TIES) and Market Access Initiatives (MAI) Scheme.
- **Agricultural & Processed Food Products Export Development Authority (APEDA)** has a Central Sector specific scheme for Financial Assistance to facilitate the export of agriproducts.

- **The Marine Products Export Development Authority (MPEDA)** provides assistance for upgrading the infrastructure facilities for value addition, establishing testing laboratories, participating in international trade fairs, and providing technical assistance for aquaculture production meant for exports etc.
- **Districts as an Export Hubs initiative** has been launched by identifying products with export potential in each district, addressing bottlenecks for exporting these products and supporting local exporters/manufacturers.

PM STATE VISIT TO SAUDI ARABIA

Context

Prime Minister Narendra Modi paid a state visit to Saudi Arabia.

Key Outcomes of the Meet

- **Strategic Partnership Council:** The second leaders meeting of the India-Saudi Arabia Strategic Partnership Council (SPC) was co-chaired by the leaders.
- **Ministerial Committee on Defence Cooperation under the SPC:** To reflect the deepening of defence partnership over the past few years, the Council decided to create a new Ministerial Committee on Defence Cooperation under the SPC.
- **A new Ministerial Committee on Tourism and Cultural Cooperation:** To strengthen cultural and people-to-people ties, the Council decided to create a new Ministerial Committee on Tourism and Cultural Cooperation under the SPC.
- **The four committees under the India-Saudi Arabia SPC shall now be as follows:**
  - Political, Consular and Security Cooperation Committee.
  - Defence Cooperation Committee.
  - Economy, Energy, Investment and Technology Committee.
  - Tourism and Cultural Cooperation Committee.
- **High Level Task Force on Investment (HLTF):** Building on the commitment of Saudi Arabia to invest USD 100 billion in India in multiple areas, the joint HLTF agreed to collaborate on establishing two refineries in India.
- **List of MoUs/Agreements:** MoU between the Saudi Space Agency and the Department of Space of India on Cooperation in the field of Space Activities for Peaceful Purposes.
  - MoU between the Ministry of Health on Cooperation in the field of Health.

Significance of India and Saudi Arabia Relations

- **Political Relations:** The two countries established diplomatic relations in **1947.**
  - The royal visit of 2006 resulted in the signing of the **Delhi Declaration,** which was followed in 2010 by the **Riyadh Declaration** that elevated bilateral ties to a **strategic partnership.**

- **The Strategic Partnership Council (SPC) Agreement** was signed during the **2019** visit of the Indian PM to Riyadh, which established a high-level council to steer the Indo-Saudi relationship.
- **Economic Relations:** India is Saudi Arabia's second-largest trade partner; Saudi Arabia is India's fourth-largest trade partner.
  - In FY 2023-24, bilateral trade stood at USD 42.98 billion, with Indian exports at USD 11.56 billion and imports at USD 31.42 billion.
- **Energy Cooperation:** Saudi Arabia remained India's third largest Crude and Petroleum products sourcing destination for FY 2023-24.
  - India imported 33.35 MMT of crude oil in FY 2023-24 from Saudi Arabia, accounting for 14.3% of India's total crude oil imports.
  - In FY 2023-24, Saudi Arabia was the 3rd largest LPG sourcing destination for India, accounting for 18.2% of the total LPG imports of India for 2023-24.
- **Indian diaspora:** As of 2024, there were **2.7 million** Indians in Saudi Arabia. This is the second largest number of foreign workers in the country, after Bangladesh.
  - Indian workers in Saudi Arabia send back significant remittances, contributing to India's foreign exchange reserves.
- **Regional Stability:** Saudi Arabia plays a key role in Middle East politics. Stable and friendly ties with Saudi Arabia help India navigate the broader West Asian region diplomatically.
- **Defence Cooperation:** India and Saudi Arabia are focusing on strengthening defence ties to achieve self-reliance and mutual growth in defence manufacturing.
  - **Under Vision 2030,** Saudi Arabia is aiming to transition from a defence consumer to a defence producer, with a target to localise 50% of its spending.
  - **Saudi Arabia signed a $250 mn contract** for ammunition from Munitions India Limited, a Defence Public Sector Undertaking.
  - Saudi Arabia has procured the **155mm Advanced Towed Artillery Gun System (ATAGS)** from Bharat Forge.
  - **Joint exercises:**
    - **Sada Tanseeq:** The inaugural Army exercise held in 2024.
    - **Al Mohed Al Hindi:** Bilateral naval exercise initiated in 2022.

PM MODI VISIT TO SRI LANKA

Context

Prime Minister Modi, during his visit to Sri Lanka, held a significant meeting with Sri Lankan President Anura Dissanayake in Colombo.

Key Outcomes of the Meeting

- PM Modi was conferred **'Mithra Vibhushana'** the country's highest civilian honour medal by the Government of Sri Lanka.
- **Energy Cooperation:** Both the nations inked an agreement to develop **Trincomalee** as an energy hub and jointly inaugurated the **Sampur solar power project,** aimed at boosting Sri Lanka's clean energy capacity.
  - **A grid interconnectivity deal** was also signed, opening the door for Sri Lanka to potentially export electricity to India in the future.
- **Railway Connectivity:** An upgraded northern railway line between **Maho and Omanthai,** enhancing connectivity between the **North Central and Northern Provinces** was jointly inaugurated, along with an upgraded railway signalling system at **Anuradhapura** railway station.
- **Comprehensive MoU on defence cooperation:** The umbrella agreement consolidates various existing defence-related understandings into a coherent framework, enabling structured dialogue.

India and Sri Lanka Relations

- **Trade Relations: India-Sri Lanka Free Trade Agreement (ISFTA)** in 2000 contributed significantly towards the expansion of trade between the two countries.
  - India has traditionally been among **Sri Lanka's largest trade partners** and Sri Lanka remains among the largest trade partners of India in the SAARC.
  - India is also one of the largest contributors to **Foreign Direct Investment** in Sri Lanka.
- **Cultural relations:** The Cultural Cooperation Agreement signed in **1977** forms the basis for periodic Cultural Exchange Programmes between the two countries.
  - The Buddhist and Tamil links enhance people-to-people connect and soft power.
- **Tourism:** India has traditionally been Sri Lanka's top inbound tourism market, followed by China.
  - As per latest data from the Sri Lanka Tourism Development Authority, India is the largest source for tourists in **2023.**
- **Maritime Security and Defence Cooperation:** In 2011, a decision was taken to establish the **Colombo Security Conclave** which aims to further promote maritime security in the Indian Ocean Region.
  - India and Sri Lanka conduct a joint Military exercise named **'Mitra Shakti'**, Trilateral Maritime Exercise **"Dosti",** and a Naval exercise named **SLINEX.**
- **Multilateral Forum Collaboration:** India and Sri Lanka are member nations of the **South Asian Association for Regional Cooperation (SAARC),** South Asia Co-operative Environment Programme, South Asian Economic Union and **BIMSTEC,** working to enhance cultural and commercial ties.

SUSPENSION OF THE INDUS WATERS TREATY BY INDIA

Context

Recently, the Cabinet Committee on Security (CCS), chaired by Prime Minister of India, held the Indus Waters Treaty (1960) with Pakistan aftermath of the terror strike in Pahalgam.

About Indus Waters Treaty (IWT)

➲ It was signed in 1960 by India's Prime Minister Jawaharlal Nehru and Pakistan's President Ayub Khan.
  ◆ It was brokered by the World Bank.
➲ **According to IWT: India** controls the Eastern Rivers (Beas, Ravi, Sutlej). **Pakistan** controls the Western Rivers (Indus, Chenab, Jhelum).
➲ Under the IWT, **India** received rights **over 20%** of the system's water, while **Pakistan received 80%.**
  ◆ India is allowed **limited use of western rivers** for non-consumptive purposes like hydropower, but cannot block or significantly alter flows.

Implications for Pakistan of IWT Suspension

➲ **Water Security Threat:** Pakistan is highly dependent on the Indus River system for agriculture, drinking water, and hydropower.
  ◆ Suspension would leave Pakistan vulnerable to upstream control by India, especially over the eastern rivers (Ravi, Beas, Sutlej), potentially disrupting water availability.
➲ **Agricultural Impact:** Punjab and Sindh, the key agricultural regions, rely heavily on Indus waters.
  ◆ A reduction or delay in water flows could devastate crop cycles, threatening food security and livelihoods.
➲ **Energy Crisis:** A significant portion of Pakistan's power comes from hydroelectric dams on the Indus.
  ◆ Disruption in water flow could reduce energy generation, worsening the power crisis, especially in summer.
➲ **Geopolitical Fallout:** Suspension would escalate tensions with India, possibly leading to military posturing, cross-border skirmishes, or further diplomatic isolation.
➲ **International Repercussions:** Pakistan could appeal to the UN, World Bank, or ICJ, framing India as violating a binding treaty.
  ◆ Suspension may invite international pressure on India to reinstate the treaty, possibly straining India's global relations.
➲ **Domestic Unrest:** Water shortages and crop failures could fuel domestic discontent, protests, and political instability.

NOTE TO READERS

For detailed analysis of *"Indus Water Treaty"*, refer Page 12-13 of January 2025 edition of NEXTIAS Current Affairs Magazine.

ADDITIONAL INFORMATION

➲ Nearly **25% of Pakistan's GDP** is contributed by the Indus River System. About 80% of Pakistan's cultivated land relies on water from the Indus system.
➲ It supports over 237 million people, with Pakistan accounting for 61% of the Indus Basin population.

CABINET COMMITTEE ON SECURITY (CCS)

➲ It is the apex decision-making body in India responsible for matters related to national security and defence.
➲ It is **chaired by the Prime Minister**, it typically includes **key ministers** such as the Home Minister, Defence Minister, Finance Minister, and External Affairs Minister.
➲ The **National Security Advisor (NSA)** acts as a secretary-level coordinator for issues within its purview.

Key Functions of the CCS:

➲ **Defence and Security:** Addresses internal and external security challenges, including military strategies and intelligence operations.
➲ **Foreign Affairs:** Deals with diplomatic policies and international security collaborations.
➲ **Nuclear and Space Policy:** Oversees critical decisions related to nuclear energy and space exploration.
➲ **Major Appointments:** Approves high-level appointments in defence and intelligence agencies.

1960 Indus Water Treaty (IWT)
India has full use of all water from three eastern rivers, but must allow unrestricted flow of water from western rivers to Pakistan

Western rivers — Pakistan control
Eastern rivers — India control

Water allocation from six-rivers of Indus basin under IWT
India — 33 million acre-feet (MAF)*
20%
Pakistan 80% — 135 MAF

India considering "technical ways" to stop flow of water at Kishenganga Dam (1) and Ratle Dam (2)

3 ECONOMY
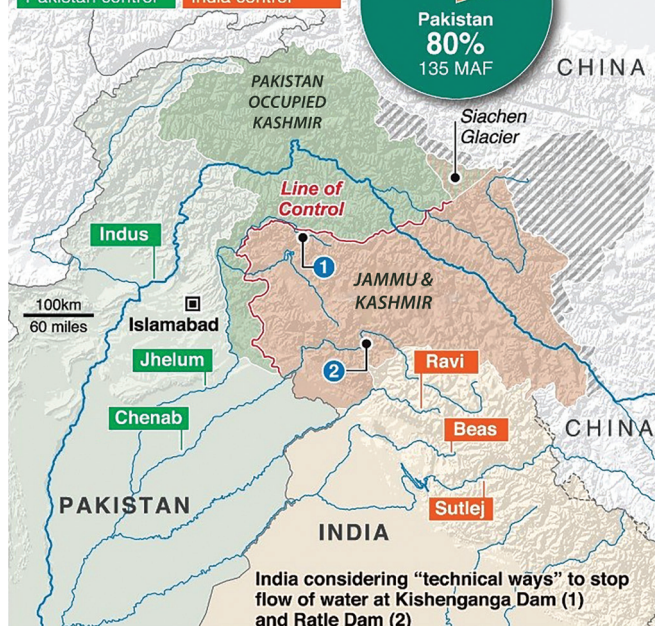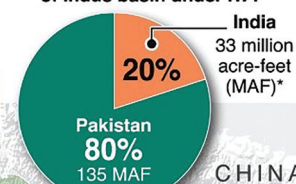
GOVERNMENT SECURITIES

Context

The Reserve Bank of India announced the injection of ₹80,000 crore by purchasing government securities through Open Market Operations (OMO) citing "evolving liquidity conditions."

Market Response:

India's benchmark **10-year bond yields fell sharply by nine basis points (bps) to 6.49% year-on-year after the RBI** announced it would buy Rs 80,000 crore worth of bonds in April.

Open Market Operations (OMO):

➲ It is a monetary tool used by the Reserve Bank of India (RBI) which involves buying and selling government securities in the open market to manage liquidity.

➲ This helps control inflation, stabilize interest rates, and ensure smooth money circulation, ultimately supporting economic growth.

What is Bond Yield?

➲ **Bond yield** is the **return an investor can expect to earn from a bond,** expressed as an annual percentage.

➲ Bond yields can be measured in several ways, each offering a different perspective on the potential return from a bond investment.

➲ **Types of Bond Yields:**

  ◆ **Current Yield:** Annual coupon payment divided by the bond's current market price.
    ◆ It represents the income return from the bond's coupon payments, relative to the bond's price.

  ◆ **Yield to Maturity (YTM):** Total return if the bond is held until maturity, including coupon payments and any capital gain/loss.
    ◆ It provides an estimate of the total return an investor can expect if they hold the bond until it matures, assuming all coupon payments are reinvested.

  ◆ **Yield to Call (YTC):** Yield assuming the bond is called (redeemed early) before maturity.
    ◆ It is relevant for callable bonds, which can be redeemed by the issuer before maturity.

GOVERNMENT SECURITY (G-SEC)

(G-Secs) are debt instruments issued by the Central or State Governments of India to raise funds for financing fiscal deficits and meeting expenditure needs, such as infrastructure, welfare, and operations. They are considered low-risk investments due to the sovereign guarantee.

Types:

➲ **Treasury Bills (T-Bills):** Short-term (91, 182, 364 days), zero-coupon, issued at a discount.

➲ **Dated Securities:** Long-term (5–40 years), with fixed or floating interest rates.

➲ **State Development Loans (SDLs):** Issued by states, similar to Dated Securities but with slightly higher yields.

➲ **Cash Management Bills (CMBs):** Ultra-short-term (<91 days) for temporary cash flow needs.

➲ **Special Securities:** E.g., Inflation-Indexed Bonds, Green G-Secs (for sustainable projects).

Purpose:

➲ Finance government borrowing to bridge fiscal deficits.

➲ Support monetary policy (e.g., through Open Market Operations by RBI).

➲ Provide safe investment options for banks, institutions, and individuals.

Issuance and Management:

➲ Issued by the Reserve Bank of India (RBI) on behalf of the government via auctions on the E-Kuber platform.

➲ Traded in the secondary market, influencing yields based on market demand and RBI policies.

Features:

➲ **Risk-Free:** Backed by the Government of India, ensuring no default risk.

➲ **Yields:** Determined by market dynamics, RBI's repo rate, and economic conditions.

➲ **Liquidity:** Highly liquid, used in repo transactions and as collateral.

Significance:

➲ **Economic:** Funds government spending, stabilizes financial markets.

➲ **Monetary:** Helps RBI manage liquidity and inflation.

➲ **Investment:** Preferred by banks to meet Statutory Liquidity Ratio (SLR) requirements.

- It calculates the yield if the bond is called at the earliest possible call date, providing a perspective on the potential return if the bond is redeemed prematurely.
- **Yield to Worst (YTW):** Lowest yield possible if the bond is called or matures early. It is used for bonds with multiple call dates or other features that could impact the bond's repayment timeline.
- **Nominal Yield:** Also known as the coupon rate, this is the interest rate stated on the bond at issuance, representing a fixed percentage of the bond's face value. It is the stated interest payment an investor receives over the life of the bond.
- **Bond Price Relation:** Price and yield are inversely related and as the price of a bond goes up, its yield goes down.
- **Indicator:** Bond yields reflect the return on investment and are influenced by interest rates and economic conditions.

DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS POLICY-2025

Context

The Centre has introduced the DMISP Policy – 2025 with a sharp focus on self-reliance and domestic value addition in the steel sector.

Objective & Significance

- **Promote Self-Reliance:** The primary goal is to encourage domestic production and consumption of iron and steel, aligning with the "Atmanirbhar Bharat" (Self-Reliant India) vision.
- **Curb Imports:** The policy seeks to address the rising trend of steel imports, which the government perceives as a threat to the Indian steel sector.
- **Protect Domestic Industry:** It aims to shield Indian steel manufacturers from foreign competition, particularly in government contracts and infrastructure projects.
- **Enhance Domestic Value Addition:** The policy also emphasizes increasing the local sourcing of capital goods used in steel manufacturing.

Key Highlights of the DMI&SP Policy–2025

- **Preference for Domestic Steel:** All government ministries, departments, PSUs, trusts, and statutory bodies must procure locally manufactured iron and steel products.
  - Applies to all procurement contracts exceeding ₹5 lakh.
  - Covers infrastructure projects under centrally sponsored and central sector schemes.
- **"Melt & Pour" Requirement:** Products must be melted and poured into solid form within India, ensuring core production happens domestically. Includes flat-rolled products, bars, rods, and railway steel.

- **No Global Tenders Under ₹200 Cr:** Global Tender Enquiries (GTE) are banned for contracts below ₹200 crore unless explicitly approved by the Department of Expenditure.
- **Reciprocal Clause:** Suppliers from nations that prohibit Indian firms from participating in their public procurement processes will be barred from bidding in Indian government steel tenders—unless specifically allowed by the Ministry of Steel.
  - Aimed at ensuring level playing fields in international trade, with China believed to be a primary target.
- **Emphasis on Domestic Value Addition:** For capital goods used in steel production (e.g., furnaces, rolling mills), a minimum of 50% domestic value addition is mandatory.
  - Bidders must self-certify, with false claims risking blacklisting and forfeiture of earnest money deposits.
  - Auditor certification is required for capital goods to verify value thresholds.

DOMESTIC CRUDE STEEL PRODUCTION OVER LAST 5 YEARS

- 2019-20 Pre-pandemic production level — 109.14
- 2020-21 Pandemic-affected production — 103.54
- 2021-22 Recovery and growth phase — 120.29
- 2022-23 Continued production increase — 127.20
- 2023-24 Highest production in the period — 144.30
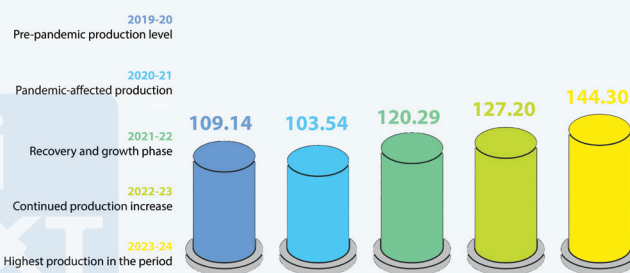
PURCHASING MANAGERS' INDEX (PMI)

Context

Manufacturing activity in India saw a notable improvement in March 2025, with the Seasonally Adjusted Purchasing Managers Index rising to 58.1, the highest in eight months, up from 56.3 in February.

How is PMI Calculated?

- The increase was mainly driven by a rise in new orders, with the new orders index reaching an eight-month high of 61.5.
- In India, the **Purchasing Managers' Index (PMI)** is calculated separately for the **manufacturing** and **services** sectors, primarily by **S&P Global**, which compiles the data through surveys of purchasing managers in private-sector companies.
- The PMI is a diffusion index that reflects the prevailing direction of economic trends in these sectors.

Here's how it is Calculated:

1. **Survey Process:**
   - **Sample**: A representative sample of companies (typically 400–500 for manufacturing and a similar number for services) is surveyed monthly.

◆ These companies are selected based on their contribution to GDP and sector representation.

◆ **Questionnaire**: Purchasing managers answer questions about key business variables compared to the previous month, such as:
- New orders
- Output/production
- Employment
- Supplier delivery times
- Inventories (for manufacturing)
- Input prices
- Output prices
- Business expectations (future outlook)

◆ Responses are typically categorized as "improved," "no change," or "declined."

2. **Components and Weighting:** The PMI is a composite index derived from five key indicators, each assigned a specific weight:
- **New Orders**: 30%
- **Output/Production**: 25%
- **Employment**: 20%
- **Supplier Delivery Times**: 15%
- **Stocks of Purchases (Inventories)**: 10% (for manufacturing only; not used in services PMI)
- For the **Services PMI**, the index is based on similar indicators but excludes inventories and focuses on business activity instead of output.

3. **Calculation Formula:** Each indicator is assigned a score based on the survey responses:
- **Improved** = 100
- **No change** = 50
- **Declined** = 0
  - *Note:* For supplier delivery times, a longer delivery time (indicating supply chain strain) is considered negative, so the scoring is inverted.

4. **Interpretation (Most Important):**
- The PMI ranges from 0 to 100:
  - **Above 50**: Indicates expansion in the sector compared to the previous month.
  - **Below 50**: Indicates contraction.
  - **Equal to 50**: Indicates no change.
- The further the PMI is from 50, the stronger the rate of expansion or contraction.

5. **Data Release:**
- In India, the PMI data is released **monthly**:
  - **Manufacturing PMI**: Released on the **first business day** of the following month.
  - **Services PMI**: Released on the **third business day** of the following month.
- The data is widely reported by financial news outlets and used by policymakers, investors, and businesses to gauge economic health.

6. **Key Points Specific to India:**
◆ The **PMI in India is based on private-sector firms** and **does not include public-sector enterprises.**
◆ It is a leading indicator of economic activity, often used alongside other metrics like GDP growth, IIP (Index of Industrial Production), and inflation.
◆ The survey is conducted in collaboration with organizations like **HSBC**, which sponsors the PMI reports in India.

GI TAG

Context

The Warangal Chapata chilli from Telangana and Kannadippaya from Kerela has been granted the Geographical Indication tag by the GI Registry.

Chapata Chilli (Tomato Chilli)

➲ Chapata Chilli is known for its flaming red colour but **low pungency.**

➲ It is in demand due to its natural colouring agent **"paprika oleoresin".**

➲ There are **three fruit types existing** in the **Warangal Chapata chilli**, namely the **single patti, double patti and odalu.**

Kannadippaya

➲ **Kannadippaya**, meaning **"mirror mat,"** is made from the **soft inner layers of reed bamboo.**
◆ It is a traditional **tribal handicraft from Kerala.**

GEOGRAPHICAL INDICATION (GI) TAG

➲ **A Geographical Indication (GI) Tag** is a form of intellectual property right that identifies a product as originating from a specific geographical region, where its quality, reputation, or characteristics are essentially attributable to that region.

➲ In India, GI tags are governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999, administered by the Controller General of Patents, Designs, and Trademarks under the Department for Promotion of Industry and Internal Trade (DPIIT).

AQUACULTURE

Context

India, with its extensive coastline and inland water resources, has emerged as a global leader in aquaculture. Over the past two decades, India has made remarkable progress, especially in prawn farming, balancing both economic and nutritional goals.

About

⮑ Aquaculture involves the **controlled cultivation of aquatic species** in freshwater, brackish, or marine environments.

- ◆ It complements capture fisheries and plays a pivotal role in **meeting the growing demand for animal protein**, generating employment, and contributing to exports.

⮑ **It can be classified into following categories:**

- ◆ Freshwater aquaculture
- ◆ Coastal aquaculture
  - ◆ Sea farming
  - ◆ Brackish water aquaculture

India's Remarkable Progress in Aquaculture

⮑ **India is currently:**

- ◆ 3rd largest producer of aquaculture products globally.
- ◆ 2nd in the world for prawn production.
- ◆ **Home to key aquaculture states:** Andhra Pradesh, West Bengal, Tamil Nadu, Odisha, and Gujarat.

⮑ A highlight of India's aquaculture success is its thriving **black tiger prawn (Penaeus monodon)** industry. This high-value species is farmed across suitable coastal regions and is in strong demand for both domestic consumption and export.

Factors Behind India's High Growth in Aquaculture

⮑ **Geographic and Natural Advantages:** Long coastline (11,098 km) and abundant **brackish water zones.**

- ◆ Coastal groundwater and **tidal access** aid **water salinity control (10–25g/L needed for prawn farming).**

⮑ **Innovative Farming Techniques:** Promotion of **smaller ponds** (e.g., in Andhra Pradesh) for better yield and disease control.

- ◆ Controlled pond management and salinity balancing through **brackish water and river water mixing.**

⮑ **Private and Institutional Collaboration:** Research support from institutions like **ICAR-CIBA**, which developed 'specific pathogen free' broodstock. Growth of **aquafeed industries** and labs for disease detection.

Challenges in Aquaculture

⮑ **Disease Outbreaks:** Pathogens like Vibrio harveyi and White Spot Syndrome Virus cause up to 25% annual yield losses.

⮑ **Environmental and Climate Change Pressures:** Salinity shifts, water temperature variations, and extreme weather events affecting production cycles.

⮑ **Infrastructure and Resource Gaps:** Need for improved access to testing labs, biosecure hatcheries, and cold chain logistics in remote regions.

Key Government and Research Initiatives

⮑ **ICAR-CIBA (Central Institute of Brackishwater Aquaculture):** Pioneering SPF (specific pathogen-free) prawn development.

- ◆ Promotion of **phage therapy** to tackle bacterial diseases.

⮑ Skill training, credit access, and support for small-scale farmers through government schemes like **PM Matsya Sampada Yojana.**

⮑ **Lab networks** and diagnostic services to monitor and contain infections early.

PAMBAN BRIDGE

Context

The new Pamban Bridge has been inaugurated by Prime Minister Narendra Modi on April 6, 2025, replacing the century-old structure.

About

⮑ The Pamban Bridge connects **Rameswaram to mainland India, spanning across the ocean.**

⮑ It was originally **built in 1914** and served as India's first sea bridge, crucial for trade and pilgrimage.

⮑ **The old bridge survived the 1964 tsunami,** which tragically washed away a train, but suffered extensive damage.

- ◆ It was later restored by renowned engineer **E. Sreedharan (Metro Man of India)** with the help of local fishermen.

⮑ The new bridge was designed to overcome the limitations of the old structure, ensuring durability, improved maritime navigation, and future-ready capacity. It aims to enhance regional connectivity and support economic growth.

⮑ It is India's first Vertical Lift Railway Sea Bridge and is built with advanced materials to withstand harsh marine conditions.

MOSPI RELEASED "WOMEN AND MEN IN INDIA 2024" REPORT

Context

The Ministry of Statistics and Programme Implementation (MoSPI), released the 26th edition of its publication titled "Women and Men in India 2024: Selected Indicators and Data".

About

- The publication offers a **comprehensive overview of the gender landscape** in India, presenting selected indicators and data across key areas like population, education, health, economic participation, and decision-making, all sourced from various Ministries/ Departments/Organizations.

Some Key Highlights of the Publication

- **Education:** The Gender Parity Index (GPI) for enrolments at both primary and higher secondary levels increased in FY24 compared to FY23 and FY22, indicating more girls being enrolled in school.
  - At the upper primary and elementary levels, the enrolment numbers were nearly equal for both boys and girls.
- **Labour Force Participation:** The Labour Force Participation Rate (LFPR) for women aged 15 years and above saw a significant improvement from 49.8% in 2017–18 to 60.1% in 2023–24.
  - This reflects growing inclusion of women in the workforce and economic activity.
- **Financial Inclusion:** Women owned 39.2% of all bank accounts in India as of the latest data. They contributed 39.7% to total deposits in banks.
  - Women's presence is most prominent in rural areas, where they make up 42.2% of account holders.
- **Entrepreneurship & Economic Independence:** The number of female-headed proprietary establishments across manufacturing, trade, and services has been rising consistently between 2021–22 and 2023–24.
  - Startups with at least one woman director (DPIIT-recognized):
    - **In 2017:** 1,943 startups
    - **In 2024:** 17,405 startups
  - This is more than an 800% increase in 7 years.
- **Political Participation:** Female voter turnout has seen variations over the years, rising to 67.2% in 2019, followed by a modest dip to 65.8% in 2024.
- **Violence against Women:** Nearly 31.9% of married women aged 18 to 49 in India report experiencing spousal violence, with the highest prevalence observed in Karnataka (48.4%), Bihar (42.5%), and Manipur (41.6%).

VOLATILITY INDEX (VIX)

Context

Recently, The India Volatility Index surged over 65% to 22.8, marking its highest single-day spike ever, indicating heightened risk and uncertainty in the market.

Volatility Index (VIX)

- The term **"VIX"** is **a trademark** owned by the **Chicago Board Options Exchange (CBOE).**
- It measures the **market's expectation of volatility** over the near term, reflecting the rate and magnitude of price changes, often associated with risk.
- It is calculated as **annualized volatility**, expressed as a percentage.

India VIX

- It is specifically based on **NIFTY Index Option prices.**
- It calculates the expected market volatility for the next 30 days.
- India VIX uses the CBOE's computation methodology.

Latest Updates

- The recent increase was driven by a sharp 5% sell-off in Indian equities, sparked by concerns over the impact of US President Donald Trump's tariffs and China's retaliatory measures.
- The spike in volatility is reminiscent of previous global market turmoil, such as in August 2015.

PRADHAN MANTRI MUDRA YOJANA COMPLETES 10 YEARS

Context

On 8 April 2025, India marked 10 years of the Pradhan Mantri MUDRA Yojana (PMMY).

About

- **Launched:** April 2015
- **Objective:** To provide collateral-free institutional credit to non-corporate, non-farm micro and small enterprises.
- **Tagline:** Funding the Unfunded
- **Implementation:** Through MUDRA **(Micro Units Development and Refinance Agency).**
- **Target:** Small businesses in manufacturing, trading, processing, and services—a major employment segment after agriculture.
  - Collateral-free credit up to ₹**20 lakh** is provided by Member Lending Institutions (MLIs) i.e. Scheduled Commercial Banks (SCBs), Regional Rural Banks (RRBs), Non-Banking Financial Companies (NBFCs) and Micro Finance Institutions (MFIs).

⮞ **Loan Categories under PMMY:**

Shishu
Covering Loans Upto ₹ 50,000/-

Kishore
Covering Loans Above ₹ 50,000/- and Upto ₹ 5 Lakh

Tarun
Covering Loans Above ₹ 5 Lakh and Upto ₹ 10 Lakh

TarunPlus
Covering Loans Above ₹ 10 Lakh and Upto ₹ 20 Lakh
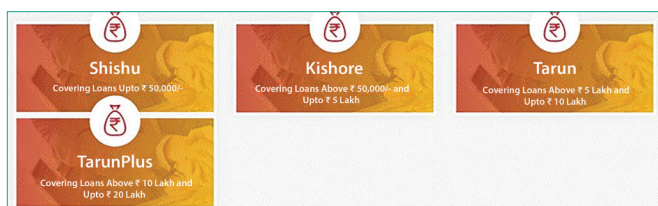
⮞ **Achievements (As of FY25):**
- **Loans sanctioned:** Over 52 crore
- **Loan value:** ₹32.61 lakh crore

States with Highest PM Mudra Loan Disbursements *(in Rs. Lakh Crore)*

State	Value
Tamil Nadu	3.23
Uttar Pradesh	3.14
Karnataka	3.02
West Bengal	2.82
Bihar	2.81
Maharashtra	2.74

(As of Feb 28, 2025)
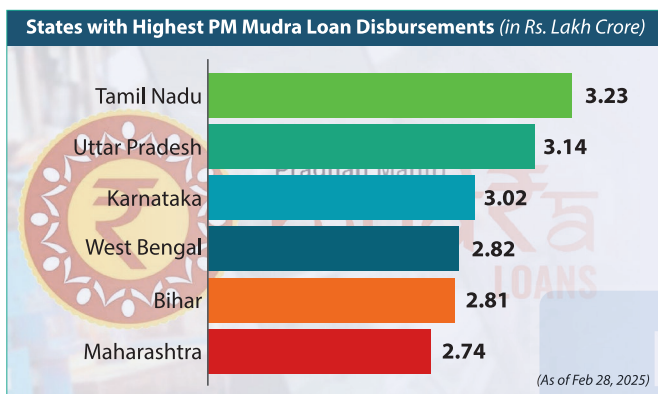
Decade of Pradhan Mantri Mudra Yojana

Cumulative Outreach to **52 crore** MSE borrower accounts with credit support of **₹32.61 lakh crore**

Empowering Women with **68% loan** Accounts belonging to women beneficiaries

Addressing the Credit Needs of Weaker Sections 50% of the loan accounts belong to SC/ST/OBC communities
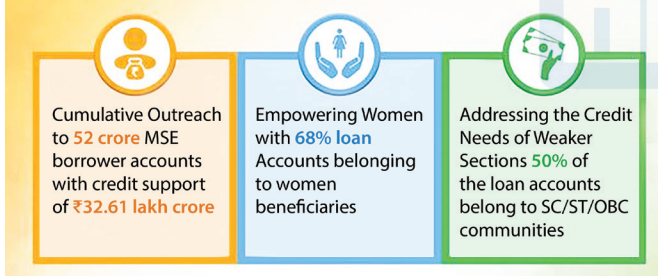
CHALLENGES FACED BY MICROENTERPRISES

1. Infrastructure Gaps
2. Access to Finance
3. Skill Development Gaps
4. Lack of Growth Orientation
5. Lack of Market Development/Market Making
6. Policy Advocacy Needs
7. Information Asymmetry
8. Knowledge Gaps
9. Entry-Level Technologies

SOME ACHIEVEMENT	
Women Empowerment	**68%** of beneficiaries are women
	Per woman disbursement **CAGR: 13%**
	Enhanced economic independence and **labour force participation**
Marginalised Communities	50% of Mudra accounts are **SC/ST/OBCs**
	11% Mudra accounts belong to minority communities
	Bridges financial exclusion and promotes inclusive growth
Boost to MSME Credit	MSME credit rose from ₹8.51 lakh crore (FY14) to **₹27.25 lakh crore** (FY24)
	Projected to cross ₹30 lakh crore in FY25
	MSME share in total bank credit increased from **15.8% to ~20%**
Job Creation	Supports self-employment and entrepreneurship
	Generates jobs in **tier-2/3** cities and rural areas

Challenges
⮞ Risk of NPAs (Non-Performing Assets) in some sectors.
⮞ Need for better credit appraisal and training of borrowers.
⮞ Require complementary ecosystems (e.g., market access, digital literacy).

"BLUE CATEGORY" CLASSIFICATION FOR INDUSTRIES

Context

The Central Pollution Control Board (CPCB) has introduced a new "Blue Category" in its industrial classification system, aimed at recognizing and incentivizing essential environmental service industries.

Revised Classification for Industries
⮞ The Blue Category was created under the **"precautionary principle**," based on the potential environmental impact of industries.
⮞ The **Blue Category i**ncludes industries such as **Waste-to-energy plants, some compressed biogas (CBG) plants, and other utilities involved in managing environmental concerns** (e.g., waste management).

CPCB revises classification of industrial sectors into red, orange, green and white categories; introduces a new blue category to distinguish the Essential Environmental Services.
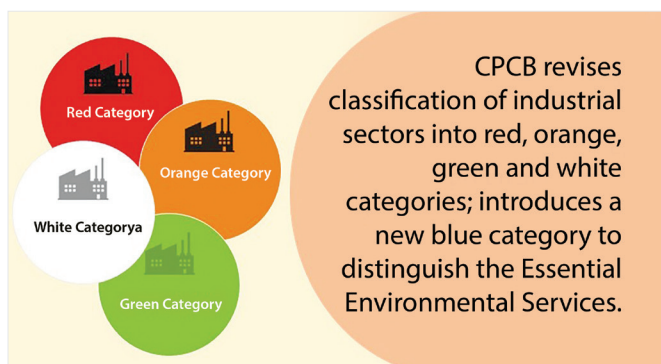
➲ These industries, although potentially high on the **Pollution Index (PI)**, are recognized for **their positive environmental externalities.**

➲ Industries classified under the Blue Category will receive an additional **two years of validity for their Consent to Operate (CTO)**, based on their **Pollution Index (PI).**

EARLIER CLASSIFICATION BY CPCB	
Pollution Index (PI)	**Category of Industrial Sector**
PI ≥ 80	Red
55 ≤ PI < 80	Orange
25 ≤ PI < 55	Green
PI < 25	White

CENTRAL POLLUTION CONTROL BOARD (CPCB)

➲ It is a **statutory organization** under the Ministry of Environment, Forest and Climate Change (MoEF&CC) in India.

➲ CPCB was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981.**

➲ It serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the Environment (Protection) Act, 1986.

NIVESHAK DIDI INITIATIVE

Context

Investor Education and Protection Fund Authority (IEPFA) and India Post Payments Bank (IPPB) have signed a MoA to jointly launch Phase 2 of the "Niveshak Didi" initiative.

Niveshak Didi Initiative:

➲ Under the initiative, **women postal workers and community leaders** are trained to act as **financial educators in local regions**.

➲ **Phase 1:** It was launched in **2018**, over 55,000 beneficiaries participated in IPPB Financial Literacy Camps across India, with 60% female participants, mainly from rural areas.

➲ **Phase 2:** Over 4,000 new financial literacy camps will be set up, led by nearly 40,000 women postal workers (Niveshak Didis).

➲ **Topics covered:** Responsible investing, fraud awareness, savings habits, and digital banking tools.

Investor Education and Protection Fund Authority:

➲ It is a **statutory body** under the **Ministry of Corporate Affairs**, established in **2016.**

➲ **Role:** Promotes financial literacy, educates people on managing personal finances, and informs about rights and responsibilities as investors.

➲ **Focus:** Special outreach to rural and underserved communities to empower individuals with financial knowledge.

India Post Payments Bank (IPPB):

➲ **Established:** In 2018, under the Department of Posts, Ministry of Communication.

➲ **Vision:** To provide accessible, affordable, and trusted banking services for all, especially the unbanked and underbanked.

➲ **Operating Model:** Focuses on paperless, cashless, and presence-less banking through smartphones and biometric devices.

ONE STATE ONE RRB: AMALGAMATION OF REGIONAL RURAL BANKS (RRBS)

Context

Recently, the Department of Financial Services (DFS) has notified amalgamation of 26 Regional Rural Banks (RRBs) on the principles of 'One State One RRB'. It is the fourth phase of amalgamation of RRBs.

About

➲ **Background:** RRBs were established in 1975, following the **recommendations of the Narasimham Working Group** and the enactment of the **Regional Rural Banks Act in 1976.**

  ◆ It was aimed to provide financial services to rural areas, particularly to small and marginal farmers.

  ◆ However, over the decades, fragmentation, overlapping operations, and high operational costs limited their effectiveness.

➲ To address these challenges, the government introduced the **amalgamation strategy, with the vision of 'One State, One RRB'**

➲ **Ownership Structure:** Jointly owned by:

  ◆ Central Government: 50%

  ◆ State Government: 15%

  ◆ Sponsoring Bank: 35%

➲ **Supervision and Regulation:** Regulated by the Reserve Bank of India (RBI) under the Banking Regulation Act, 1949.

- Supervised by the **National Bank for Agriculture and Rural Development (NABARD).**
- **Treated as cooperative societies for** tax purposes under the **Income Tax Act, 1961.**

'One State, One RRB' Policy

- It is a strategic initiative led by the **Department of Financial Services (DFS) under the Ministry of Finance.**
- It aims to **restructure and consolidate Regional Rural Banks (RRBs) in India**, and to boost rural banking efficiency, enhance financial inclusion, and optimize operational costs through the amalgamation of RRBs within the same state.

Objectives of 'One State, One RRB'

- **Operational Efficiency:** Larger banks benefit from economies of scale, uniform technology platforms, and shared human resources.
- **Cost Rationalization:** Reduces administrative overhead and duplication.
- **Enhanced Credit Flow:** Streamlined operations mean better credit availability to farmers and small businesses.
- **Improved Governance:** Single RRB per state improves state-wise planning, accountability, and monitoring.
- **Technological Advancement:** Unified Core Banking Systems (CBS) and digital banking capabilities.
- **Enhanced Financial Inclusion:** The unified RRBs will focus on providing credit and financial services to small and marginal farmers, artisans, and rural entrepreneurs.

PHASES OF AMALGAMATION OF RRBS IN INDIA (Initiated in 2004-05 based on the recommendations of the Vyas Committee)		
Phases	**Objectives**	**Outcomes**
Phase I (2006–2010)	To address the operational inefficiencies and financial weaknesses of RRBs.	196 RRBs to 82
Phase II (2013–2015)	To further streamline the RRB structure and enhance their operational scale.	82 RRBs to 56
Phase III (2019–2021)	To align RRBs with modern banking requirements and enhance their financial sustainability.	56 RRBs to 43
Phase IV (2025)	To implement the **'One State, One RRB' policy,** ensuring uniformity and efficiency across states.	43 RRBs to 28

After Phase IV Amalgamation

- At present, 43 RRBs are functioning in 26 States and 2 union territories. Post amalgamation, there will be 28 RRBs in 26 states and 2 UTs with more than 22,000 branches covering 700 districts.
- Their predominant area of operation is in rural areas with approximately 92% of branches in rural or semi urban areas.

Challenges Ahead

- **Staff Realignment and Training in the Unified Systems:** Many staff members are unfamiliar with new digital tools, requiring extensive retraining.
  - Resistance to change further slows adoption.
- **Regional Disparities in Infrastructure and Local Banking Needs:** Remote areas often face poor connectivity, power issues, and fewer bank branches, limiting access to unified services.
- **Customer Awareness and Onboarding in Rural Areas:** Low digital literacy and trust issues hinder rural customers from adopting modern banking platforms.
- **Cybersecurity and Data Privacy Risks:** Wider digital access increases vulnerability to fraud and misuse of personal data in less-aware populations.
- **Legacy System Integration:** Integrating old banking systems with modern platforms is technically complex and time-consuming.
- **Language and Cultural Barriers:** Lack of local language support and culturally relevant communication limits service effectiveness.
- **Inconsistent Policy Implementation:** Variation in operational standards and enforcement across regions disrupts smooth integration.

Way Forward

- **Comprehensive Staff Reskilling Program:** Launch tailored training programs to equip staff with skills in digital tools and customer handling.
  - Regular updates should be ensured.
- **Infrastructure Boost in Underserved Areas:** Improve internet and power access through government and private partnerships. Set up mobile units or banking correspondents.
- **Targeted Financial Literacy Campaigns:** Use local languages and familiar channels to raise awareness. Conduct workshops and involve trusted community leaders.
- **Robust Cybersecurity Framework:** Implement multi-layered security systems and educate users on safe digital practices, especially in vulnerable regions.
- **Phased Integration and Feedback Loops:** Roll out systems gradually while collecting user and staff feedback. Use insights to adapt and scale up effectively.

AGASTHYAMALAI LANDSCAPE

> **Context**
>
> *The Supreme Court has directed the Central Empowered Committee (CEC) to survey the entire Agasthyamalai landscape to identify non-forestry activities and encroachments.*

About

➲ The ruling aims to **initiate restoration of pristine forest areas and protect tiger habitats** and **wildlife sanctuaries.**

➲ **Survey Scope:** The CEC survey will include **Periyar tiger reserve, Srivilliputhur sanctuary, Meghamalai sanctuary, and Thirunelveli sanctuary.**

➲ **Comparative Data:** The survey will compare current forest cover with historical data to assess depletion and degradation.

Central Empowered Committee (CEC)

➲ The CEC was formed in **2002** (and reconstituted in 2008) by the Supreme Court under the **T.N. Godavarman Thirumulpad vs. Union of India judgement.**

➲ The Committee functions under the **administrative control of the Central Government in the Ministry of Environment.**

➲ **Composition:** A member secretary, and the remaining three expert members, who are civil servants appointed by the Union Ministry of Environment Forest and Climate Change (MoEFCC).

Agasthyamalai

➲ **Agasthyamalai Biosphere Reserve** is located in the southernmost part of Western Ghats in South India, spanning the **Kerala-Tamil Nadu border.**

➲ **UNESCO Recognition:** Added to UNESCO's World Network of Biosphere Reserves in **2016**.

➲ The **reserve includes three wildlife sanctuaries**, **Shendurney, Peppara and Nayar**, as well as the **Kalakad Mundanthurai Tiger reserve**.

➲ The reserve is home to **Kani tribes from both Tamil Nadu and Kerala,** which number in total approximately 30,000 inhabitants.

➲ **The Agasthyamala peak** rises to **1,868 meters** within the Neyyar Wildlife Sanctuary.

➲ **Cultural Significance:** It is named after the Hindu sage **Agasthya Muni,** with his statue situated at the top of the peak; a popular pilgrimage site.

➲ **Flora & Fauna:** Home to a diverse range of species, including rare and medicinal plants; about 2,000 medicinal plants used in Ayurvedic treatments.

AFRICAN GIANT POUCHED RAT

> **Context**
>
> *A giant African pouched rat, set a world record by detecting 109 landmines and 15 other unexploded ordnance (UXOs) in Cambodia.*

About

➲ It made the **Guinness World Record** for most landmines detected by a rat.

➲ The **rats are trained to sniff out chemicals** that are found in landmines and other weapons abandoned on battlefields.

   ◆ **Because of their small size,** the rats are not heavy enough to detonate the mines.

   ◆ The rats can check an area the size of a tennis court in about 30 minutes, whereas a metal detector might take four days to clear the same land.

   ◆ **They can also detect tuberculosis** far quicker than it would be found in a lab using conventional microscopy.

➲ **Cambodia** remains one of the **most heavily mined countries** due to decades of war.

   ◆ The country aimed to be **mine-free by 2025,** but the deadline was **extended to 2030** due to funding challenges and new minefields discovered.

The African Giant Pouched Rat

➲ **Scientific name: Cricetomys gambianus**, it is a large rodent species **native to sub-Saharan Africa.**

➲ **Appearance:** They have greyish-brown fur, with large ears and a distinctive pouch-like cheek where they store food.

➲ **Habitat:** Found in a range of habitats, including savannas, forests, and agricultural areas in sub-Saharan Africa.

➲ **Diet: Omnivores** and mainly feed on fruits, seeds, insects, and small animals.

➲ **Intelligence:** Highly intelligent and trainable, which makes them ideal candidates for work like landmine detection and medical alert services.

➲ **Conservation Status:** Least Concern (IUCN Red List).

INDIA'S AIR POLLUTION CONCERN

Context

India's air pollution crisis is a persistent issue causing severe health problems, with cities regularly topping global pollution rankings.

World Air Quality Report 2024

- **Thirteen of the world's top 20 most polluted cities are in India**, with **Byrnihat** on the **Assam-Meghalaya border** being the most polluted.
- **India is the fifth most polluted country in the world,** with an average Air Quality Index **(AQI) of 50.6 µg/m3 (10 times higher than the World Health Organization's (WHO) annual PM2.5 guideline value of 5 µg/m3).**
- **Delhi continues to be the most polluted Capital city** in the world with an average PM 2.5 concentration of 91.8 µg/m3.

(CREA) Report on Air Pollution

- A new analysis by non-profit Centre for Research on Energy and Clean Air (CREA) revealed data on **India's Air Pollution levels.**
- **Delhi's PM 10 Levels: Delhi recorded the highest Particulate Matter 10 levels** among 130 cities under the National Clean Air Programme (NCAP) in FY 2024-25.
  - Delhi's annual average PM 10 concentration was 206 µg/m³, three times above the **national standard of 60 µg/m³.**
- **Other Cities with High PM 10 Levels: Byrnihat (Assam)** and **Patna (Bihar)** followed Delhi.
- **NCAP Targets:** The NCAP **aims to reduce PM 10 levels by up to 40% by 2025-26 compared to the 2017 baseline.**
  - PM 10 reductions are assessed on a financial year basis.
- **Significant Changes:**
  - Bareilly (Uttar Pradesh) showed the largest reduction in PM 10 levels at 78%.
  - Jalgaon (Maharashtra) recorded the highest increase in PM 10 levels at 57%.
- **Ongoing Challenges:** Despite improvements, 91 of the 102 NCAP cities still exceeded the national PM 10 standard during FY 2024-25, with just one year left to meet NCAP targets.

Air Pollution

- **When harmful substances (pollutants)** – particles, gases, or matter – are released into the air and reduce its quality, the air is polluted.
- **Common air pollutants include:** Particulate Matter (PM), Nitrogen Dioxide (NO2), Sulfur Dioxide (SO2), Ozone (O3), Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), Lead etc.
- **Source:** These pollutants can originate from natural sources such as volcanic eruptions and wildfires, but human activities such as industrial production, transportation, agriculture, and residential heating are significant contributors to air pollution.
- **Concerns:**
  - **Health Related:** Respiratory issues, cardiovascular problems, reduced lung function.
  - **Environmental:** Ecosystem damage, Biodiversity loss, Water pollution, climate change, crop damage.
  - **Healthcare Costs:** The health impacts of air pollution result in increased healthcare costs, including expenses related to the treatment of respiratory and cardiovascular diseases.

NOTE TO READERS

For further detailed analysis of Air Pollution, refer Page 69 *(World Air Quality Report 2024)* of March 2025 edition of NEXTIAS Current Affairs Magazine.

DE-EXTINCTION OF DIRE WOLF

Context

A United States-based bioscience company claimed that it had revived an extinct species of animal, the dire wolf.

About the Dire Wolf (Aenocyon Dirus)

- The Dire wolf was one of the most formidable predators of the late Pleistocene epoch.
- **Geographic Range:** It lived across **North America** — from southern Canada to the United States, before they went extinct about 13,000 years ago.
- **Physical Traits:** They resembled the grey/ gray wolves (Canis lupus), but were larger, with white coats.
  - A dire wolf could be **3.5 feet tall**, more than **6 feet** in length, and weigh up to **68 kg.**
- **Diet:** Predators of horses, bison, and possibly mammoths.

Meaning of De-Extinction

- De-extinction, or resurrection biology, refers to the **scientific process of bringing back extinct species** or creating organisms closely resembling them through genetic engineering.
- De-extinction is possible because of bioengineering techniques that can manipulate DNA and genomes or the genetic material in an organism.
- The goal is to re-establish dynamic processes that **produce healthy ecosystems** and **restore biodiversity.**

Methods of De-Extinction

- **Back-breeding:** It uses the principles of selective breeding. This method works well when the extinct species are closely related to a still-living species.

- ◆ **Limitation:** It cannot recreate the exact genome of the extinct species. Risks include inbreeding and genetic mutations.
- ➲ **Cloning:** It produces a genetically identical copy of an organism through **Somatic Cell Nuclear Transfer (SCNT).**
  - ◆ **Example:** Birth of Dolly the sheep in **1996.**
  - ◆ **Limitation:** It requires intact living cells, so it's not feasible for long-extinct species.
- ➲ **Genome Editing & Synthetic Genomics:** Genome editing tools (like CRISPR) allow for precise deletion, addition, or modification of genes. Synthetic genomics involves inserting large sections of synthesized DNA into a host genome.
  - ◆ **Result:** Hybrid organisms with traits from both extinct and living species.

THE DE-EXTINCTION OF DIRE WOLF
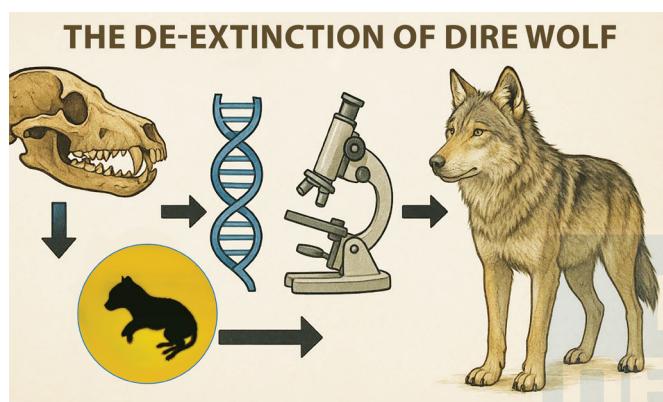
GREEN CREDIT PROGRAMME

Context

The government is inviting voluntary participation in sectors ranging from plantations to water conservation in exchange of tradable credits under the Green Credit Programme.

About Green Credit Programme

- ➲ A **market-based mechanism** designed to incentivize voluntary environmental actions.
- ➲ It allows individuals, communities, and industries to earn tradable "green credits" for undertaking environmentally positive activities like afforestation, water conservation, and sustainable agriculture.
- ➲ These credits can then be traded on a domestic platform to meet environmental obligations or to generate revenue
- ➲ **Launched by:** Ministry of Environment, Forest and Climate Change (MoEFCC)
- ➲ **Officially unveiled:** December 1, 2023, at COP28 in Dubai by PM Modi and UAE President Sheikh Mohammed bin Zayed Al Nahyan
- ➲ **Objective**: To incentivize voluntary pro-environmental actions through tradable "green credits"

- ➲ **Linked to:** Mission LiFE (Lifestyle for Environment)
- ➲ **Participation:** Open to individuals, companies, PSUs, and institutions on a voluntary basis.
- ➲ **Activities Eligible for Green Credits:** Tree plantation, Eco-restoration (grasses, shrubs, herbs), water conservation (rainwater harvesting, soil moisture conservation), Waste management & air pollution reduction.
- ➲ **Incentive Structure:** Participants earn green credits (e.g., 1 grown tree = 1 green credit)
  - ◆ Credits are tradable on a domestic market platform
  - ◆ Can be used for:
    - ◆ Meeting compensatory afforestation obligations
    - ◆ Environmental social and governance (ESG) under SEBI guidelines.

Mission LiFE

- ➲ **Mission LiFE (Lifestyle for Environment)** is an India-led global mass movement launched to promote sustainable lifestyles and mindful consumption to combat climate change. **Introduced by Prime Minister Narendra Modi at COP26 (Glasgow, 2021) and formally launched on October 20, 2022, at the Statue of Unity, Gujarat, with UN Secretary-General António Guterres,** it encourages individual and collective actions to reduce environmental impact, aligning with India's **Nationally Determined Contributions (NDCs)** and global **Sustainable Development Goals (SDGs).**

Conference of the Parties (COP)

- ➲ The **Conference of the Parties (COP)** is the supreme decision-making body of the **United Nations Framework Convention on Climate Change (UNFCCC)**, established in **1992** to address global climate change.
- ➲ Held annually (unless otherwise decided), COP brings together **198 member countries** to review progress, negotiate agreements, and strengthen commitments to mitigate climate change, adapt to its impacts, and mobilize finance, with the goal of limiting global warming.

Concerns & Criticism

- ➲ **Legal:** Ministry of Law and Justice questioned the legality of the trading model.
- ➲ **Supreme Court:** Reviewing petition on survival of plantations and legality under amended Forest Act.
- ➲ **Ecological concerns:** May incentivize forest diversion by replacing non-forest land with degraded forest land.
  - ◆ Risk of harming ecologically important scrublands and open forests.
- ➲ **Key issue:** Undermines "land-for-land" principle of compensatory afforestation.

"Land for Land" Principle

➲ The **Land for Land Principle** is a core component of **Compensatory Afforestation (CA) under India's Forest (Conservation) Act, 1980 (FCA)**, requiring that non-forest land equivalent to the forest land diverted for non-forest purposes (e.g., infrastructure, mining) be provided for afforestation to offset environmental losses.

➲ It ensures no net loss of forest cover, promotes ecological balance, and aligns with India's climate commitments.

NAINI LAKE

Context

The Naini Lake has recorded a water level of 4.7 feet — marking a five-year low. The lake has reached its zero level more than 10 times since 2000, compared to just twice in the 1900s.

About

➲ **Naini Tal,** also known as **Naini Lake**, situated amidst the town of Nainital.

➲ It is a natural freshwater lake**, tectonic in origin** and crescent or kidney shaped-shaped due to repeated landslides.

➲ Mentioned in Skanda purana as Tri-Rishi-Sarovar, rediscovered by the British in early 1800's.

➲ Situated in the Kumaon region of Uttarakhand,it is one of the Four lakes in the Kumaon Hills(other three are (i) Sattal Lake (ii) BhimTal Lake iii. Naukuchiatal Lake.

➲ **Third largest lake** in the state by surface area with Balia Nala being the main feeder Stream.
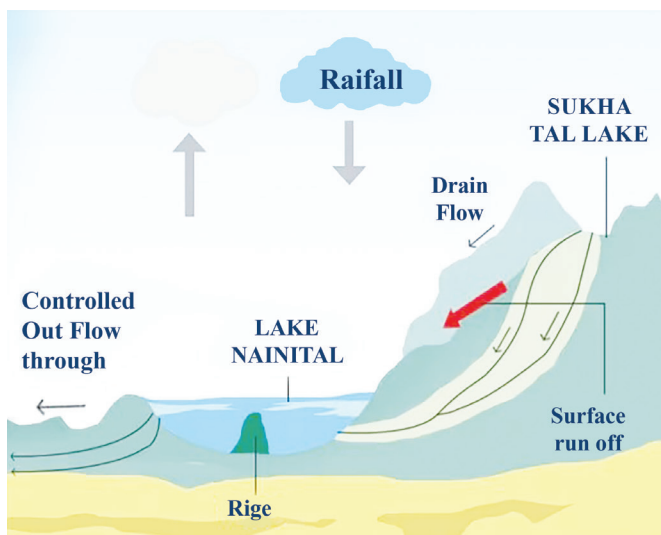
SIMILIPAL BIOSPHERE RESERVE

Context

A strong objection has been raised against the proposed hotel project inside the Similipal Biosphere Reserve in Odisha's Mayurbhanj district.

Similipal Biosphere Reserve

➲ Similipal derives its name from **'Simul' (Silk Cotton)** tree.

➲ **Location:** It is located in **Odisha's Mayurbhanj district** adjoining Jharkhand and West Bengal.

➲ **Fauna:** It hosts endangered species like the **Royal Bengal Tiger, Asian Elephant, Chausingha and Indian Bison.**
   ◆ It is **Asia's second largest biosphere reserve,** and the country's only wild habitat for **melanistic** royal Bengal tigers.

➲ **Flora:** Tropical moist broadleaf forest, Tropical moist deciduous forest, Dry deciduous hill forest, Sal forests.

➲ **Tribes:** Inhabited by indigenous communities such as the**Mankidia,Santhal and Ho tribes.**

➲ **Rivers** like **Budhabalanga, Salandi** and many tributaries of **Baitarani river** pass from the Reserve.

➲ It was declared a **biosphere reserve** by the Government of India in **1994.**
   ◆ UNESCO added it to its list of **Biosphere Reserves** in **2009.**

Melanistic Animals

➲ Melanistic animals, characterized by an excess of dark pigment melanin in their skin, fur, or feathers, captivate researchers and conservationists due to their striking appearance and ecological significance.

➲ Caused by genetic mutations, melanism enhances camouflage, thermoregulation, or disease resistance in species like leopards, jaguars, and wolves.

➲ Melanism is a genetic condition causing increased melanin production, resulting in dark or black skin, fur, or feathers.

➲ It contrasts with albinism (lack of melanin) and includes pseudomelanism (abundism), where darker spots or stripes dominate.

Biosphere Reserves

➲ Biosphere Reserves are designated areas under **UNESCO's Man and Biosphere (MAB) Programme** that balance biodiversity conservation, sustainable development, and research.

➲ In India, 18 Biosphere Reserves span diverse ecosystems, from the Nilgiris to the Sundarbans, covering 73,073.87 km² (9.29% of India's forest area). These reserves protect endangered species, promote eco-tourism, and support local livelihoods while advancing scientific study.

BIOSPHERE RESERVES IN INDIA

Cold Desert Himachal Pradesh
*Khangchendzonga Sikkim
Dehang Debang Arunachal Pradesh
Manas,Dibru Saikhowa Assam
*Nanda Devi Uttarakhand
Kachchh Gujarat
*Pachmarhi, Panna Madhya Pradesh
*Achankmar Amarkantak Chhattisgarh, Madhya Pradesh
*Nokrek Meghalaya
*Sunderbans West Bengal
*Similipal Odisha
Seshachalam Andhra Pradesh
*Nilgiri Karnataka
*Gulf of Mannar Tamil Nadu
*Agasthyamala Tamil Nadu & Kerala
*Great Nicobar Andaman & Nicobar Islands

BIOMASS MISSION

Context

The European Space Agency's (ESA) Biomass mission will be launched on April 29, 2025.

Need

➲ Forests store large amounts of carbon, absorbing 16 billion metric tonnes of CO_2 annually and holding 861 gigatonnes of carbon. In 2023, tropical forests lost 3.7 million hectares, contributing 6% of global CO_2 emissions.

➲ Understanding forest biomass and carbon storage is vital for measuring climate change impacts.

Biomass Mission

➲ It will consist of a single LEO (Low Earth Orbit) satellite platform carrying the SAR instrument. It will be placed in a Sun-Synchronous Orbit (SSO) at an altitude of 666 km.

➲ It will map the **world's forests to better understand** their role in the carbon cycle.

➲ It will use a **Synthetic Aperture Radar (SAR) operating** in the P-band frequency to penetrate forest canopies and assess carbon storage and forest biomass.

  ◆ It is the first satellite to use this technology.

➲ It is part of **ESA's Earth Explorer programme**, designed to provide vital data on Earth's systems.

➲ It will also observe ice sheet movement in Antarctica and create 3D models of terrains with dense vegetation.

Significance

➲ **Accurate Global Forest Carbon Mapping:** The mission will provide precise data on forest biomass and carbon storage, essential for understanding the role of forests in the global carbon cycle and tracking climate change.

➲ **First Use of P-band SAR in Space:** It is the first satellite to use P-band Synthetic Aperture Radar (SAR) from space, enabling penetration through dense forest canopies to measure biomass more effectively than ever before.

➲ **Support for Climate and Conservation Policy:** Offers vital information for climate agreements, REDD+ initiatives (Reducing Emissions from Deforestation and Forest Degradation), and sustainable forest management by governments and conservation bodies.

THE ARCTIC BOREAL ZONE (ABZ) REJECTS MORE CARBON

Context

According to a new study published in Nature, the increasing ferocity of wildfires means that more than 30% of the Arctic Boreal Zone (ABZ) has now stopped capturing carbon and is instead releasing it.

About

➲ The findings align with the **National Oceanic and Atmospheric Administration (NOAA's) 2024 Arctic Report Card.**

- It also highlighted that the Arctic tundra, a treeless region, is becoming a net carbon source, largely due to warming temperatures and escalating wildfire activity in the Northern polar region.

The Arctic Boreal Zone (ABZ)

- ABZ is a critical region in the northern hemisphere, characterized **by its unique ecosystems and significant role in regulating global carbon cycles.**
- **Geographical Location:** The ABZ spans across the Arctic Circle, including parts of **Alaska, northern Europe, and Siberia.**
  - It includes **tundra, coniferous forests, wetlands, and permafrost regions.**
- **Carbon Sink:** The ABZ has historically acted as a significant carbon sink, absorbing large amounts of Carbon Dioxide (CO_2) from the atmosphere through its forests, soil, and permafrost.
  - The tundra and wetlands in the ABZ sequester carbon in the form of organic material frozen in permafrost, which helps mitigate global warming.
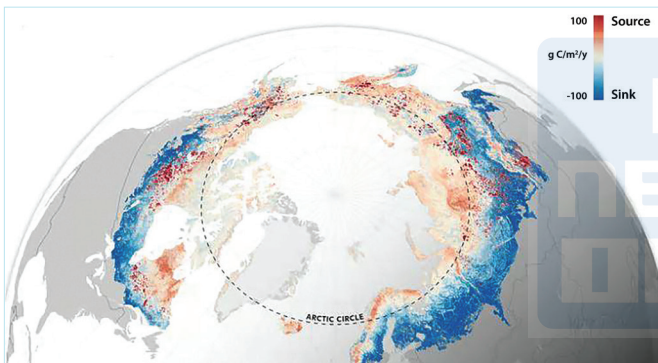
Recent Wildfires:

- Multiple U.S. states (Texas, Oklahoma, California) and Japan (Ofunato) faced severe wildfires in early 2025.
- India's forest fire hotspots dropped, but the number of fires remains high, particularly in Uttarakhand, Odisha, and Chhattisgarh.
- Rising land temperatures and prolonged heat waves contribute to more intense fires.

Carbon Emissions:

- Wildfires in January 2025 released 800,000 tonnes of carbon, **nearly four times the amount released a decade ago.**
- Wildfires worldwide significantly contribute to carbon emissions, **including 69 million tonnes annually in India.**

Carbon Sinks and the Arctic Boreal Zone (ABZ):

- Oceans, forests, and soil are carbon sinks, but wildfires have **disrupted their ability to absorb carbon.**
- The ABZ, once a significant carbon sink, has **started releasing carbon, especially due to thawing permafrost and increased wildfires.**

- **Over 30% of the ABZ now releases carbon**, reversing its long-standing role as a carbon sink.

UNHRC ADOPTS RESOLUTION LINKING PLASTIC POLLUTION, OCEAN PROTECTION, AND HUMAN RIGHTS

Context

Recently, the United Nations Human Rights Council (UNHRC) has adopted a resolution recognizing the critical connection between plastic pollution, ocean protection, and the human right to a clean, healthy, and sustainable environment.

Key Highlights of the Resolution

- **Interconnected Crises:** Plastic pollution, climate change, and biodiversity loss collectively threaten the health of the planet and the rights of future generations.
- **Impact on Vulnerable Communities:** Coastal communities and small island developing states are disproportionately affected by ocean degradation and natural disasters.
  - The resolution calls for a human rights-based approach to ocean governance, emphasizing inclusion and protection for at-risk populations.
- **Building on Previous UN Actions:** The resolution **strengthens the Human Rights Council Recognition (2021)** and the **UN General Assembly Resolution (2022)** affirming the **right to a healthy environment.**
  - It was strongly influenced by a report from the **UN Special Rapporteur on the Right to a Healthy Environment.**

Scale of Plastic Pollution

- **Global Impact:** According to estimates, **over 11 million metric tons** of plastic find their way into the oceans annually.
  - If left unchecked, this figure **could triple by 2040,** causing irreparable damage to marine ecosystems.
- A significant portion of ocean plastic pollution originates from **single-use plastics**, including packaging and disposable items.
- Plastic debris damages coral reefs, entangles marine species, and disrupts habitats.

Global Implications and Future Actions

- **Influence on Upcoming Conferences:** The resolution sets a strong precedent ahead of two major events:
  - UN Ocean Conference in Nice, France (June, 2025).
  - Final negotiations for a global treaty to end plastic pollution in Geneva (August, 2025).

➲ **Integrating SDGs:** Integrate **SDG 14 (Life Below Water)** with SDGs on poverty, gender, health, and climate justice.

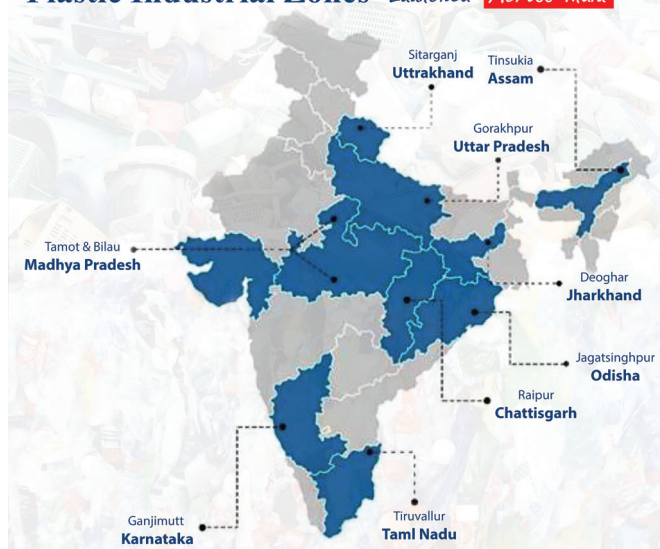### Human Right to a Healthy Environment in India

➲ **Constitutional Provisions:**
- ◆ **Article 21 (Right to Life):** The right to a healthy environment is derived from Article 21, which guarantees the right to life and personal liberty.
- ◆ **Directive Principles of State Policy (DPSP):**
  - ◆ **Article 48A:** It directs the state to protect and improve the environment and safeguard forests and wildlife.
  - ◆ **Article 51A(g):** It imposes a duty on every citizen to protect and improve the natural environment, including forests, lakes, rivers, and wildlife.

➲ **Judicial Activism:**
- ◆ **MC Mehta v. Union of India** and **Subhash Kumar v. State of Bihar**: Supreme Court of India reinforced the right to a clean environment as a **Fundamental Right.**
- ◆ Principles such as *polluter pays, precautionary principle, and sustainable development* have been **upheld by Courts in India.**

PLASTIC PARKS IN INDIA

Context

The Plastic Parks scheme is promoting industrial growth and environmental sustainability in India's plastics sector.

About

➲ It is an industrial zone specifically **designed for plastic-related businesses and industries.**

➲ It aims to **consolidate and synergize** the capacities of the plastic processing industry, promoting investment, production, and exports while generating employment.

➲ These parks also focus on **achieving environmentally sustainable growth** through **waste management** and recycling initiatives.

Importance and Progress

➲ Plastic Parks have emerged as an integral part of India's strategy for managing **plastic waste**, **promoting recycling**, and **supporting the chemical industry.**

➲ India generates one-fifth of all global plastic waste, the highest amount in the world, driven by government efforts like the Plastic Parks scheme.
- ◆ 10 Plastic Parks have been approved so far in different States.

Plastic Industrial Zones *Launched* **Across India**

Sitarganj **Uttrakhand** · Tinsukia **Assam**
Gorakhpur **Uttar Pradesh**
Tamot & Bilau **Madhya Pradesh**
Deoghar **Jharkhand**
Jagatsinghpur **Odisha**
Raipur **Chattisgarh**
Ganjimutt **Karnataka**
Tiruvallur **Taml Nadu**

Existing Issues

➲ The Indian plastics industry was large but highly fragmented with dominance of tiny, small and medium units and thus lacked the capacity to tap this opportunity.

Governments Efforts

➲ **The Department of Chemicals and Petro-Chemicals** is implementing the **Scheme for Setting up of Plastic Parks** under the umbrella scheme of **New Scheme of Petrochemicals,** to support setting up **need-based Plastic Parks**, with requisite **state-of-the-art infrastructure**, enabling common facilities through **cluster development approach**, to consolidate the capacities of the **domestic downstream plastic processing industry.**

➲ The objective is to **consolidate** and **synergize** the **capacities** of **downstream plastic processing industry** to help **increase investment**, **production** and **export** in the sector as well as **generate employment.**

➲ Under the scheme, the government of India provides grant funding **up to 50%** of the project cost subject to a **ceiling of Rs.40 crore per project.**

Conclusion

➲ The **Plastic Parks concept** is a revolutionary venture aimed at improving the infrastructure of plastic processing in India.

OZONE POLLUTION

Context

According to a study by the IIT Kharagpur, surface ozone pollution is impacting India's major food crops, particularly in the Indo-Gangetic Plain and central India.

What is Ozone Pollution?
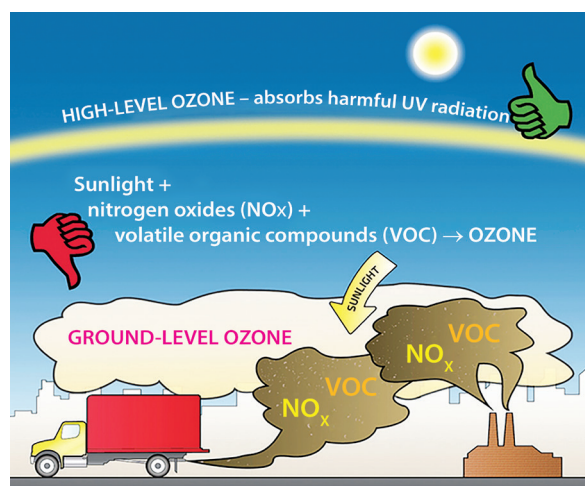
- **Ozone (O_3)** is a gas composed of three oxygen atoms.
  - It occurs both in the Earth's upper atmosphere (**stratosphere**) and at ground level (**troposphere**).
- **Stratospheric ozone** is beneficial as it forms the ozone layer that **shields the Earth** from the sun's harmful ultraviolet radiation.

- **Tropospheric ozone**, however, is a harmful air pollutant and greenhouse gas.
  - It is not emitted directly but is formed by chemical reactions between **Oxides of Nitrogen (NO2)** and **volatile organic compounds (VOCs)** in the presence of sunlight.
- **The World Health Organization (WHO)** recommends a maximum ozone level of **100 micrograms per cubic meter ($\mu g/m^3$)**, measured as an 8-hour maximum moving average within a day

Impact on Crops

- Ozone enters plants through stomata and causes oxidative stress, **reducing photosynthesis and damaging cell membranes.**
- According to the IIT Kharagpur study;
  - **Wheat yields** could **decline by an additional 20%** under high-emission scenarios.
  - **Rice and maize** yields may drop by around **7%.**
  - Exposure in the Indo-Gangetic Plain and Central India may exceed safe ozone limits by up to **six times.**
- Ozone Pollution is hindering the country's progress towards achieving the United Nations Sustainable Development Goals (SDGs) of **'no poverty'** and **'zero hunger'** by 2030.

International Conventions Related to Ozone

Vienna Convention for the Protection of the Ozone Layer, adopted in 1985, which provides a framework for international cooperation on protecting the ozone layer. It was followed by the Montreal Protocol on Substances that Deplete the Ozone Layer, signed in 1987, which regulates the production and consumption of ozone-depleting substances.

Here's a more

- **Vienna Convention (1985):** This convention serves as a framework for international cooperation to protect the ozone layer. It encourages scientific research, observation, and information exchange on the effects of human activities on the ozone layer. It also calls for the adoption of measures to prevent activities that could harm the ozone layer.
- **Montreal Protocol (1987):** This protocol, adopted under the Vienna Convention, is a landmark international agreement that regulates the production and consumption of nearly 100 ozone-depleting substances. Its primary goal is to phase out these substances and protect the ozone layer.
  - **Significance:** The Vienna Convention and the Montreal Protocol have been credited with successfully preventing further ozone depletion and contributing to the ozone layer's recovery. The Montreal Protocol is considered the most successful international environmental treaty in history.
  - **Universal Ratification:** Both the Vienna Convention and the Montreal Protocol achieved universal ratification in 2009, meaning every country in the world is a party to them.
- **Kigali Amendment (2016):** A recent amendment to the Montreal Protocol, the Kigali Amendment, calls for the phase-down of hydrofluorocarbons (HFCs), which are powerful greenhouse gases and were used as alternatives to ozone-depleting substances.

ALFALFA HAY

Context

The delay in India's approval of genetically modified (GM) alfalfa hay imports from the US has emerged as a contentious issue in ongoing Indo-US trade negotiations.

About

- Despite clearance from India's **Genetic Engineering Approval Committee (GEAC)**, the final nod from the Agriculture Ministry remains pending.
- It is often referred to as the **'Queen of Forages'** and is a highly nutritious and versatile crop widely used in agriculture and livestock farming.

- It is rich in protein, calcium, and essential vitamins, making it an ideal feed for dairy cattle, horses, and other livestock.
  - Its high fiber content aids in digestion and promotes overall animal health.
- Alfalfa is a **perennial legume** that thrives in **well-drained soils** and **moderate climates.**
  - It fixes nitrogen in the soil, reducing the need for synthetic fertilizers and improving soil fertility.
- It has a **deep root system**, which allows it to access nutrients and water from deeper soil layers, making it drought-resistant.

Other Food Safety Issues in Trade Talks With U.S.

- **Ready-to-Drink (RTD) Alcoholic Beverages:** India is considering relaxing food safety norms for RTD low-alcohol beverages, a concern raised by the United States Trade Representative **(USTR).** Current regulations allow 0.5-8% alcohol content, but discussions are underway to permit 10-15% alcohol in this category.
- **Whiskey Import Standards:** The USTR has sought explicit protection for US whiskey products like Bourbon and Tennessee Whiskey. India's FSSAI permits these imports, but further clarifications are being discussed.

MISSION AMRIT SAROVAR

Context

Mission Amrit Sarovar is enhancing rural livelihoods by enabling various income-generating activities around completed Sarovars, such as irrigation, fisheries, duckery, water chestnut cultivation, and animal husbandry.

About

- It was launched in 2022 under the **Azadi Ka Amrit Mahotsav.**
- It is a **flagship initiative** aimed at **constructing and rejuvenating** 75 water bodies in each district to promote water conservation, sustainability, and community participation.
- It addresses critical issues like groundwater depletion and rural water scarcity by blending traditional practices with modern approaches.
- It is implemented through convergence with existing schemes like Mahatma Gandhi NREGS, 15th Finance Commission Grants, PM Krishi Sinchai Yojana sub-schemes, and state-level programs. It also allows for public contributions via crowdfunding and Corporate Social Responsibility (CSR).

Progress

- Originally targeting 50,000 Sarovars by August 15, 2023, the mission has evolved into a nationwide movement integrating rural development, ecological restoration, and grassroots governance.

- As of March 2025, over 68,000 Sarovars have been completed, significantly improving water availability.
- Notably, over 46,000 were developed under the Mahatma Gandhi NREGS, reflecting strong convergence with existing schemes and public engagement.

Flagship Schemes

- Flagship schemes are priority programs addressing major socio-economic issues, designed for broad impact and high visibility, often backed by significant funding and political will.
- They target inclusive growth, poverty reduction, and equity for marginalized groups (SCs, STs, OBCs, minorities).

WET-BULB IMPACT

Context

Urban regions today are facing a dual climate threat— the intensifying Urban Heat Island (UHI) effect and the increasingly lethal Wet-Bulb Impact.

What is Wet Bulb Impact?

- **Wet-bulb impact** refers to the dangerous combination of high heat and humidity that significantly reduces the human body's ability to cool itself through sweating.
- The Wet-Bulb Temperature (WBT) is the lowest temperature to which the human body can cool itself through the evaporation of sweat. This is a measure of how hot air feels, taking into account both air temperature and humidity.

WBT AND HEALTH EFFECTS	
Wet-Bulb Temperature	**Effects on Human Body**
28°C - 30°C	**Heat exhaustion:** Heavy sweating, dizziness, nausea, fatigue
30°C - 32°C	**Severe heat stress:** Rapid heart rate, confusion, shortness of breath
32°C - 35°C	**Heat stroke:** Cessation of sweating, core body temperature > 40°C
≥ 35°C	**Thermoregulatory failure:** Organ failure, seizures, death within hours

Urban Heat Island (UHI) Effect

- The Urban Heat Island (UHI) effect refers to the phenomenon where urban areas experience significantly higher temperatures than surrounding rural areas.
- This temperature difference is caused by human activities and urban development patterns that absorb and retain heat.

Causes of UHI

- **Concrete and Asphalt:** Materials used in buildings and roads absorb more solar radiation and release it slowly at night.
- **Lack of Vegetation:** Reduced tree cover and green spaces mean less natural cooling via evapotranspiration.
- **Waste Heat from Human Activities:** Vehicles, air conditioners, industries, and power plants emit heat directly into the environment.

ARSENIC POLLUTION

Context

A new study in The Lancet Planetary Health links climate change to rising arsenic levels in rice, warning of increased health risks in Asia by 2050.

What is Arsenic (As)?

- **Arsenic** is a naturally occurring trace element that occurs in many minerals, usually in combination with sulfur and metals.
- It is **highly toxic** in its inorganic form.

Effects on Health

- Long-term exposure to arsenic can cause **cancer, skin lesions, cardiovascular disease, diabetes** etc.
- **In-utero and early childhood exposure** have been linked to negative **impacts on cognitive development** and increased deaths in young adults.
- In Taiwan, arsenic exposure has been linked to "**Blackfoot disease"**. It is a severe disease of blood vessels leading to gangrene.

Permissible Limits

- **The World Health Organization's** provisional guideline value for arsenic in drinking water is **0.01 mg/l (10 µg/l).**
- **In India** the permissible limit of arsenic in the absence of an alternative source is **0.05 mg/l (50 µg/l).**

Arsenic Contamination in India

- The occurrence of Arsenic in groundwater was first reported in **1980 in West Bengal in India.**
- Maximum number of the arsenic-affected habitations are in the **Ganga and Brahmaputra alluvial plains.**
- **Steps taken by India:**
  - **National Rural Drinking Water Programme (NRDWP):** Addressing contaminants such as fluoride and arsenic through water treatment plants and alternate water supply solutions.
  - **IIT-Madras** has developed a technology called '**AMRIT' (Arsenic and Metal Removal by Indian Technology)** for the removal of Arsenic and Metal ions from water.

>50 ppb of As

Bay of Bengal

Arabian Sea
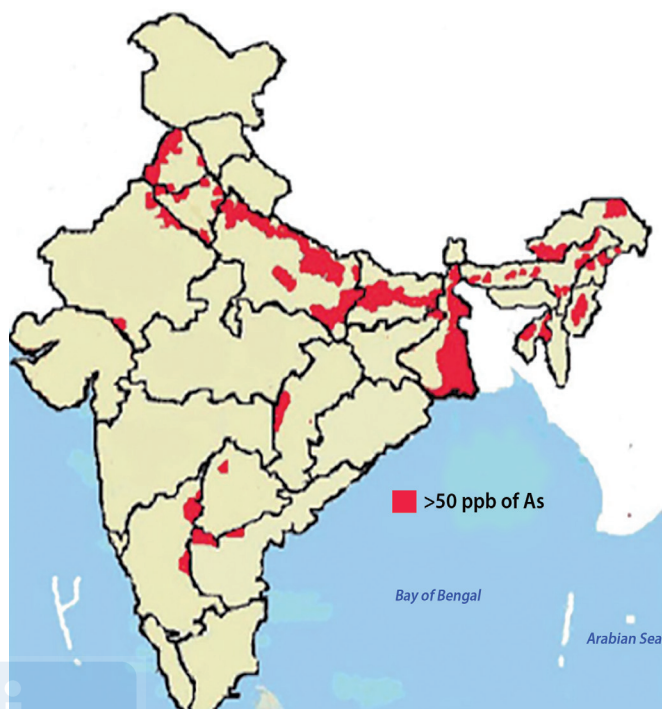
MIGRATION PATTERN OF PAINTED LADY BUTTERFLIES

Context

Daria Shipilina, an evolutionary biologist, is studying how genetics contribute to observable traits, or phenotypes, in organisms, with a focus on migration in insects, particularly butterflies.

Findings from the Latest Research

- The butterflies follow a **multi-generational migration cycle,** spanning 8-10 generations, with each butterfly living only 2-4 weeks.

- Recent research examines **painted lady butterflies (Vanessa cardui)**, which are known for their long migratory journeys of up to 15,000 km.
- Unlike birds, which have distinct genetic groups for short- and long-distance migration.
  - It was found that **painted lady butterflies** do not have significant genetic differences based on migration distance.
    - Instead, environmental factors seem to influence migration patterns.
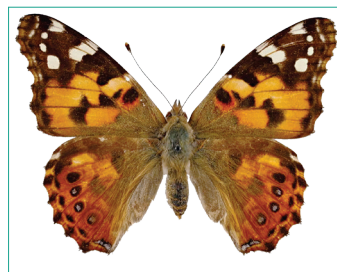
Do you know?

Painted Lady butterflies undertake one of the longest butterfly migrations, covering up to 14,000 kilometers in a single year across Africa, Europe, and the Middle East. This journey is not a single, direct route but a complex, multigenerational cycle, with butterflies moving north in the spring and south in the fall. They cross continents and oceans, relying on wind patterns and the availability of food plants like thistles.

➲ **Global Distribution:** Painted Ladies are incredibly widespread, found on every continent **except Antarctica**, and they've even been documented crossing oceans.

➲ **Multigenerational Cycle:** The migration isn't a one-way trip for a single generation. It's a cycle where butterflies move north, reproduce, and the next generation migrates south, completing a round trip that spans 8 to 10 generations.

➲ **Transcontinental Journey:** They travel from sub-Saharan Africa to the Arctic Circle, crossing the Sahara and Arabian deserts.

➲ **Wind-Assisted Flights:** Scientists have observed that Painted Ladies can use wind patterns, particularly during transatlantic crossings, to travel long distances with minimal effort.

➲ **Transoceanic Records:** Recent research has documented a trans-oceanic flight of Painted Ladies across the Atlantic Ocean from West Africa to the northern coast of South America.

➲ **Relying on Resources:** Their migration is timed to the blooming of wildflowers that appear after seasonal rains, providing a food source for the caterpillars.

➲ The painted lady butterfly is known for its remarkable ability to thrive in diverse climates, from temperate grasslands to deserts.

➲ They are strong flyers, capable of high speeds and altitudes, with specialized thoracic muscles for long-distance flight.

➲ IUCN Red List status: **Least Concern.**

DISCOVERY OF SMALL HIVE BEETLE IN INDIA

Context

A scientist from the Zoological Survey of India (ZSI), identified the Small Hive Beetle (SHB), Aethina tumida, in Amdanga, West Bengal. This is the first recorded instance of SHB in India.

Small Hive Beetle

➲ SHBs are small, oval-shaped beetles (5-7 mm), reddish-brown in color.

➲ It is **a notorious enemy of honey bees** and has caused widespread damage to the apiculture industry globally.

➲ It infiltrates hives, laying eggs that hatch into larvae, which feed on honey, pollen, and bee brood, contaminating honey and causing colony collapse.

➲ **Distribution:** Originating in sub-Saharan Africa, SHB has spread globally to the United States, Australia, Canada, and parts of Asia.

  ◆ India's climate may favor the proliferation of SHB, making early detection and response crucial.

➲ **Classifications:** It is classified as an **"Invasive Alien Species,"** a category of non-native organisms that pose significant threats to biodiversity and local ecosystems.

  ◆ The World Organisation for Animal Health (OIE) has classified SHB infestation as a notifiable disease due to its destructive potential.

Concerns

➲ The presence of SHB raises concerns about its impact on India's honey bee population and apiculture industry. The beetle is known for rapidly multiplying and spreading.

➲ SHB could harm India's beekeeping sector, jeopardizing honey production and the livelihoods of those dependent on it.

Measures to tackle them

➲ Experts emphasize the need for coordinated monitoring, containment strategies, and awareness campaigns to protect native pollinators and the apiculture industry in India.

POPE'S PIT VIPER VENOM

Context

A new study has uncoded the mysteries of how the venom of Pope's pit viper, a snake species native to northern and northeastern parts of India, works. The study can help establish the foundation for venom toxicity, pharmaceutical advancements, and enhanced antivenom compositions.

Why Does It Matters?

➲ Currently, no species-specific antivenom exists for **Pope's Pit Viper.**

➲ Commercial antivenoms in India only target the **"Big Four" snakes (Russell's Viper, Saw-Scaled Viper, Spectacled Cobra, and Common Krait)**, leaving bite victims from pit vipers like **Pope's Pit Viper vulnerable and untreated.**

➲ This study explores the venom's harmful components, which are mostly toxic enzymes and demonstrating their deleterious effects on the victim. For example, snake Venom metalloproteinases (SVMPs), a toxic enzyme of the Viperidae family of snakes including Pope's Pit Viper, are demonstrated for causing bleeding, tissue breakdown, and blood clotting issues in victims.

- The venom also contains **enzymes** called **Serine Proteases (SVSPs)**, which **hinder blood coagulation**, a toxic enzyme phospholipases A2which induce muscle injury and inflammation and, **a non-enzymatic toxin Snaclecs (Snake C-type lectins) which affect blood platelet function and blood coagulation.**
- This study underscores the necessity for broad-spectrum or region-specific antivenoms to counteract **T. popeiorum** venom.
- By comprehending the proteomic complexity of Pope's Pit Viper venom, researchers have established a foundation for venom toxicity, pharmaceutical advancements, and enhanced antivenom compositions.
- As **India endeavours to decrease snakebite mortality by 50% by 2030**, such innovative research would facilitate transforming venom studies into life-saving medical treatments.
- **IUCN Status:** Least Concern.

About Pope's Pit Viper (*Trimeresurus popeiorum*)

- **Naming:** Named after American herpetologist Clifford H. Pope.
- **Habitat:** Dense tropical and subtropical forests.
- **Nature:** Aboreal and nocturnal.
- **Distribution:** Northern and Northeastern India (including Arunachal Pradesh, Assam, Nagaland, and Meghalaya), Bhutan, Myanmar, Northern Thailand
- **IUCN STATUS:** Least Concern.

NILGIRI TAHR CENSUS TO BE CONDUCTED

Context

Kerala and Tamil Nadu will jointly conduct a Nilgiri Tahr census, commemorating the 50th anniversary of Eravikulam National Park's establishment.

Eravikulam National Park

- Originally **declared a sanctuary in 1975**, it was **established as Kerala's first National Park in 1978.**
- This park has **numerous endangered species,** including the **Nilgiri Tahr (an endangered mountain goat species), Lion-tailed Macaques, and Nilgiri Langurs.**
- Park's primary aim was to **safeguard the endangered Nilgiri tahr.**
- It is also known as the **"Land of Neelakurinji",** purplish-blue Neelakurinji flowers **blossom every 12 years.**
- **The Nilgiri tahr i**s the only **mountain ungulate in southern India** amongst the **12 species present in India**. It is also the **state animal of Tamil Nadu.**
    - It is the **endemic species** of the Western Ghats and is found in **Kerala and Tamil Nadu.**

- It is listed as **Endangered** in the IUCN Red List of Threatened Species and is protected under **Schedule I** of the Wildlife (Protection) Act of India, 1972.

MANTIS SHRIMP

Context

A joint US-French research team discovered that the mantis shrimp's powerful strike is made possible without self-injury due to a specialized microstructure in its club.

Mantis Shrimp

- The mantis shrimp is a small, colorful ocean creature, about 10 cm long
- It is known for its fearsome predatory abilities despite its unassuming appearance.
- It lives in warm, shallow waters in the **Indian and Pacific oceans.**
- It is a powerful ocean predator which uses a specialized hammer-like appendage called the **dactyl club to strike prey** at speeds of 23 m/s.
- This powerful strike not only generates shockwaves but also avoids causing recoil damage to the shrimp itself

Importance

- This natural design mirrors metamaterials, previously thought to be man-made, and opens doors to bio-inspired innovations like better protective gear and energy-trapping materials.
- These insights may inspire biomimetic materials for protective gear, reducing injuries from blasts in military and sports.

NEW SPECIES OF FROG NAMED AFTER ASSAM COLLEGE

Context

A new frog species named Leptobrachium aryatium has been discovered in the Garbhanga Reserve Forest on the edge of Guwahati, Assam.

About

- The species is named after **Arya Vidyapeeth College,** a reputed institution in Guwahati.
- It was initially misidentified as **Leptobrachium smithi in 2004.**
- **Leptobrachium genus:** It includes 38 known species.
    - These frogs are stocky with broad heads, and distinctively coloured eyes and short limbs.
    - Found across Southern China, India, Southeast Asia, and the Philippines.

➲ **Unique Features of the Frog:**
  ◆ Fiery orange-and-black eyes.
  ◆ Reticulated throat pattern.
  ◆ Smooth, rhythmic call at dusk.

Garbhanga Reserve Forest

➲ It is situated in the southwestern part of Guwahati, Assam, bordering the state of Meghalaya.
➲ **Ecological Significance:** Acts as a green lung for Guwahati by helping regulate the city's climate and water systems.
  ◆ Plays a crucial role in groundwater recharge and maintaining urban ecological balance.

Reserve Forests

➲ Reserve Forests are **legally protected forest areas** in India, designated under the **Indian Forest Act, 1927**, to conserve biodiversity, regulate resource use, and support ecological balance.
➲ Managed by state forest departments, they restrict human activities like logging and grazing to preserve flora, fauna, and ecosystem services.
➲ **Covering approximately 23% of India's forest area** (about **80 million hectares** as of 2023), Reserve Forests are critical for climate resilience and wildlife protection.

SEA LIONS

Context

An algal bloom off the coast of California has caused sea lions to become unusually aggressive towards humans.

About:

➲ They are **pinnipeds ("fin-footed" mammals)**.
➲ They are characterized by a coat of short coarse hair that lacks a distinct undercoat
➲ They have large, elongated, mostly skin-covered fore flippers.
➲ They are noisy and bark loudly and they can rotate their hind flippers to "walk" on land, making them more mobile on shore.
➲ They are highly social, forming large groups (herds or rafts) of up to 1,500 individuals.

Latest Study

➲ Their recent aggression is due to a **neurotoxin** called **domoic acid,** secreted by the **algae Pseudo-nitzschia.**
  ◆ This toxin affects sea lions' brains, causing stress, aggression, muscle spasms, and even permanent brain damage.

➲ The algal bloom is driven by factors like upwelling, where nutrient-rich waters rise to the surface due to high-speed winds (linked to global warming), and effluent runoff containing nutrients that fuel the growth of toxic algae.

Algal Blooms

➲ Algal blooms are rapid proliferations of microscopic algae or cyanobacteria in fresh, salt, or brackish waters, forming visible green, red, or brown patches.
➲ Harmful algal blooms (HABs) produce toxins like domoic acid or microcystin, impacting ecosystems and health.

JUVENILE COLOSSAL SQUID SIGHTING

Context

A team of scientists, on board a research vessel in the South Atlantic, recorded a juvenile colossal squid, only a foot long, 2,000 feet under the ocean's surface.

About

➲ First identified in **1925** from arm fragments found in a sperm whale's stomach.
  ◆ Until now, no footage existed of a live colossal squid in its natural deep-sea environment.
➲ Despite being massive, the **colossal squid** has **rarely been seen in its natural habitat.**
  ◆ Its large, light-sensitive eyes may make it avoid bright, noisy research equipment.
➲ Most knowledge about the species comes from **specimens found in whale stomachs or caught in trawl nets.**
➲ Sperm whales are the **only known predator of fully grown giant and colossal squid.**

Differences between Giant and Colossal Squid

➲ **Giant squid (Architeuthis dux)** and **colossal squid (Mesonychoteuthis hamiltoni)**, the largest cephalopods (class of marine animals including octopus and cuttlefish), and possibly the **largest invertebrates in the world.**
➲ **Colossal squid:** Up to 7 meters (23 feet) long.
  ◆ Can weigh up to 500 kg.
  ◆ Has a large, bulky body with shorter arms and tentacles.
  ◆ The lifespan of colossal squid is still uncertain.
➲ **Giant squid:** Can grow up to 13 meters (43 feet).
  ◆ Typically weighs up to 275 kg.
  ◆ Has longer arms and tentacles but a narrower body.
  ◆ Estimated lifespan of giant squid: 2–12 years.

LAND SUBSIDENCE IN URBAN AREAS

Context

Land subsidence at a dumping ground in Belgachia, West Bengal, left hundreds of families without water and electricity, highlighting the growing challenges of man-made urban crises.

About Land Subsidence

➲ According to the **National Oceanic and Atmospheric Administration (NOAA),** subsidence is the "sinking of the ground because of underground material movement".
  ◆ It can happen for a host of reasons, man-made or natural, such as the removal of water, oil, or natural resources, along with mining activities.
➲ Across the world, many cities are slowly sinking including tropical megacities like **Jakarta in Indonesia or Manila in the Philippines**, or places like **New Orleans, Vancouver, Mexico City** etc.
➲ Land subsidence has affected around **65 percent** of the houses in the pilgrimage town of **Joshimath in Uttarakhand** in 2023.
➲ **Jharia Coal Fields** in Dhanbad (Jharkhand) have been facing Land Subsidence since the last half century due to **underground Coal Fire.**

Causes of Land Subsidence in Urban Areas

➲ **Over-extraction of Groundwater:** Causes aquifers to collapse.
➲ **Unregulated Dumping of Waste:** Exert heavy pressure on land, especially if dumped on weak or marshy soils.

➲ **Rapid Urbanization:** Put enormous pressure on the land without assessing the soil's carrying capacity.
➲ **Natural Causes:** Geological faults, tectonic activities, and the dissolution of underground rocks (e.g., limestone in karst areas).

TOP 3 PREDICTORS THAT POSITIVELY AFFECT LAND SUBSIDENCE RATE

Ground Water Abstraction	Seismic Hazard	Clay Content

Countries with Largest Subsidence extent (at > 5 mm/year cutoff) (in 1000 km²)		Countries with Greatest Affected Population (in Million)	
China	1043	India	633
Indonesia	844	China	368
Iran	791	Indonesia	213
India	671	Pakistan	145
Pakistan	374	Bangladesh	137

Impacts of Land Subsidence

➲ **Damage to Infrastructure:** Cracks in roads, bridges, buildings, and pipelines increase maintenance cost for urban local bodies.
➲ **Displacement of Populations:** Slum dwellers and low-income families living near landfills or unstable areas are worst affected.
➲ **Public Health Crisis:** It increases the risk of urban flooding and vector-borne diseases. Exposure to chemical sludge and foul gases impacts respiratory and digestive health.

Way Ahead

➲ **Scientific Landfill Management:** Urban waste must be segregated, recycled, and processed using modern techniques.
➲ **Soil testing and simulation models** should be used to predict the likelihood of subsidence. Installing **early warning systems** could help prevent disasters in densely populated areas.
➲ **Reviving local governance** through elected municipal representatives is crucial. Without accountable civic bodies, disasters like Belgachia are likely to recur.

ANCIENT JAWBONE DISCOVERY EXPANDS INSIGHTS INTO DENISOVAN MIGRATION AND EVOLUTION

Context

A remarkable fossil of jawbone discovery off the coast of Taiwan has provided new insights into the geographic reach of Denisovans, an enigmatic group of archaic humans.

About Ancient Denisovans

➲ The **jawbone** *(known as Penghu 1)* was recovered from the **Penghu Channel, near Taiwan,** during commercial fishing operations.

➲ They are an extinct group of archaic humans, known primarily through limited fossil evidence, including a jawbone, teeth, and a finger bone.

➲ **Origins and Discovery:** Denisovans were **first identified in 2010** from DNA extracted from a **finger bone found in the Denisova Cave in Siberia.**

  ◆ Genetic analysis revealed that they were a distinct lineage, closely related to Neanderthals and modern humans.

➲ **Physical Characteristics:** Reconstructions **based on DNA Methylation** patterns suggest Denisovans had a **wider skull** and a **longer dental arch** compared to Neanderthals and Homo sapiens.

Significance of the Findings

➲ **Geographic Range and Adaptability**: The discovery of the **Penghu 1 jawbone** highlights their adaptability to diverse environments, **from cold highlands to subtropical coastlines.** Key Geographical Range:

➲ **Genetic Legacy:** Denisovans **interbred with Neanderthals and Homo sapiens**, contributing genetic material to **modern populations in Asia and Oceania.**

  ◆ Their genetic influence is evident in traits such as **high-altitude adaptation in Tibetan populations.**

Challenges and Future Research

➲ **Dating the Fossil:** The exact age of Penghu 1 remains uncertain due to the absence of traditional dating methods.

  ◆ Estimates range from 10,000 to 190,000 years, based on associated animal fossils.

➲ **Nobel Prize for Physiology or Medicine (2022):** It has been awarded to Swedish geneticist Svante Pääbo for his research in the **field of genomes of extinct hominins and human evolution.**

NANKAI TROUGH MEGAQUAKE WARNING

Context

Japan has been alarmed over a long-anticipated megaquake in the Nankai Trough, warning that such an event could trigger devastating tsunamis.

About Megaquake

➲ A megaquake (or megathrust earthquake) is a massive seismic event with a magnitude of 8.0 or higher, capable of causing extreme destruction, tsunamis, and widespread loss of life and infrastructure.

Projected epicenter zone — Nankai Trough — Pacific Ocean
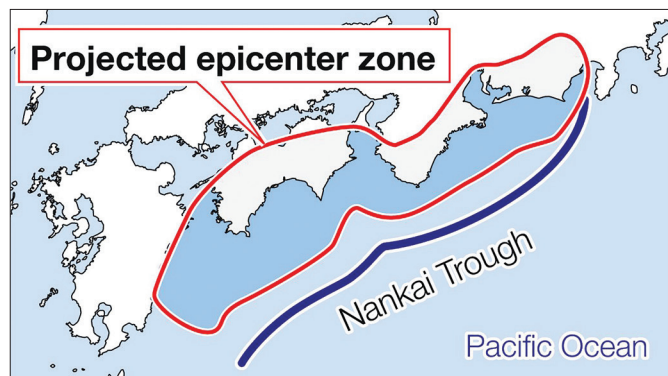
What is the Nankai Trough?

➲ The Nankai Trough is a subduction zone—an undersea trench where the Philippine Sea Plate is being forced under the Eurasian Plate.

➲ This trench stretches about 800 km along Japan's Pacific coastline, from Suruga Bay near central Japan to the Hyuganada Sea near Kyushu.

Ring of Fire

➲ The Ring of Fire is a string of volcanoes and sites of seismic activity, or earthquakes, around the edges of the Pacific Ocean.

  ◆ Roughly 90 percent of all earthquakes occur along the Ring of Fire, and the ring is dotted with 75 percent of all active volcanoes on Earth.

➲ The Ring of Fire isn't quite a circular ring. It is shaped more like a 40,000-kilometer (25,000-mile) horseshoe.

  ◆ A string of 452 volcanoes stretches from the southern tip of South America, up along the coast of North America, across the Bering Strait, down through Japan, and into New Zealand.

  ◆ Several active and dormant volcanoes in Antarctica, however, **"close"** the ring. The Ring of Fire is the result of plate tectonics.
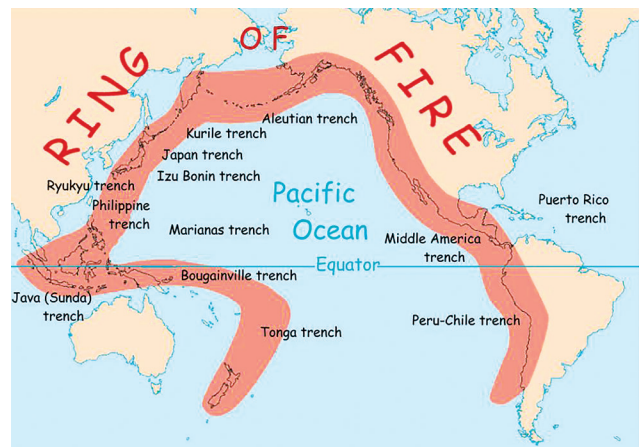
Why the Concern?

⊃ The Japanese government estimates a 70–80% chance of a magnitude 8–9 earthquake in the Nankai Trough within the next 30 years which could kill up to 300,000 people

⊃ Historical data shows major quakes in this region every 100–150 years.

⊃ **Note** Japan lies on the **"Ring Of Fire"** which make it susceptible to frequent Earth Quakes(appx 1500 quakes annually)

INDIA'S TECTONIC SHIFTS: SPLITTING IN TWO

Context

Recent geological studies have revealed that the Indian Plate is undergoing a process of delamination, where a portion of it is splitting apart and sinking into the Earth's mantle.

About

⊃ India is **drifting northward** at an average of about **5 cm per year**—one of the fastest continental motions on Earth.

⊃ This northward movement, postulated by plate tectonics, is **responsible for the uplift of the Himalayas**, along with the **complex geological stress** within the **Indian plate itself.**

Science Behind the Split

⊃ **Delamination of the Indian Plate:** The **Indian Plate** has been colliding with the **Eurasian Plate** for about 60 million years, leading to the **formation of the Himalayan mountain range.**

⊃ **Evidence from Seismic Waves and Gas Emissions:** Scientists studying earthquake waves beneath Tibet noticed unusual patterns, indicating a vertical tear in the plate.

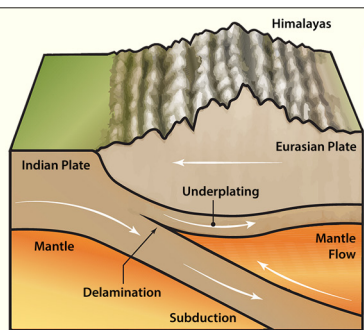 ◆ **Helium isotopes** detected in **Tibetan springs further support the theory of deep fractures** forming in the Earth's crust.

A GEOLOGICAL BATTLEGROUND

The continental collision of the Indian and Eurasian tectonic plates has created the Himalayas. New evidence suggests part of the Indian Plate may be splitting away and plunging into the mantle.

Potential Consequences

⊃ **Increased Earthquake Risk:** The delamination process could lead to stronger and more frequent earthquakes, particularly in the Himalayan region and Tibetan Plateau.

  ◆ The **Cona-Sangri Rift**, a large fracture in **Tibet**, may be directly linked to this underground activity.

⊃ **Implications for Plate Tectonics**: The above discovery challenges traditional views on continental stability, suggesting that Earth's plates are more dynamic and unpredictable than previously thought.

  ◆ Geologists believe that similar processes may be occurring in other tectonic regions worldwide.

Plate Tectonic Theory

⊃ It explains the **movement and interaction of lithospheric plates**, provides insights into the processes driving this collision and its implications.

⊃ It proposes that the earth's lithosphere is **divided into seven major** and some minor plates that float on the **semi-fluid asthenosphere beneath.**

⊃ These plates interact at boundaries, leading to geological phenomena such as earthquakes, volcanic activity, and mountain formation.

Types of Plate Boundaries

⊃ **Convergent Boundaries:** Plates collide, leading to **subduction** or mountain building.

  ◆ **Three ways of convergence:** (i) between an oceanic and continental plate; (ii) between two oceanic plates; and (iii) between two continental plates.

⊃ **Divergent Boundaries:** Plates move apart, creating new crust.

  ◆ *Example:* **Mid-Atlantic Ridge:** American Plate(s) is/are separated from the Eurasian and African Plates.

⊃ **Transform Boundaries:** Plates slide past each other, causing earthquakes. Transform faults are the planes of separation generally perpendicular to the mid oceanic ridges.

UNESCO ADDS 16 NEW GLOBAL GEOPARKS

Context

The United Nations Educational, Scientific and Cultural Organization (UNESCO) added 16 new sites across 11 countries to its Global Geoparks Network.

About

⊃ The newly featured geoparks are located in **China, North Korea, Ecuador, Indonesia, Italy, Norway, South Korea, Saudi Arabia, Spain, the UK, and Vietnam.**

⊃ With the new entries, the Network now comprises **229 sites** across **50 countries,** collectively spanning nearly **855,000 km².**

What Are UNESCO Global Geoparks?

⊃ The UNESCO Global Geoparks Network, brings together **territories recognized for their rich geological heritage**, rock formations, mountain or volcanic ranges, caves, canyons,

fossil sites or ancient desert landscapes, which bear witness to our planet's history, evolution and climate.

⮎ **Established:** The Global Geopark designation was established in **2015 by UNESCO.**

India and Global Geoparks

⮎ **Current Status:** India does **not yet have any site** designated as a UNESCO Global Geopark.

⮎ **Potential Sites (Under Consideration):**

- **Lonar Crater (Maharashtra):** Impact crater formed by a meteorite.
- **St. Mary's Island (Karnataka):** Columnar basaltic lava formation.
- **Siwalik Fossil Park (Himachal Pradesh):** Paleontological significance.

## NEUTRAL CONDITIONS TO PREVAIL IN PACIFIC OCEAN: US WEATHER MONITOR

Context

Recently, the National Oceanic and Atmospheric Administration (NOAA) has forecasted that neutral conditions will dominate the Pacific Ocean until October 2025.

About El Niño-Southern Oscillation (ENSO)

⮎ It highlights the absence of **El Niño or La Niña phenomena,** collectively known as the **El Niño-Southern Oscillation (ENSO).**

⮎ It is a naturally occurring climate phenomenon resulting from i**nteractions between the ocean and atmosphere** in the **equatorial Pacific Ocean**.

- It has three distinct phases:

⮎ **El Niño:** It is a naturally occurring climate pattern associated with the **warming of the ocean surface** temperatures in the **central and eastern tropical Pacific Ocean.**

- It occurs irregularly at **two to seven year intervals.**
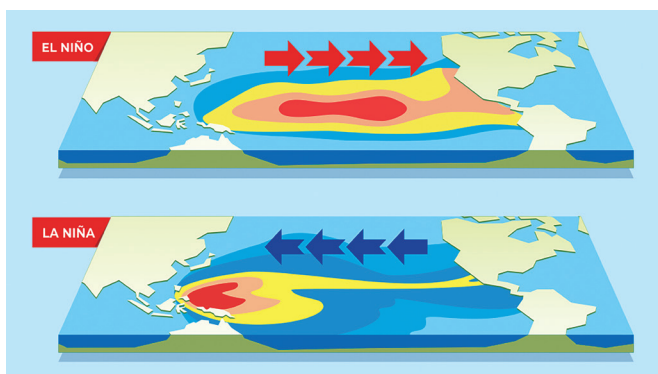
⮎ **La Nina:** It is characterised by cooler than average ocean surface temperatures in the central and eastern tropical Pacific Ocean.

- During La Niña events, trade winds are even stronger than usual, pushing more warm water toward Asia.

⮎ **Neutral:** Neither El Niño nor La Niña conditions dominate.

- Neutral conditions occur when sea surface temperatures in the equatorial Pacific Ocean remain close to the long-term average.

KEY COMPONENTS OF ENSO		
El Niño	**La Niña**	**Southern Oscillation**
⮎ Suppresses rainfall in Australia, Indonesia, and India. ⮎ Increases rainfall and flooding in the southern US and Peru. ⮎ Typically weakens the Indian Monsoon and increases hurricane activity in the Pacific.	⮎ Strengthens monsoons in South Asia. ⮎ Brings drought to the U.S. Southwest. ⮎ Causes increased Atlantic hurricane activity.	⮎ Refers to the atmospheric component of ENSO. ⮎ Measured via the Southern Oscillation Index (SOI), which tracks pressure differences between Tahiti and Darwin, Australia.

Impact on Global Weather

⮎ **Global Implications:** Neutral conditions reduce the likelihood of extreme weather events linked to El Niño or La Niña, such as droughts or floods.

- However, localized weather anomalies may still occur due to other climatic factors.

⮎ **India's Southwest Monsoon:** ENSO-neutral conditions are generally associated with normal or above-normal rainfall during India's monsoon season.

- It is a positive development for agriculture, as nearly 70% of India's annual rainfall occurs between June and September.

Global Impacts of ENSO		
Region	**El Niño Effects**	**La Niña Effects**
India	Weaker monsoon, droughts	Stronger monsoon, flooding
USA	Wetter South, drier North	Drier South, colder North
South America	Heavy rains and floods (Peru, Ecuador)	Drier west coast
Africa	Drought in southern Africa	Flooding in parts of East Africa
Australia	Droughts and bushfires	Cooler, wetter weather

HINDU KUSH HIMALAYA SNOW UPDATE

Context

As per the report released by the International Centre for Integrated Mountain Development (ICIMOD) the Hindu Kush Himalaya (HKH) region has seen its third consecutive below-normal snow year in 2025.

Findings

➲ The report used a **23-year time series (from 2003 to 2025)** of **basin-scale snow persistence** during the snow season between November and March.

➲ **All three major river basins** — **Ganga, Indus, and Brahmaputra** — are experiencing significant declines in snow persistence.

➲ Snow persistence across the Hindu Kush Himalayas (HKH) was at a **two-decade low of 23.6%.**

➲ **Continued deficit of seasonal meltwater means** lesser river runoffs and early-summer water stress, especially for downstream communities.

Snow Persistence

➲ Snow persistence is the **fraction of time snow is on the ground.** When this snow melts, it provides water to people and ecosystems.

➲ In the river basins of the **Hindu Kush Himalaya (HKH),** snowmelt is the biggest source of water in the streams.

➲ Overall, it contributes **23%** of the runoff to the region's **12 major river basins every year.**

Hindu Kush Himalaya

The HKH mountains extend around 3,500 km over eight countries — Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan.

➲ These mountains are also called the **"water towers of Asia"** because they are the origins of **10 crucial river systems on the continent** — Amu Darya, Indus, Ganga, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtse, Yellow river, and Tarim.

➲ These river basins provide water to almost **one-fourth of the world's population** and are a significant freshwater source for people in the HKH region.

About ICIMOD

➲ It is an **intergovernmental knowledge and learning centre** working on behalf of the people of the Hindu Kush Himalaya (HKH). It was established in **1983**.

➲ It is based in **Kathmandu, Nepal** and work in and for **eight regional member countries** – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.

➲ Activities range from hands-on research and piloting of solutions, to policy implementation with governments, to mountain advocacy on the global stage.

● River Basins
● Hindu Kush Himalayan Region
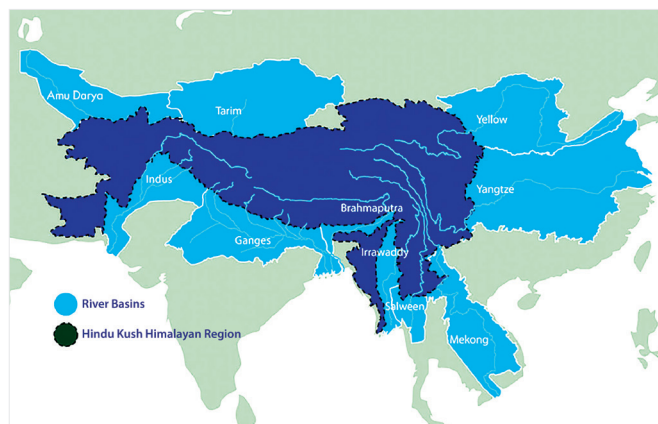
NORTH SENTINEL ISLAND

Context

A US citizen has been arrested for illegally entering North Sentinel Island of Andaman, home to one of the world's last uncontacted tribes.

About

➲ **Location:**

◆ Situated in the Bay of Bengal. Part of the South Andaman administrative district, Andaman and Nicobar Islands, India.

◆ Lies approximately 50 km west of Port Blair.

➲ **Geographic Features:**

◆ Encircled by coral reefs, making maritime access extremely difficult.

◆ Bordered by white-sand beaches, mangrove forests, and dense tropical vegetation.

◆ The 2004 Indian Ocean earthquake uplifted the island, exposing more coral reefs, thus expanding its landmass.

➲ **Sentinelese – Indigenous Inhabitants:**

◆ One of the last uncontacted peoples on Earth.

◆ Known for rejecting all outside contact; aggressive toward intruders.

◆ Live as hunter-gatherers, using bows, arrows, spears, and dugout canoes.

◆ Population size (estimated 50–150).

➲ **Legal Protection & Governance:**
  - **Andaman & Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956:** Prohibits travel within 5 nautical miles (9 km) of the island.
    - No prosecution of Sentinelese for defensive aggression.
  - **Restricted Area Permit (RAP):** RAP requirement was revoked in 2018 for 29 islands, but North Sentinel remains off-limits. No tourism, filming, fishing, or visits allowed.
➲ **Note:** The People of Andaman can be broadly categorized into two groups viz. Indigenous or Aborigines and Immigrants or Settlers. Prior to 1858, the Andaman Islands were inhabited by Autochthons only and with the founding of Penal Settlement at Port Blair after Indian Mutiny, Non-autochthons came to inhabit these Islands.

Indigeneous People of South Andaman

The Aborigines of Andaman Island consist of the following four tribes:
➲ Great Andamanese
➲ Onges
➲ Jarwas
➲ Sentinalese

KATCHATHEEVU ISLAND

Context

The Tamil Nadu Legislative Assembly passed a resolution urging the Union government to take steps to retrieve the Katchatheevu island from Sri Lanka.

Katchatheevu

➲ As it is crucial for protecting Tamil Nadu fishermen's traditional fishing rights and alleviating the hardships caused by the Sri Lankan Navy's actions.
➲ Katchatheevu is a small, uninhabited island covering approximately 285 acres in the Palk Strait, situated between Tamil Nadu, India, and northern Sri Lanka.
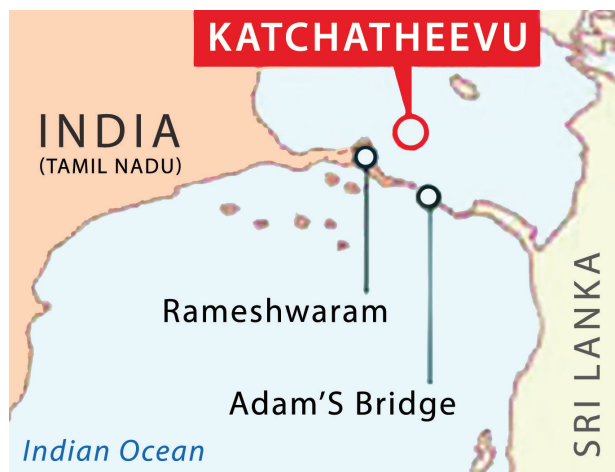
➲ It lies 14.5 km south of Delft Island and about 16 km northeast of Rameswaram.
➲ The island is barren, lacking drinking water or infrastructure, except for a Catholic church dedicated to St. Anthony.

Dispute

➲ It began in 1921 between the British colonial governments of Madras and Ceylon and it was resolved through two bilateral agreements signed in 1974 and 1976 by India and Sri Lanka.
➲ These agreements established that Katchatheevu belongs to Sri Lanka and defined the maritime boundaries between the two countries, including their Exclusive Economic Zones (EEZs).
➲ The agreement also allowed Indian fishermen to visit Katchatheevu for the annual St. Anthony's festival, but prohibited fishing activities in Sri Lankan waters.

Do You Know?

➲ India's gains from the agreements included diplomatic advantages with Sri Lanka, especially during a time when Sri Lanka was strengthening ties with China.
➲ Additionally, India secured sovereign rights over the Wadge Bank near Kanniyakumari, which holds valuable marine resources.

Governments Stand

➲ The Union government has consistently rejected demands for retrieval, arguing that the **1974 and 1976 agreements** resolved the matter, with Katchatheevu now firmly under Sri Lankan jurisdiction.
➲ The issue remains unresolved in the Supreme Court, with the Union government asserting that no Indian territory was ceded to Sri Lanka.

HEARD AND MCDONALD ISLANDS

Context

Trump's "Liberation Day Tariffs", imposed a baseline 10% tariff on all trade partners.

Heard and McDonald Islands:

➲ This included **Heard and McDonald Islands,** remote volcanic islands in the sub-Antarctic Indian Ocean, despite being uninhabited.
➲ These islands are **Australian territory,** which led to their inclusion in the tariff list.
➲ **Location:** In the Southern Indian Ocean, about 1,700 km from Antarctica and 4,100 km southwest of Australia.
➲ **Volcanic Activity:** Only active sub-Antarctic volcanoes, including **Big Ben (Heard Island)** and the **McDonald Island volcano.**

➲ **Unique Ecosystem: No introduced species**, making it one of the rare pristine ecosystems, with large populations of marine birds and mammals.

NOTE TO READERS

For further detailed analysis of *"Democratic Republic of Congo"*, refer Page 69-70 of February 2025 edition of NEXTIAS Current Affairs Magazine.

MORAG AXIS

Context

Israel announced that its military had completed the takeover of a new security corridor known as the Morag axis.

NOTE TO READERS

Please refer our Economy section of this magazine for more details on *"Liberation Day Tariffs"*. We have covered it in detail.

DR CONGO

Context

The UN condemned the widespread rape of children in eastern DR Congo, where thousands faced sexual violence in early 2025.

Democratic Republic of the Congo (DRC)

➲ It is a country located in Central Africa. It is the second-largest country in Africa by land area

➲ Kinshasa is the capital city, located on the Congo River, and is one of the largest urban areas in Africa.

➲ **Bordering countries:** Angola, Burundi, Central African Republic, Republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia.

About

➲ It cuts across Gaza between the southern cities of **Rafah and Khan Yunis.**

➲ This move effectively links the **Philadelphi Route** along the Egyptian border to **Morag**, creating a **wider Israeli-controlled "security zone."**

   ◆ The Morag corridor joins **other key zones under Israeli control**, including the Philadelphi and Netzarim corridors.

   ◆ The **Philadelphi Corridor** refers to a narrow strip of land along **Gaza's border with Egypt** that has been under Israeli control since 2024.

➲ Together with expanded buffer zones, these give **Israel control of over 50% of Gaza's territory.**

Gaza Strip

Israel has established control over more than 50% of the territory within the Gaza Strip, Since resuming its military campaign against Hamas in retaliation to October 7 attack in 2023.

About

➲ **Location:** The Gaza Strip is a small territory located on the **eastern coast** of the **Mediterranean Sea.**

➲ It borders **Israel** to the north and east and **Egypt** to the southwest, covering about **365 square kilometers.**

➲ **Conflict zone:** It has been the site of repeated conflicts between Israel and Hamas, including wars in 2008, 2012, 2014, and most recently in 2023–2024.

➲ **Humanitarian crisis:** Due to the blockade and ongoing conflicts, Gaza faces high unemployment, limited access to clean water, electricity, and healthcare, and widespread poverty.

October 7 Attack

➲ The **October 7, 2023, attack,** termed **Operation Al-Aqsa Flood** by Hamas, was a coordinated assault by Hamas-led Palestinian militant groups from the Gaza Strip into southern Israel, marking the deadliest day in Israel's history and triggering the ongoing Gaza War. It involved rocket barrages, ground incursions, and hostage-taking, leading to significant casualties and global repercussions.

➲ **Date and Context:** Launched on October 7, 2023, during the Jewish holidays of **Simchat Torah and Shemini Atzeret, coinciding with Shabbat**, catching Israel off-guard.

PANAMA CANAL

Context

Panama confirmed that the United States recognizes its sovereignty over the Panama Canal, despite recent tough rhetoric from the US.

Panama Canal

➲ The two nations also announced new agreements aimed at deepening U.S. military training in Panama.

➲ It is an artificial waterway connecting the Atlantic and Pacific Oceans.

➲ It is vital for global trade, with 6% of maritime world trade passing through it.

➲ It was opened in 1914 by the U.S., the canal symbolized American technological and economic power.

   ◆ The U.S. controlled the canal until December 31, 1999, when it was handed over to **Panama under the Torrijos-Carter Treaties.**

◆ The U.S. retains the right to defend its neutrality and ensure priority passage during military emergencies.
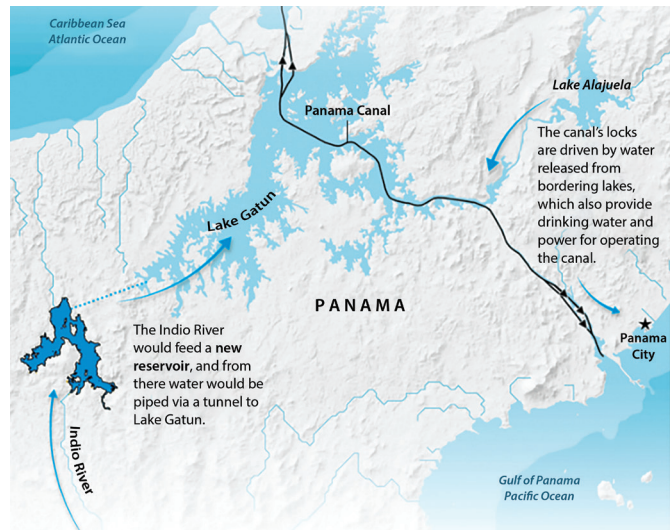
Do You Know?

The Panama Canal Treaty abolished the Panama Canal Zone and transferred control to Panama, while the Permanent Neutrality Treaty declared the canal neutral, allowing vessels from all nations to use it.

RAS ISA PORT

Context

US air strikes on Yemen's Ras Isa oil port kill at least 80 people.
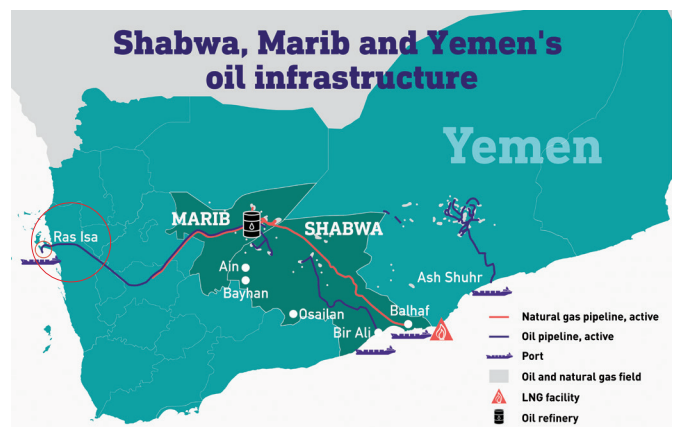
About Ras Isa Port

➲ It is a port located in the **Ras al-Mashawn Peninsula, Yemen.**

➲ It is situated on the Gulf of Aden, approximately 35 kilometers west of the city of Al Mahrah.

- The **Marib–Ras Isa oil pipeline** is a critical component of Yemen's energy infrastructure, linking the inland oil fields of Marib to the Ras Isa Marine Terminal on the **Red Sea.**
- **Note:** A peninsula is a piece of land surrounded by water from three sides.

DAVIS STRAIT

Context

A hidden landmass has been found beneath the icy waters of the Davis Strait.

About

- The discovery was made by a team of scientists from the **UK and Sweden during a study of the ocean floor in the region.**
- The landmass is now named the **Davis Strait proto-microcontinent.**
  - It is made up of **unusually thick continental crust** and measures between 12 and 15 miles (around 19 to 24 km).

- It lies submerged beneath **Greenland's western offshore** waters and has been identified as a **primitive microcontinent** which is an ancient fragment of crust that never fully separated when Greenland and North America drifted apart.

Davis Strait

- Davis Strait, the body of water that **separates Canada's Baffin Island from Greenland.**
- The Strait connects the **Labrador Sea (Atlantic Ocean) in the south with Baffin Bay to the north.**
- Straits are usually defined as a **narrow passage or a waterway** that lies between two land masses and connects two oceans or large bodies of water. They are formed by natural geological phenomena such as tectonic shifts.

Do You Know?

- A primitive microcontinent is a fragment of ancient continental crust that did not fully separate from a larger landmass during continental drift.
- They are essentially pieces of continental crust that remained partially attached when continents separated.

6 INTERNAL SECURITY

VIBRANT VILLAGES PROGRAMME-II (VVP-II)

Context

The Union Cabinet has approved the second phase of the Vibrant Villages Programme (VVP) to boost development in strategic border areas.

About
- It is a **Central Sector Scheme** (100% Centre-funded) with a total outlay of **₹6,839 crore**.
- **Implementation and Timeline:** It will be implemented in select strategic villages across the following States/UTs till FY 2028–29:
  - Arunachal Pradesh, Assam, Bihar, Gujarat, Jammu & Kashmir (UT), Ladakh (UT), Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.
- **Objective:** The programme aims to create better living conditions and adequate livelihood opportunities to ensure prosperous and safe borders, control trans-border crime, assimilate the border population with the nation, and inculcate them 'as eyes and ears of the border guarding forces'— vital for internal security.
- **Key Features:**
  - Infrastructure development within the village or a cluster of villages,
  - Support for value chain development (via cooperatives, SHGs, etc.),
  - Border-specific outreach activities,
  - Education infrastructure like SMART classes,
  - Tourism circuit development and
  - Works/projects to create diverse & sustainable livelihood opportunities.
- **Significance:** VVP-II along with VVP-I, is a transformative step towards making border villages self-reliant, resilient, and vibrant—crucial for national security and inclusive development.

PROJECT VARSHA

Context

India is set to establish a new naval base under Project Varsha for nuclear submarines and warships in coastal Andhra Pradesh by 2026.

About
- **Located:** The new base will be located near the village of **Rambilli**, approximately 50 kilometers from Eastern Naval Command headquarters in Visakhapatnam.
- **Stealth capabilities:** The naval base will feature underground pens and tunnels to house nuclear submarines, ensuring stealthy operations in the Bay of Bengal.
  - The stealth capabilities are vital for **SSBNs (nuclear-powered ballistic missile submarines),** which need to remain hidden during their long patrols.
- Similarly **Karwar base in Karnataka** under **Project Seabird** safeguards the west coast.

Nuclear-Powered Submarines of India
- The Indian Navy is going to commission **INS Aridhaman,** the third nuclear-powered submarine in India's fleet.
- The submarine, with a displacement of 7,000 tonnes, will be slightly bigger than the first two SSBNs — **INS Arihant and INS Arighaat.**

NATIONAL INVESTIGATION AGENCY (NIA)

Context

A Delhi court sent 26/11 accused Tahawwur Rana to NIA custody, after his extradition from the U.S.

About
- **Established under:** NIA Act, 2008 after 26/11 Mumbai attacks.
- **Function:** Central counter-terrorism law enforcement agency.
- **Mandate:** Investigates offences affecting India's sovereignty, security, international treaties, etc.
- **NIA (Amendment) Act, 2019:**
  - **Jurisdiction extended:** Can investigate scheduled offences committed outside India involving Indian citizens/interests.
  - **Expanded mandate:** Covers offences under Explosive Substances Act, 1908 Human Trafficking, Cyber Terrorism Arms Act, 1959.
- **Governing body**: Ministry of Home Affairs, Government of India
- **Headquarters:** New Delhi
- **Special Courts:** Total NIA Special Courts: 51
  - **Exclusive NIA Courts:** 2 (Ranchi & Jammu)

LONG RANGE GLIDE BOMB 'GAURAV'

Context

DRDO successfully conducted the Release Trials of Long-Range Glide Bomb (LRGB) 'Gaurav' from the Su-30 MKI aircraft.

About

- LRGB 'Gaurav' is a **1,000 kg class glide bomb.**
- It is a **precision-guided, long-range glide bomb** developed to strike land targets from stand-off distances, i.e., beyond enemy air defence range.
- It is designed and developed indigenously by **Research Centre Imarat, Armament Research and Development Establishment** and Integrated Test Range, Chandipur.
- The trials successfully demonstrated a range close to 100 kms with pin-point accuracy. The stated range capability is between **30 km and 150 km.**
- **Importance**: The development of LRGB will further enhance the capabilities of the Armed Forces to a great extent.

DRDO TESTS LASER WEAPON SYSTEM

Context

DRDO successfully tested the Mk-II(A) Laser-Directed Energy Weapon (DEW) system in Andhra Pradesh.

About

- **Developer**: Designed by DRDO's **Centre for High Energy Systems and Sciences (CHESS)**, Hyderabad, along with partner labs, academia, and industries.
- **Capability**: Engages and destroys **drones, enemy sensors, and antennae** with high speed and precision.
- **Global Standing**: With this, **India joins the US, China, and Russia** in possessing advanced laser weapon capabilities.
- **Cost-Effective**: Operation cost is extremely low, roughly **equivalent to a few litres of petrol**.
- **Technology**: Uses a **high-intensity laser beam** to neutralize targets instantly, minimizing collateral damage and avoiding expensive ammunition use.

Functioning of the Laser Weapon

- **Detection**: Target is identified using **advanced tracking systems** like radars or optical sensors.
- **Target Lock**: The system locks onto the moving or stationary target precisely.
- **Laser Firing**: A **concentrated laser beam** is fired, delivering massive heat energy at the target.

- **Neutralization**: The target's **electronics, structure, or propulsion systems** are rapidly disabled or destroyed.
- **Speed**: The attack occurs **at the speed of light**, allowing no reaction time for the target.

GPS SPOOFING

Context

Recently, the Indian Air Force's transport aircraft carrying relief materials to earthquake-hit Myanmar late last month faced "GPS spoofing".

About

- GPS (global positioning system) spoofing can be considered to be a **form of cyberattack** that includes **generating false GPS signals to mislead an aircraft**.
- **The false signals** result in **misleading the navigation equipment**, posing a significant risk to the aircraft.
- **Due to excessive reliance** on satellite navigation systems in areas susceptible to electronic warfare, the **cyberattack has sparked security concerns.**
- Even though modern aircraft have backup systems, such incidents underscore the **need for increased vigilance and more robust defence in military and humanitarian operations.**

OPERATION CHAKRA-V

Context

The CBI arrested four people in connection with a 'Digital Arrests' fraud, as part of 'Operation Chakra-V,' after searches at 12 locations.

Operation CHAKRA

- It is an initiative of the Central Bureau of Investigation (CBI) which was launched in 2022.
- It is a global initiative supported by INTERPOL to combat and dismantle organized cyber-enabled financial crime networks.
- These crimes, including impersonation, phishing, romance, and lottery scams, involve sophisticated tactics such as data harvesting, customized messaging, money mules, and call center operations.

Objectives

- The criminals operate globally, targeting victims across various jurisdictions and causing significant financial losses.
- The operation aims to coordinate law enforcement efforts internationally to address the growing threat of cyber-enabled financial crimes.

TERROR ATTACK IN PEHALGAM

Context

A terror attack happened in the Baisaran Valley (meadows) often called 'mini Switzerland', near the town of Pahalgam in the Anantnag district. It is claimed by terrorist outfit TRF.

About The Resistance Front (TRF)

➲ It was founded in **October 2019**, after India bifurcated Jammu and Kashmir, and abrogated Article 370 that gave special status to the erstwhile State.

➲ The **MHA banned** the outfit under the **Unlawful Activities (Prevention) Act (UAPA) in 2023.**

➲ The front is involved in carrying out propaganda on terror activities, recruitment of terrorists, infiltration of terrorists and smuggling of weapons and narcotics from Pakistan into Jammu and Kashmir.

Militancy in Kashmir Region

➲ **Rooted in the 1947 Partition dispute over Kashmir's status**, armed militancy erupted in the late 1980s, fueled by alleged election rigging and Pakistani support.

➲ The **1990s witnessed peak violence**, targeting security forces and civilians, including the **Kashmiri Pandit community** leading to their exodus, met by intense Indian counter-insurgency.

➲ After India revoked **Article 370 in 2019**, ending Kashmir's special status, a new phase of militancy in Jammu and Kashmir has been seen like targeted killings of minorities and non-locals, "hybrid" militants, and increased activity in Jammu's Pir Panjal region.

Reasons For Persistence of Terrorism and Security Challenges in Jammu & Kashmir

➲ **State-Sponsored Terrorism from Pakistan:** Pakistan remains a central driver of terrorism in J&K by providing safe havens, training, funding, and logistical support to militant outfits.

➲ **Porous Borders and Infiltration Routes:** Rugged terrain, forests, and difficult weather conditions. These geographical factors make it challenging for security forces to completely seal borders.

➲ **Security Thinning due to Strategic Diversion:** After the 2020 Galwan clashes, a significant contingent of the Indian Army was repositioned to counter the Chinese threat along the eastern border. This strategic shift has inadvertently weakened the security grid in Jammu.

➲ **Post-2019 Focus Shift:** With a successful security crackdown in the Kashmir Valley post-Article 370 abrogation, terrorist outfits have shifted operations south of the Pir Panjal range—targeting Jammu's districts like Rajouri, Poonch, Doda, and Kathua.

➲ **Evolving Tactics of Terrorist Groups:** Terrorists operating using forest cover, night vision gear, M4 rifles, and encrypted communications.

➲ **Technological and Operational Challenges:** Terrorists use apps like Telegram, TamTam, Chirpwire, Enigma—combined with VPNs, complicating surveillance.

➲ **Communal and Demographic Sensitivities:** The religious and ethnic diversity in J&K — comprising Muslims, Hindus, Sikhs, and tribal communities — is vulnerable to communal tension. Terror groups aim to exploit these divides to destabilize social cohesion and provoke unrest.

➲ **Over Ground Workers (OGWs) Crucial Role:** They enable militancy through logistics, finance, propaganda, and safe houses—often invisible yet deeply entrenched.

Way Ahead

➲ **Rebuild and Strengthen Security Grid in Jammu Region:**

◆ Establish integrated command centers for real-time coordination between Army, JKP, CRPF, and intelligence agencies.

◆ Specialized joint units (COBRA + SOG) must be deployed for ambush-prone jungle warfare operations.

◆ Reinforce troop deployment in terror-affected districts (Rajouri, Poonch, Doda, Kathua) with Valley-experienced personnel.

➲ **Accelerate Technological Modernization and Surveillance:**

◆ Fully implement Comprehensive Integrated Border Management System (CIBMS) across LoC and IB, with smart fencing, drones, seismic sensors, and AI-driven analytics.

◆ Invest in counter-encryption capabilities and cyber-forensics to monitor and disrupt communication on banned apps and platforms.

➲ **Revive and Integrate HUMINT Networks:** Rebuild human intelligence (HUMINT) networks by deconflicting inter-agency rivalries post-2019.

➲ **Community Engagement and Youth Outreach:**

◆ Expand Village Defence Guards (VDGs) and provide them with modern training and equipment.

◆ Launch targeted counter-radicalization programs in colleges and religious institutions with mentorship, skill training, and awareness drives.

➲ **Diplomatic and International Pressure on Pakistan:** Continue efforts to expose Pakistan's role in cross-border terrorism at international forums (UN, FATF, etc.).

➲ **Navigation systems:** It uses four independent navigation systems to stay on track. It has a **satellite-supported GPS system,** which is protected against attempts to jam it.

TAURUS MISSILE

Context

Russia has said it will view any Ukrainian strike using German Taurus missiles as "direct participation" by Germany in the war.

About

➲ **It is a long-range, cruise missile,** known to be one of the most modern weapon systems used by the German military, the Bundeswehr.

➲ **Speed & Range:** It is capable of travelling at a speed of up to **1,170 kilometres per hour,** and can reach targets as far as **500 kilometres** away.

◆ It can travel at an altitude of just **35 metres**, making it nearly impossible to be detected by radar systems.

◆ It has day and night, **all-weather capabilities**.

➲ The system is a **Mobile Technology Control Regime (MTCR) Category II weapon,** designed to penetrate thick, hardened air defences via a very low-level terrain following flight.

INDIA'S DEFENCE EXPORTS HIT NEW RECORD

Context

India's defence exports have surged to a record high of Rs 23,622 crore in the FY 2024-25.

About:

➲ A growth of Rs 2,539 crore or 12.04% has been registered in the FY 2024-25 over the defence exports figures of FY 2023-24, which were Rs 21,083 crore.

➲ The **Defence Public Sector Undertakings (DPSUs)** have shown a significant increase of 42.85% in their exports in the FY 2024-25.

➲ The private sector and DPSUs have contributed Rs 15,233 crore and Rs 8,389 crore respectively in defence exports of 2024-25, whereas the corresponding figures for FY 2023-24 were Rs 15,209 crore and Rs 5,874 crore respectively.

Significance of India's Rising Defence Exports

➲ **Strengthening Indigenous Defence Production:** Defence production rose by 174% from 2014-15 to 2023-24,

KEY POLICY INITIATIVES	
Initiative	**Description**
Defence Production and Export Promotion Policy (DPEPP) – 2020	Aims to achieve defence exports worth ₹50,000 crore by 2029. Focus on building a robust manufacturing ecosystem, including the private sector and MSMEs.
Simplified Export Authorization Process	The online portal under DDP facilitates fast export clearance. 1,762 authorizations issued in FY 2024-25, a 16.92% rise over last year.
Strategic Partnership (SP) Model	Enables Indian private firms to partner with foreign OEMs to co-develop and manufacture high-tech defence platforms. Boosts tech transfer.
Industrial Licensing Reforms	Removal of licensing for parts/components and extension of license validity reduces compliance burden for startups and MSMEs.
Defence Attaches Empowered for Export Promotion	Financial powers given to defence attachés abroad to promote exports, engage buyers, and participate in expos.
Export Promotion Cell in DDP	Dedicated cell in DDP coordinates with industry and governments to streamline export procedures and resolve issues.
Participation in International Defence Exhibitions	India regularly organises defence expos like Aero India, DefExpo, IDEX, enhancing brand visibility.
Encouraging MSMEs and Startups	iDEX platform supports over 250 startups with funding and incubation for export-ready innovation in AI, drones, etc.
Make in India & Atmanirbhar Bharat Abhiyan	Mission to promote indigenous manufacturing. Offers production-linked incentives and promotes import substitution.

signaling India's successful shift from import-dependence to Atmanirbhar Bharat (self-reliant India).

- ◆ This will promote domestic innovation, manufacturing, and reduce reliance on foreign military technology.
- ➲ **Progress Toward Strategic Export Targets:** India is on course to achieve its ₹50,000 crore defence export target by 2029.
- ➲ **Catering to Global Demand:** Exports to nearly 80 countries reflect growing international trust in Indian-made defence systems.
  - ◆ **Exp:** Recently Indonesia has signed a deal of $450 million for the Brahmos Supersonic Cruise Missile also India is exporting Pinaka Multi-barrel rocket launcher to Armenia.
- ➲ **Encouraging Private Sector Participation:** In FY 2024-25, private players contributed ₹15,233 crore in exports, showcasing a thriving defence startup and MSME ecosystem.
  - ◆ Enhances employment, investments, and R&D in the defence sector.
- ➲ **Boosting Diplomatic and Strategic Leverage:** Enhances India's soft power and influence in regional and global security architecture.
  - ◆ **For exp:** India is exporting Brahmos to Philippines which is in conflict China in South China Sea thus enhancing the role of India in the Indo-Pacific Region and countering China's illegitimate hegemony.
- ➲ **Self Sufficiency leading to Strategic Autonomy:** As India will become more and more self Sufficient in terms of Defence Goods it will lead to India pursuing its National Interest and adopting its preferred foreign policy independent of any foreign influence.

Additional Information

- ➲ **Defence Public Sector Undertakings (DPSUs)** are **state-owned companies** under the administrative control of the **Department of Defence Production (DDP), Ministry of Defence**, responsible for designing, manufacturing, and maintaining defence equipment to enhance India's self-reliance and military capabilities. They play a pivotal role in reducing import dependency and boosting defence exports under the Make in India initiative.
- ➲ As of 2025, there are 16 DPSUs under the DDP, formed after the corporatization of the Ordnance Factory Board (OFB) in 2021, which split 41 factories into seven new DPSUs.
- ➲ **Example-Hindustan Aeronautics Limited (HAL):** Navratna, manufactures aircraft like LCA Tejas, Dhruv helicopter.

Key Challenges in Defence Exports

- ➲ **Technological Dependence:** Reliance on foreign tech limits indigenous development and export competitiveness.
- ➲ **DPSU Under performance:** Slower innovation, bureaucracy, and weak marketing hinder export potential.
- ➲ **Policy Implementation Delays:** Lag between policy and execution slows down exports.
- ➲ **Limited Global Reach:** Struggling to penetrate established markets against strong competition.
- ➲ **Low Volume, High Diversity:** Lack of high-demand, scalable flagship products.
- ➲ **Quality & Support Gaps**: Need improvement in product quality, certifications, and after-sales service.

DEFENCE EXERCISES IN NEWS				
Exercise Name	**Type**	**Location**	**Participants**	**Objective**
Exercise Tiger Triumph	Bilateral Tri-Service HADR Exercise	Visakhapatnam, India	India and USA	Develop interoperability for HADR operations; formulate SOPs for a Combined Coordination Center (CCC).
Exercise INIOCHOS-25	Biennial Multinational Air Exercise	Andravida Air Base, Greece	Air forces from 15 countries (including India)	Simulate modern-day air warfare challenges through integration of multiple air and surface assets under realistic scenarios.
Exercise INDRA 2025	Bilateral Naval Exercise	Not specified	India and Russia	Enhance interoperability towards countering common maritime threats and strengthening naval cooperation.
Exercise Desert Flag-10	Annual Multinational Air Combat Exercise	Al Dhafra Air Base, UAE	Air forces from Australia, Bahrain, France, Germany, India, Qatar, Saudi Arabia, South Korea, Turkey, UAE, UK, USA.	Undertake complex fighter engagements; exchange operational knowledge and best practices among advanced air forces.

FUTURE CIRCULAR COLLIDER (FCC) FEASIBILITY STUDY

Context

CERN and international partners completed a study on the Future Circular Collider (FCC), reflecting contributions from over 1,000 physicists and engineers.

Future Circular Collider (FCC)

- ➲ The FCC aims to succeed the **Large Hadron Collider (LHC)** in the 2040s.
- ➲ It will have a 91 km circumference and focus on fundamental physics questions, particularly related to the **Higgs boson**.
- ➲ It seeks to address key physics questions left unanswered since the discovery of the Higgs boson in 2012, including the origin of mass and the fate of the universe.
- ➲ The FCC could lead to technological advancements with applications in medical fields, fusion energy, electricity transmission, and advanced accelerators

Purpose

- ➲ It is a proposed particle accelerator designed to collide protons at unprecedented energies, aiming to study fundamental forces and particles.
  - ◆ The project will unfold in two phases: the first phase, featuring an electron-positron collider, is expected to begin operations in 2046, while the second phase, a proton-proton collider, is slated for 2070.
  - ◆ The FCC will target an energy level of 100 trillion electronvolts, more than seven times higher than the Large Hadron Collider (LHC).

Additional Information

- ➲ **Large Hadron Collider (LHC)** is the world's largest and most powerful particle accelerator, has been operational since 2008 and has made significant discoveries, such as the Higgs boson. It is expected to conclude operations by 2041, with the FCC poised to continue advancing research in fundamental physics.
- ➲ **"Higgs boson"** also called the **"God Particle"** is a fundamental particle in the Standard Model of particle physics, associated with the Higgs field, which gives other particles mass through their interactions.

ELON MUSK'S NEURALINK TO IMPLANT 'BLINDSIGHT' CHIP IN FIRST HUMAN BY 2025

Context

Elon Musk's brain-chip startup Neuralink has announced ambitious plans to begin human trials of its visual prosthesis device, "Blindsight" by the end of 2025. This brain-computer interface (BCI) aims to restore vision in people who are completely blind.

About Blindsight:

Blindsight is an experimental artificial vision device that:

- ➲ Uses a microelectrode array implanted in the visual cortex of the brain.
- ➲ Bypasses the eyes and optic nerves entirely.
- ➲ Processes visual data from a camera feed and stimulates neurons in the brain's visual center, enabling perception of images.

Brain-Computer Interfaces (BCIs)

HOW BRAIN-COMPUTER INTERFACES WORK

Electrode

Electrode Retrieving Escaped Electric Signals

Electrode translates signal

Brain

Neuron

Escaped Electric Signals
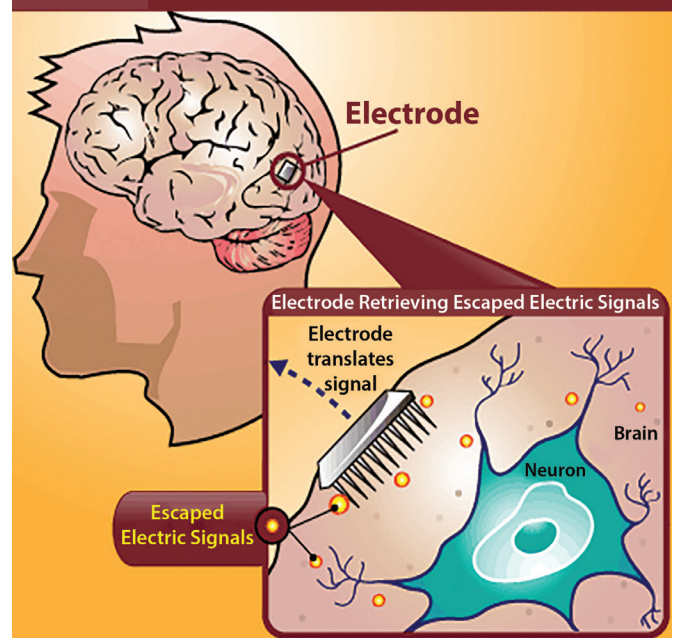
- ➲ A Brain-Computer Interface is a **computer-based system** that:
  - ◆ Acquires brain signals
  - ◆ Analyzes them

- Translates them into commands
- Sends those commands to external devices to carry out a desired action
- Unlike traditional motor control (e.g., flipping a light switch), BCIs enable users to control devices directly using brain activity, bypassing the body's muscles and peripheral nerves.
- **BCIs can be broadly categorized as:**

- **Invasive:** Electrodes are surgically implanted directly into the brain. These offer high signal quality but carry risks associated with surgery.
- **Non-invasive:** Sensors are placed on the scalp (e.g., EEG headsets). These are safer but have lower signal quality.
- **Partially invasive:** Electrodes are placed inside the skull but outside the brain tissue.

APPLICATIONS & CHALLENGES OF BCIS		
Category	**Applications**	**Challenges**
Medical & Rehab	Assistive technology for paralysis, ALS, etc.; Stroke & spinal injury rehab; Communication aids	Signal noise in non-invasive methods; Biocompatibility issues with implants
Mental Health & Cognitive	Neurofeedback for ADHD, PTSD, etc.; Memory & attention enhancement	Requires brain training; Ethical issues in cognitive manipulation
Education	Monitor engagement & cognitive load; Adaptive learning systems	Data privacy in learning settings; Standardization of tools
Military & Defense	Thought-controlled drones & devices; Cognitive monitoring of soldiers	Ethical use in combat; Risk of misuse or surveillance
Smart Home & IoT	Control devices using brain signals	Latency and reliability issues; Cost and integration complexity
Neuroscience Research	Brain mapping; Understanding cognition and neural links	Requires high-precision data; Long development cycles
General	Enhancement of brain functions and overall efficiency in functionality.	High costs; Lack of trained experts; Regulatory and legal uncertainty; Brain data security

Terms Used Above

- **ADHD** is a neurodevelopmental disorder marked by persistent inattention, hyperactivity, and/or impulsivity that's inconsistent with developmental age and impacts daily functioning
- **PTSD** is a psychiatric disorder triggered by experiencing or witnessing a traumatic event (e.g., abuse, violence, accidents).
- **Electroencephalography (EEG)** headsets are wearable devices that record the brain's electrical activity through electrodes placed on the scalp.

VIBE CODING

Context

In February 2025, OpenAI co-founder Andrej Karpathy coined a new term called "Vibe Coding".

Vibe Coding:

- **Definition:** Vibe coding is an intuitive, prompt-driven approach to software development, where users interact with **LLMs (Large Language Models)** like ChatGPT, Cursor, or Sonnet to generate and debug code without deep programming expertise.
  - **Vibe coding** emphasizes **'feeling the vibes'** over structured programming logic, making it especially suited for **low-risk, creative, or personal projects** where precision isn't the primary concern.

- **Working:** The user types a plain-language prompt describing the feature or tool they want.
  - The AI generates code and suggests improvements or fixes.
  - The user copies, pastes, and runs the code with minimal engagement in debugging or understanding.

Advantages of Vibe Coding

- **Accessibility for Non-Programmers:** Allows creatives, entrepreneurs, and students to build apps or websites without formal training.
- **Boosts Creativity & Experimentation:** Encourages rapid prototyping and iterative testing. Exposes new users to different programming languages and concepts.
- **Time-Saving for Developers:** Helps seasoned developers automate repetitive tasks, debug small issues, or draft boilerplate code quickly.

➲ **Gateway to Learning:** Serves as a stepping stone for beginners to transition into serious coding by sparking curiosity.

Disadvantages and Concerns

➲ **Code Quality & Efficiency:** AI may generate bloated, inefficient, or redundant code.
  ◆ Results often lack optimization, making maintenance harder and more expensive.
➲ **Security Risks:** AI-generated code might introduce vulnerabilities, especially if users don't review it.
➲ **Loss of Understanding:** Vibe coders often don't understand the code they use, making future editing or scaling difficult.
  ◆ **"Accept All"** culture (blindly accepting changes) increases risk.
➲ **Ethical and Legal Issues:** Raises concerns of plagiarism, especially in hackathons or job applications.
➲ **Unsuitable for Critical Applications:** Not fit for enterprise, medical, financial, or industrial-grade systems that require precision and reliability.

Large Language Models (LLMs)

LLMs are advanced AI systems trained on massive text datasets to understand and generate human-like language.

ASBESTOS

Context

The Global Asbestos Awareness Week (GAAW) is observed annually during the first week of April.

About

➲ Asbestos refers to a group of six naturally occurring fibrous minerals **(chrysotile, amosite, crocidolite, tremolite, actinolite, anthophyllite)** known for their resistance to heat, fire, and chemicals, and their durability.
➲ Asbestos was widely used in numerous industrial, residential, and commercial applications due to its unique physical properties.
➲ When asbestos fibers are inhaled or ingested, they can lodge in the lungs and tissues, leading to chronic health conditions like Asbestosis, Mesothelioma etc.

SPACEX'S FRAM2 MISSION

Context

SpaceX launched the Fram2 mission, sending the first private astronaut crew on a groundbreaking journey to orbit Earth from pole to pole.

Historical Linkages

➲ It was named after the **Norwegian ship "Fram**," which was instrumental in early 20th-century polar exploration.
➲ The Fram participated in expeditions and played a significant role in reaching the **Arctic and Antarctic regions.**
➲ **Fram2 mission** honors the ship's legacy.

SpaceX's Fram2 Mission

➲ The Fram2 mission lifted off atop a Falcon 9 rocket from **NASA's Kennedy Space Center, Florida,** sending the **Crew Dragon capsule "Resilience"** into a polar orbit.
➲ It also allows scientists to study how astronauts' bodies respond to **weightlessness and motion sickness.**
➲ It will last between 3 to 5 days, with the crew traveling in a novel orbital path to perform various experiments.
➲ The crew will perform the **first-ever x-ray in space**, providing insights into how microgravity affects bone and muscle density.
➲ It will also focus on **cultivating mushrooms** in **space**, which could offer valuable insights into **sustainable food production** for future space missions.

Post-Mission Task

➲ After returning to Earth, the crew plans to exit the Dragon spacecraft unassisted, aiding research on astronauts' ability to perform tasks without medical or operational help after spaceflight.

About Earth's Polar Orbit

➲ A polar orbit is when a satellite travels around Earth passing over or near the North and South Poles.
➲ A deviation of up to 10 degrees from the exact poles is still considered a **polar orbit.**
➲ Polar orbits fall under the category of Low Earth Orbit (LEO). Typical height range is 200 to 1000 km above Earth's surface.

Significance

➲ As the Earth rotates beneath it, a satellite in a polar orbit can eventually scan the entire planet.
➲ **Extremely useful for:** earth mapping and remote sensing, environmental monitoring & military and reconnaissance (spy) satellites.

Challenges

➲ Launching into a polar orbit requires more fuel. This is because rockets cannot take advantage of Earth's rotational speed, unlike in equatorial launches.

FLUORIDE POLLUTION CRISIS IN SONBHADRA

Context

The incidents of fluoride poisoning seen in groundwater of Sonbhadra district of Uttar Pradesh. The contamination is 5 to 6 times higher than the prescribed safe limit.

About

- Fluoride is a **naturally occurring, non-biodegradable pollutant found in minerals, soil, water, and air.**
- It is also released during the **burning of coal bricks.**
- The World Health Organization sets the maximum safe level of fluoride in **drinking water at 1.5 mg/liter.**
- In safe doses, **fluoride helps prevent tooth decay** and supports bone health.
- **In excessive amounts, it causes** dental and skeletal fluorosis, joint pain and stiffness & bone deformities. It also poses risks to wildlife and ecosystems.

SATURN GAINED 128 NEW OFFICIAL MOONS

Context

Saturn has "gained" 128 new moons in a groundbreaking discovery by astronomers in Taiwan.

About

- **Saturn's New Title:** Saturn now holds the **title of "moon champion" with 274 moons,** the most of any planet in the solar system. This **surpasses the total number of moons of all other planets combined.**
- **Discovery Details:** Some moons were found during space missions like Voyager 1 and others during **"ring-plane crossings."**
- **Irregular Moons:** All newly discovered moons are classified as **"irregular"** moons, which have **elliptical orbits at various angles.**
  - **Irregular moons were likely once small planets** captured by Saturn's gravity and later shattered by collisions.
  - **Regular moons** are formed around a planet at the same time as the planet itself forms.
- **Size of Moons:** The new moons are small, **only a few kilometers in size,** but still classified as moons by NASA.
  - **Insights into Saturn's Rings:** The discovery of irregular moons offers **clues about the formation of Saturn's rings,** believed to be fragments from comets, asteroids, and moons torn apart by Saturn's gravity.
- **Naming of Moons:** Saturn's moons typically follow names from Greco-Roman mythology and other mythologies. The 128 new moons are currently named with technical designations (e.g., "S/2020 S 27") and await official names from the **International Astronomical Union (IAU).**

About Saturn

- Saturn, is the **second-largest planet** in the Solar System and the **6th** closest planet to the sun.
- **Saturn's rings** are composed mainly of water ice, with a minor component of rocky material.
- **Titan** is the largest moon of Saturn, larger than Mercury and Pluto.

International Astronomical Union (IAU)

- The IAU, founded in 1919 and headquartered in **Paris, France,** is the world's primary authority for professional astronomy.
- It promotes astronomical research, education, and international collaboration through its 9,000+ individual members (astronomers) and 80+ national members (countries, including India).
- The IAU is best known for standardizing astronomical nomenclature, defining celestial standards, and fostering global cooperation.

Key Functions

- **Nomenclature:** Assigns names to celestial bodies (e.g., planets, moons, asteroids) and features (e.g., lunar craters). Famously, it **redefined Pluto as a dwarf planet in 2006.**
- **Standards:** Sets astronomical constants, coordinate systems, and time standards (e.g., Julian Date).
- **Meetings and Publications:** Organizes triennial General Assemblies (e.g., 2024 in Cape Town, South Africa) and publishes journals like Astronomy & Astrophysics.
- **Outreach and Education:** Runs programs like Office of Astronomy for Development (OAD) and Office for Astronomy Outreach (OAO) to promote astronomy in underserved regions, including the Global South.
- **Divisions and Commissions:** Covers fields like stellar physics, cosmology, and space weather, relevant to missions at Lagrangian points.

Ring Plane Crossing

- A ring plane crossing is an astronomical event where the Earth or Sun aligns with the plane of a planet's ring system, causing the rings to appear edge-on and nearly invisible from that perspective.
- This phenomenon is most notable for Saturn, whose extensive ring system becomes a thin line or disappears from Earth's view due to its 26.7° axial tilt and 29.4-year orbit around the Sun. Ring plane crossings occur approximately every 13–15 years.

Voyager 1

- Voyager 1 is a NASA spacecraft launched on September 5, 1977, as part of the Voyager program to explore the outer planets and eventually study interstellar space.

AXIOM-4 MISSION (AX-4)

Context

Indian astronaut Group Captain Shubhanshu Shukla will pilot the Axiom-4 mission (Ax-4) to the International Space Station.

Axiom Space Mission

- Ax-4 is the fourth crewed mission (to the ISS organized by Axiom Space, a private company based in Houston).
  - It will include Shubhanshu Shukla , former NASA astronaut Peggy Whitson (commander), and astronauts Sławosz **Uznański-Wiśniewski** (Poland) and Tibor Kapu (Hungary).
- The crew will spend 14 days aboard the ISS, conducting around 60 scientific experiments as part of the mission.

Additional Information

- **Axiom Mission 1** was the **first all-private mission to the ISS**, followed by Axiom Mission 2, which launched the **first Saudi female astronaut,** and Axiom Mission 3, which included the **first Turkish astronaut** and **first ESA astronaut on a commercial mission.**
- **In 2024**, Axiom Space has announced a partnership with India (through ISRO), Poland (with ESA support), and Hungary for Axiom Mission 4 (Ax-4).

ISRO's Role

- ISRO's research will focus on microgravity studies, including investigating the effects of space on human health (e.g., physical and cognitive impacts of computer screens, skeletal muscle dysfunction), plant growth, and crop seed germination in space.

Importance

- The mission underscores the global significance of the research, with collaboration between ISRO, NASA, and the European Space Agency (ESA) to advance microgravity research.

NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH (NCPOR)

Context

National Centre for Polar and Ocean Research (NCPOR) Goa, has observed the 25th foundation day.

About

- NCPOR is an **autonomous body** under the **Ministry of Earth Sciences**.

- It was created to **manage national expeditions and strategic interests in polar regions.**
- NCPOR operates **two remote stations in Antarctica - Maitri and Bharati,** one in the Arctic - **Himadri, and one in the Himalayas - Himansh.** It also manages a **floating oceanographic platform called Sagar Kanya.**

INDIA'S RESEARCH STATION

Himadri

Himadri is **India's first permanent Arctic research station**, located at the International Arctic Research Base in **Ny-Ålesund, Spitsbergen, Svalbard, Norway**, approximately 1,200 km from the North Pole.

Himansh

- Himansh is a high-altitude glaciological research station established in **Sutri Dhaka, Chandra Basin, Lahaul-Spiti Valley, Himachal Pradesh**. Unveiled on October 9, 2016, at an altitude of 4,080 meters (13,500 feet), it studies Himalayan glacier responses to climate change, focusing on the Indus River basin, which supports millions of lifes.

Maitri and Bharati

- India operates these two research stations in Antarctica under its Indian Antarctic Program, launched in 1981. These stations support climate, environmental, and polar science research, complementing India's Arctic (Himadri) and Himalayan (Himansh) efforts.
- Earlier India had **Dakshin Gangotri(1st Research Station in Antarctica)** which is now defunct and used as a base.

Sagar Kanya

- ORV Sagar Kanya is a research vessel commissioned in 1983 under an Indo-German collaboration, built in Germany and delivered to India's Ministry of Earth Sciences (then Department of Ocean Development).
- Managed by NCPOR, Goa, it is a versatile ocean-observing platform studying the Arabian Sea, Bay of Bengal, and Indian Ocean.

SEMAGLUTIDE

Context

A recent study found that oral semaglutide (Rybelsus) reduces the risk of heart attacks, strokes, and cardiovascular death by 14%.

About

- **Semaglutide is** a **GLP-1 receptor agonist** (GLP-1RA) is to achieve a significant reduction in cardiovascular risk, **was approved in 2021 for weight management in people with obesity and conditions like type 2 diabetes.**

- **The trial focused** on **reducing major adverse cardiovascular events** (MACE) in people with type 2 diabetes, Cardiovascular Disease (CVD), and Chronic Kidney Disease (CKD).
- The study found that **oral semaglutide significantly reduced MACE** compared to a placebo.

Additional Information

- A placebo is a substance or treatment with no active therapeutic effect, often used in medical research to test the efficacy of actual drugs or interventions.
- GLP-1 receptor agonists (GLP-1 RAs) are a class of medications primarily used to manage type 2 diabetes and, increasingly, obesity.

Diabetes

- Diabetes is a **chronic medical condition** where the body has trouble regulating **blood sugar (glucose) levels.**
- It occurs when the body either **doesn't produce enough insulin** (a hormone that helps regulate blood sugar) or doesn't effectively use the insulin it produces.
- **There are two main types:**
  - **Type 1 Diabetes:** The body doesn't produce insulin at all, and it typically develops in childhood or adolescence.
  - **Type 2 Diabetes:** The body doesn't use insulin properly (insulin resistance), often due to lifestyle factors, and usually develops in adults.
- **Managing Diabetes:**
  - If not managed, diabetes can lead to serious health issues such as heart disease, kidney problems, and nerve damage.
  - Managing diabetes typically involves a combination of diet, exercise, medication, and regular blood sugar monitoring.

TECHNOLOGY AND INNOVATION REPORT 2025

Context

The 2025 Technology and Innovation Report, entitled: Inclusive artificial intelligence for development, has been issued by United Nations Trade and Development (UNCTAD).

About the Report

- **It aims to guide policymakers** through the complex AI landscape.
- **The US** leads the world in terms of private investment in AI, at **67 billion US dollars** in 2023, or 70 percent of global AI private investment.

- **The Report examines five core themes:**
  - AI at the technological frontier
  - Leveraging AI for productivity and workers' empowerment
  - Preparing to seize AI opportunities
  - Designing national policies for AI
  - Global collaboration for inclusive and equitable AI
- **China** was in second position, with **7.8 billion US dollars**, and India in tenth position, with **1.4 billion dollars.**

India's Position

- India ranks **10th globally for private AI investments in 2023**, with $1.4 billion investment in AI.
- India is one of the only developing countries with significant AI investments, along with China (2nd place with $7.8 billion).
- India ranks **36th in the Readiness for Frontier Technologies index** (improved from 48th in 2022).
  - India has around 13 million developers, making it a major contributor to AI and GenAI projects.

Concerns

- The report shows that just 100 companies, mostly in the United States and China, are behind **40 percent of the world's private investment in research and development**, highlighting a sharp concentration of power.
- At the same time, **118 countries** – mostly from the **Global South** – are missing from global AI governance discussions altogether.
- The report estimates that up to **40 percent of global jobs** could be affected by AI.

SHINGLES VACCINE CAN REDUCE RISK OF DEMENTIA

Context

A study in Wales suggests that the shingles vaccine may reduce the likelihood of new dementia diagnoses by about 20% over seven years. Shingles (Herpes Zoster) is a viral infection caused by the Varicella-Zoster Virus (VZV), the same virus that causes chickenpox.

Dementia

- It is a group of diseases that affect memory, thinking, and daily activities, primarily in older adults, though not everyone will develop it with age.
- **Common forms of dementia** include Alzheimer's disease, vascular dementia, dementia with Lewy bodies, and frontotemporal dementia.
- **Risk factors** include age (65+), high blood pressure, diabetes, obesity, smoking, excessive alcohol use, physical inactivity, social isolation, and depression.

- Dementia is caused by diseases that damage brain cells, leading to cognitive decline beyond normal aging.
- It can also arise from strokes, infections, alcohol abuse, or physical brain injuries.

⊃ **Treatment :** While there is no cure for dementia, treatment can help manage symptoms.

⊃ **Finding of recent study :** The research, published in Nature, found that people eligible for the shingles vaccine (based on their birth date) had a lower risk of developing dementia compared to those who were ineligible.

- This effect was more pronounced in women than men.

HADEAN PROTOCRUST

Context

A new study questions the assumption that Earth's chemical signatures post Hadean protocrust appeared only after subduction began.

About

⊃ **The Hadean protocrust** refers to **Earth's first crust** formed during the **Hadean eon,** which spanned from **about 4.6 billion to 4 billion years ago.**

- This eon marks the time **right after the formation of the Earth,** when the planet was still very hot and largely molten.
- During this time, the Earth's surface was molten and bombarded by space rocks.

HADEAN EON
4.6 to 4.0 billion years ago
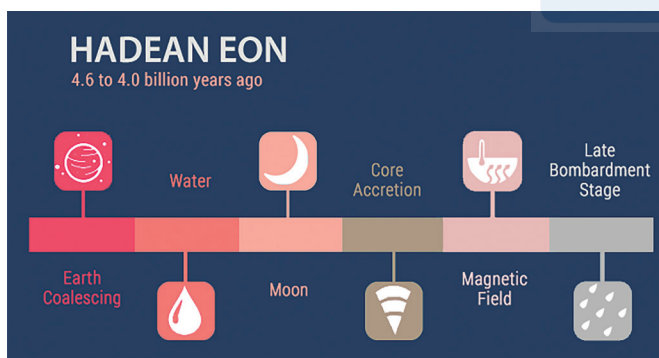
⊃ **Volcanic Activity:** Frequent volcanic eruptions and asteroid bombardment shaped the surface.

⊃ **Conditions:** Hot, inhospitable with little to no liquid water and a volcanic gas-dominated atmosphere.

⊃ **Thicker parts of the crust** gradually formed the **first continents,** which moved on the asthenospheric mantle.

- **Plate tectonics** started as plates drifted, slid over, or dove under each other.
- **These movements left distinct chemical signatures** in the crust, helping **scientists study plate tectonics.**

⊃ A new study questions the assumption that these signatures appeared only after subduction began.

- Researchers suggest that **these signatures existed in the Hadean protocrust.**
- This finding **challenges a key idea in geology** and needs validation by independent research.

Additional Information

An **"eon"** is the longest division of geological time, spanning hundreds of millions to billions of years (e.g., the Phanerozoic Eon, ~541 Ma to present).

NATIONAL MISSION ON POWER ELECTRONICS TECHNOLOGY (NaMPET)

Context

The Ministry of Electronics and Information Technology (MeitY), announced the signing of ToT/MoA/MoU among industries for the commercialization of NaMPET-developed technologies. Emphasized the need for indigenous technology in the Power Electronics sector.

About

⊃ **Wireless Charger for EVs:** The charger can charge a 4.8kWh onboard battery in 3 hours with 89.4% efficiency.

⊃ **Indigenous Propulsion System for Electric Locomotives:** MoA signed for the indigenization of a 3-phase electric locomotive propulsion system.

- Aims for full electrification of Indian Railways by 2030 with enhanced locomotive performance and reliability.

About NaMPET:

⊃ **National Mission on Power Electronics Technology (NaMPET):** A mission-mode programme by MeitY focused on the **development, deployment, and commercialization** of Power Electronics technologies.

⊃ **Main Areas:** Includes Microgrids, Green Energy, e-mobility ecosystem, Smart Power Quality Centre, High Voltage Power Electronics, and technology outreach for startups.

⊃ **Implemented by C-DAC:** Led by C-DAC, Thiruvananthapuram with participation from academia, R&D organizations, and industries.

IRON INSIDE THE SUN IS MORE OPAQUE THAN EXPECTED

Context

Recent research suggests that solar models have long underestimated iron's opacity and its impact on the Sun's temperature profile.
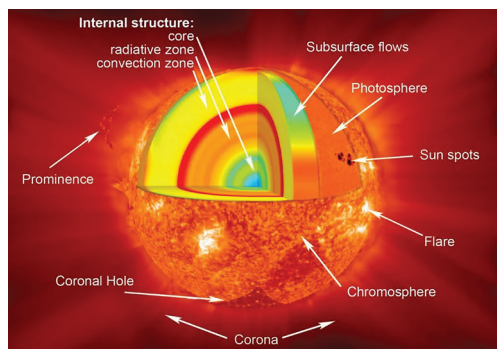
About:

- Opacity refers to a **material's ability to absorb light**; the higher the opacity, the more light it absorbs.
- In the context of stellar interiors, opacity determines how energy moves from the core to the surface.
- In 2015 a study suggested that the opacity of iron inside the Sun could be 30–400% higher than theoretical predictions.

Importance of Iron's Opacity in the Sun

- The opacity of elements like iron plays a crucial role in determining a star's **temperature gradient, energy transport mechanisms**, and its **seismic properties** (such as sound wave propagation).
- Many astrophysical models use the Sun as a reference to understand distant stars. Thus, errors in solar modeling can cascade into errors across cosmological simulations, affecting theories on **star formation, galactic evolution, and the universe's structure.**
- Further the updated opacity values could improve predictions about; Solar neutrino emissions, Sunspot cycles and flares, Stellar aging processes and Energy balance in other stars.

Internal Structure of Sun

- **Core:** The Sun's energy originates in its core through nuclear fusion reactions. With extremely high temperatures and pressures, the core fuses hydrogen into helium, releasing energy.
- **Radiative Zone:** Surrounding the core, energy is transported outward via radiation.
- **Convection Zone:** Here, heated material rises, cools at the surface, and sinks again, forming convection currents. This movement carries energy toward the Sun's surface.
- **Photosphere:** It has no solid surface but appears as a bright disk due to high gas density blocking deeper visibility.
- **Chromosphere:** Located above the photosphere, this layer is less dense and usually visible only during solar eclipses or with special filters.
- **Corona:** The outermost and most extended part of the Sun's atmosphere. It consists of very hot, low-density plasma and is visible during total solar eclipses.

Internal structure: core, radiative zone, convection zone; Subsurface flows; Photosphere; Sun spots; Flare; Chromosphere; Corona; Coronal Hole; Prominence

3D PRINTING

Context

Japan's West Japan Railway Company unveiled the world's first 3D-printed train station in Arida City, Wakayama Prefecture. It was named Hatsushima Station and the structure was built in under six hours.

About

- **Meaning:**
  - 3D Printing, also known as **Additive Manufacturing (AM)**, is a process of **creating three-dimensional objects from a digital file, by adding material layer by layer.**
  - Unlike traditional subtractive manufacturing (which involves cutting away material), 3D printing builds up the product from scratch.
- **Key Components of 3D Printing:**
  - **CAD Model:** A 3D digital blueprint of the object.
  - **Slicing Software:** Converts the 3D model into thin horizontal layers.
  - **3D Printer:** Executes the design by laying down material in successive layers.
  - **Printing Material:** Includes plastics, concrete, resin, metal powders, or even biological tissue.
- **Types of 3D Printing Technologies:**
  - **Fused Deposition Modeling (FDM):** Most common and cost-effective method.
    - Uses thermoplastic filaments like PLA or ABS.
  - **Stereolithography (SLA):** Uses UV light to cure liquid resin into solid plastic.
    - High-resolution but more expensive.
  - **Selective Laser Sintering (SLS):** Uses laser to sinter powdered material (e.g., nylon, metal).
    - Suitable for industrial applications.
  - **Direct Metal Laser Sintering (DMLS) / Selective Laser Melting (SLM):** Used for producing metal parts in aerospace, defense, and automotive sectors.

Applications of 3D Printing

- **Construction & Infrastructure:** Rapid construction of homes, bridges, train stations, and disaster-relief shelters.
  - **Example:** India's first 3D-printed post office in Bengaluru by L&T in 2023.
- **Healthcare & Biomedical:** 3D-printed prosthetics, dental implants, organs-on-chip, and even human tissue.
- **Aerospace & Defense:** Lightweight, durable parts being made for aircraft and satellites.
  - **Example:** DRDO is exploring additive manufacturing for weapon parts and UAVs.
- **Education & Research:** Affordable tools and models for STEM education and research labs.

● **Food Industry:** Layered printing of chocolates, pancakes, or custom-designed food.

ADVANTAGE	EXPLANATION
Speed	Rapid prototyping and construction.
Customization	Tailor-made objects as per specific requirements.
Waste Reduction	Only required material is used—less scrap.
Cost-Effective for Low Volumes	No need for molds or dies.
Design Flexibility	Can manufacture complex and intricate shapes.
Decentralized Production	On-demand local manufacturing reduces logistics and storage.

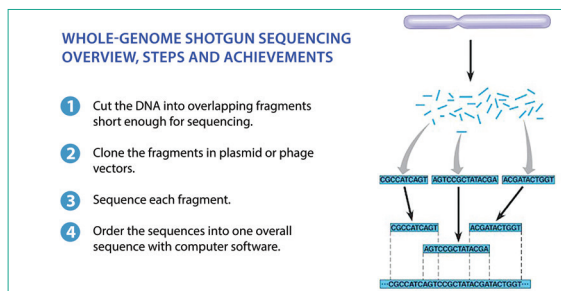| LIMITATION	EXPLANATION
Material Constraints	Limited types and properties of printable materials.
High Initial Cost for Industrial Use	Equipment and material costs can be high.
Size Restrictions	Printers have limited build volume.
Post-Processing Required	Additional steps like curing, polishing, or machining.
Slow for Mass Production	Not ideal for large-scale production lines.
Intellectual Property Risks	Digital designs are prone to unauthorized copying.
Skill & Regulation Gap	Skilled manpower and standardization are lacking in many regions.

INDIA'S GENOME MAPPING REVEALS 180 MILLION DNA VARIANTS

Context

The GenomeIndia project has published preliminary findings based on genome sequencing of 9,772 individuals across 85 diverse Indian populations.

About Genome Sequencing

● It is the process of **determining the complete DNA sequence** of an organism's genome, which includes all its genes and non-coding regions.

● It involves identifying the exact order of the **four nucleotide bases (adenine, cytosine, guanine, and thymine)** that make up the DNA.

WHOLE-GENOME SHOTGUN SEQUENCING OVERVIEW, STEPS AND ACHIEVEMENTS

1. Cut the DNA into overlapping fragments short enough for sequencing.
2. Clone the fragments in plasmid or phage vectors.
3. Sequence each fragment.
4. Order the sequences into one overall sequence with computer software.

Key Findings of the Study

● **180 million** genetic variants discovered:
  ◆ **130 million** in autosomes (non-sex chromosomes).
  ◆ **50 million** in sex chromosomes (X and Y).

● **Population-specific uniqueness:** Certain variants are found exclusively in specific communities, pointing to localized genetic adaptations.

● **Disease-related variants:** Some variants indicate susceptibility or resistance to infectious diseases, while others relate to environmental adaptations, e.g., high altitude, low oxygen.

Importance of the Study

● It enables **personalized treatment protocols** based on individual genetic makeup.

● It identifies **genetic markers** for complex diseases like diabetes, cancer, cardiovascular disorders.

● It helps in **predicting drug response,** minimizing adverse effects through pharmacogenomics.

GenomeIndia Project

● **The objective** of GenomeIndia is to build a comprehensive catalogue of genetic variations that **reflect the unique diversity of the Indian population.**

● It is a collaborative effort of **20 institutions** and funded by the **Department of Biotechnology,** Ministry of Science and Technology.

NOTE TO READERS

For further detailed analysis of *"Genome India Project"*, refer Page 28 of January 2025 edition of NEXTIAS Current Affairs Magazine.
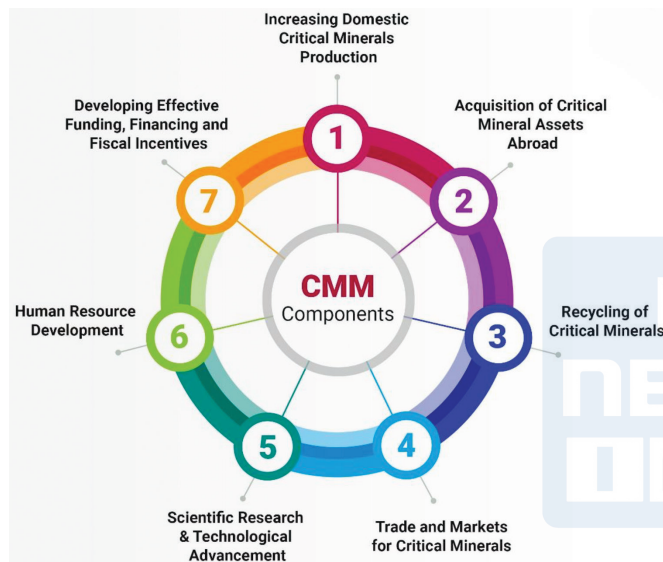
NATIONAL CRITICAL MINERAL MISSION

Context

The National Critical Mineral Mission (NCMM) was launched in 2025 to establish a robust framework for self-reliance in the critical mineral sector.

About

➲ Critical minerals are **essential for clean energy technologies** like solar panels, wind turbines, EVs, and energy storage systems. To secure these resources, **India launched the NCMM** to ensure their long-term availability and processing.

CMM Components:
1. Increasing Domestic Critical Minerals Production
2. Acquisition of Critical Mineral Assets Abroad
3. Recycling of Critical Minerals
4. Trade and Markets for Critical Minerals
5. Scientific Research & Technological Advancement
6. Human Resource Development
7. Developing Effective Funding, Financing and Fiscal Incentives

➲ The NCMM mission aims to establish a **robust framework for self-reliance in the critical mineral sector**. Under this mission, the Geological Survey of India (GSI) has been tasked with conducting 1,200 exploration projects from 2024-25 to 2030-31.

➲ A committee formed by the Ministry of Mines in November 2022 identified **30 critical minerals**, with 24 included in **Part D of Schedule I of Mines and Minerals Development and Regulation Act, 1957 (MMDR Act, 1957).**

➲ The Union Government now has the exclusive authority to auction mining leases and composite licenses for these specific minerals.

Meaning of Critical Minerals

➲ Critical minerals are essential for a country's economic development and national security, and their lack of availability or concentration in a few geographical locations can lead to supply chain vulnerabilities.

Uses of Critical Minerals

➲ **Energy Security & Clean Transition:** Lithium, cobalt, nickel, and REEs are crucial for renewable energy systems (e.g. solar panels, wind turbines).

◆ **Support India's targets:** 50% electric power from non-fossil sources by 2030
  ◆ Net-zero emissions by 2070
  ◆ Increases wind energy capacity from 42 GW to 140 GW by 2030

➲ **Boost to Electric Vehicles (EVs) and Storage:** Essential for manufacturing lithium-ion batteries, the backbone of EVs and energy storage systems.
  ◆ Reduce India's dependency on imported oil.
  ◆ Aligns with the National Electric Mobility Mission Plan (NEMMP) and FAME scheme.

➲ **Economic Development & Job Creation:** Mining, processing, and R&D in critical minerals can:
  ◆ Attract domestic and foreign investment.
  ◆ Create jobs in exploration, engineering, refining, and technology sectors.
  ◆ Strengthen MSMEs and startups in the clean-tech value chain.

➲ **National Security:** Critical minerals like rare earths, titanium, and tungsten are used in:
  ◆ Defense (missile systems, stealth aircraft, radar)
  ◆ Electronics (telecom, semiconductors, satellites)
  ◆ Reduces strategic vulnerabilities by minimizing import dependence.

➲ **Infrastructure & Digital Economy Backbone:** Minerals like silicon, gallium, indium are essential for:
  ◆ Semiconductors
  ◆ 5G/6G tech
  ◆ Smart grids, smart cities, and digital India initiatives

IREL (India) Limited (erstwhile Indian Rare Earths Limited)

➲ It is a key public sector enterprise under the **Department of Atomic Energy**, and plays a vital role in India's critical minerals value chain.

➲ With a processing capacity of **6 lakh tonnes per annum**, it produces essential beach sand minerals such as ilmenite, rutile, zircon, sillimanite, and garnet.

➲ The company operates a **Rare Earth Extraction Plant in Chatrapur, Odisha, and a Rare Earth Refining Unit in Aluva, Kerala**, contributing to the indigenous processing of rare earth elements (REEs).

International Engagements

➲ **KABIL-CAMYEN Agreement (Argentina, 2024):** Lithium exploration over 15,703 hectares.

➲ MoU with **Australia's Critical Minerals Office (2022).**

➲ Talks with Democratic Republic of Congo (DRC) for cobalt and copper.

➲ Strategic tie-ups with Africa, Latin America, and ASEAN countries for secure sourcing.

Challenges

- **Geopolitical Risks:** Dependence on imports from China, DRC, and South America.
- **Lack of Domestic Processing Capacity:** India currently lacks advanced REE separation technologies.
- **Low Private Investment**: Mining sector faces regulatory and financial entry barriers.
- **Environmental Concerns:** Mining and refining can damage local ecosystems.
- **Recycling Ecosystem:** Still nascent and lacks scale.

Way Forward

- Strengthen domestic exploration and incentivize the private sector via PPP.
- Forge long-term strategic partnerships with mineral-rich countries.
- Boost R&D and recycling to close the mineral loop.
- Skilling and capacity-building for critical mineral-specific technologies.

ARTEMIS ACCORDS

Context

Bangladesh became the 54th country to sign the Artemis Accords, a U.S.-led initiative for peaceful and cooperative space exploration.

About

- **Launched:** October 13, 2020
- **Founding Nations:** Australia, Canada, Italy, Japan, Luxembourg, UAE, UK, and the **United States**.
- **Legal Basis:** Based on the **Outer Space Treaty of 1967 (OST).**
- **Nature: Non-binding** set of principles for civil space exploration and utilization.

- **Key Principles:** Peaceful purposes, Transparency, Interoperability, Emergency Assistance, Registration of Space Objects, Release of Scientific Data, Protecting Heritage, Utilization of Space Resources, Deconfliction of Activities, and Orbital Debris and Spacecraft Disposal.
- **Scope of Activities:** Applies to civil space operations on the **Moon, Mars, comets, and asteroids** — including their **surfaces & sub-surfaces**, as well as **orbital**, **Lagrangian points**, and **transit operations** between these bodies.

The Outer Space Treaty

- Formally known as the **Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space**, including the Moon and Other Celestial Bodies, was signed in 1967 and entered into force on October 10, 1967.
- It is a foundational international agreement under the United Nations, establishing a legal framework for the peaceful exploration and use of outer space. As of 2025, 115 countries are parties to the treaty, with 22 additional signatories.

Lagrangian Points

- Lagrangian points are five specific positions in space where the gravitational forces of two large bodies (e.g., the Earth and Sun or Earth and Moon) and the centripetal force of an object's orbit balance, allowing a smaller object (like a spacecraft or satellite) to maintain a stable or semi-stable position relative to the two bodies.
- Named after mathematician **Joseph-Louis Lagrange**, these points are critical for space missions due to their stability and energy efficiency.

ARTEMIS ACCORDS

ANGOLA · ARGENTINA · ARMENIA · AUSTRALIA · AUSTRIA · BAHRAIN · BANGLADESH · BELGIUM · BRAZIL · BULGARIA · CANADA · CHILE

COLOMBIA · CYPRUS · CZECH REPUBLIC · DENMARK · DOMINICAN REPUBLIC · ECUADOR · ESTONIA · FINLAND · FRANCE · GERMANY · GREECE · ICELAND

INDIA · ISRAEL · ITALY · JAPAN · LIECHTENSTEIN · LITHUANIA · LUXEMBOURG · MEXICO · NETHERLANDS · NEW ZEALAND · NIGERIA · PANAMA

PERU · POLAND · REPUBLIC OF KOREA · ROMANIA · RWANDA · SAUDI ARABIA · SINGAPORE · SLOVAKIA · SLOVENIA · SPAIN · SWEDEN · SWITZERLAND

THAILAND · UKRAINE · UNITED ARAB EMIRATES · UNITED KINGDOM · UNITED STATES OF AMERICA · URUGUAY

United for Peaceful Exploration of Deep Space

8 SOCIETY

KOKBOROK LANGUAGE

Context

Kokborok Sahitya Parishad an indigenous linguistic organisation has demanded inclusion of Kokborok language in the 8th Schedule of the Constitution of India with native script preferably with Devanagari or Bengali Script.

About Kokborok

➲ Kokborok is the language of the **Borok people** and was notified as one of the **official languages of Tripura in 1979.**
   ◆ Other official languages are **Bengali, and English**.
➲ The word Kokborok is composed of **two words**, viz., kok which means "language" and borok means "man". Thus Kokborok means "the language of man" or "the language of the Borok people".
➲ The dialect belongs to the **Tibeto-Burman group of languages** and its root can be traced to the **Sino-Tibetan speech family**. It is closely related to the **Bodo language and the Dimasa language** of the neighbouring state of **Assam.**
➲ The Kokborok dialect has **no script of its own** and is written in **Devanagari, Bengali and Roman scripts.**

KAILASH MANSAROVAR PILGRIMAGE

Context

India and China are in advanced talks to resume the Kailash Mansarovar Yatra, suspended since 2019 due to COVID-19 and border tensions.

About

➲ It is organized by the **Ministries of External and Home Affairs**, Indo-Tibetan Border Police, and the governments of Delhi, Sikkim, and Uttarakhand, along with state agencies like Kumaon Mandal Vikas Nigam.
➲ It was conducted until 2020 via two official routes: **Lipulekh Pass (Uttarakhand,** since 1981) and **Nathu La Pass (Sikkim,** since 2015).
➲ It holds deep religious and cultural significance for **Hindus, Jains, and Buddhists,** attracting hundreds of pilgrims each year.
➲ It is open to eligible Indian citizens with valid passports for religious purposes.

◆ The Government does not provide any financial assistance or subsidy for the Yatra.
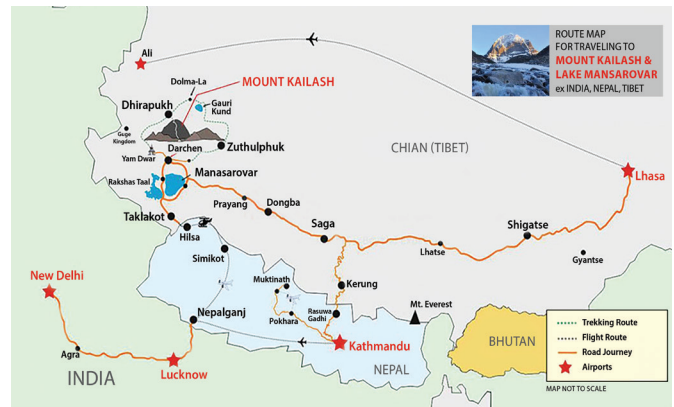
NAVKAR MAHAMANTRA DIVAS

Context

Prime Minister Narendra Modi inaugurated and participated in Navkar Mahamantra Divas.

About

➲ The Prime Minister proposed **nine resolutions anchored in the Navkar Mantra**, each a commitment to knowledge, action, harmony, and rooted progress.

What Is Vishwa Navkar Mahamantra Divas?

➲ It is an annual event observed on **April 9,** dedicated to **promoting global peace, non-violence, and spiritual harmony**

through the collective chanting of the **Navkar Mantra - the most revered prayer in Jainism.**

⮞ **The mantra venerates the five supreme beings:** Arihants, Siddhas, Acharyas, Upadhyayas, and all Sadhus, personifying the core values of Jain philosophy.

⮞ The day is observed by **mass chanting sessions**, both in-person and virtual.

BHARANI FESTIVAL

Context

Known as the Kodungalloor Bharani, one of Kerala's most famous and intense celebrations. It occurs during the Malayalam month of Meenam (March-April).

About

⮞ Kodungalloor Bharani is the **annual festival of Sree Kurumba Bhagavathy Temple** at Kodungalloor in Thrissur.

⮞ The Bharani festival celebrates the **birth of Bhadrakali (Hindu Goddess).**

TRADITIONAL HARVEST FESTIVALS

Context

Traditional harvest festivals were celebrated in different parts of the country on 13th and 14th April.

Harvest Festivals

⮞ **Baisakhi** marks the **start of the solar calendar** and the **harvest season, celebrated predominantly in Punjab.**

  ◆ Baisakhi usually falls on April 13 or April 14.

  ◆ According to the hindu calendar, this day is observed on the **first day of the month of Vaishakh.**

⮞ This day also coincides with several other regional spring festivals across India that celebrate the onset of the harvest season.

⮞ These include **Pana Sankranti** in Odisha, **Poila/Pohela Baisakh** in West Bengal, **Rongali Bihu** in Assam, **Puthandu** in Tamil Nadu, **Vaishakhi** in Bihar, and **Vishu or Poooram Vishu** in Kerala.

⮞ While each festival follows its own unique customs and traditions, they all **share a common spirit of gratitude and new beginnings.**

LODHI GARDEN

Context

Lodhi Garden, located in the heart of New Delhi, marks 89 years of its establishment as a public garden.

About

⮞ Lodhi Garden traces its origins back to the **14th and 15th centuries** and was initially known as **Bagh-e-Jud.**

⮞ The garden's roots are entwined with the **Hazrat Nizamuddin Auliya Dargah** and later became a burial site during the **Sayyid and Lodi dynasties**, showcasing Indo-Islamic architecture.

  ◆ The garden was developed during the British Period and was inaugurated by **Lady Willingdon** on **9th April 1936.**

Architectural Landmarks

⮞ **Tomb of Muhammad Shah:** The oldest structure in the garden, built for the third ruler of the Sayyid dynasty.

⮞ **Tomb of Sikandar Lodi** is an octagonal tomb from the Lodi period.

⮞ **Sheesh Gumbad** is known for its mysterious, unidentified graves and intricate glazed tile work.

⮞ **Bada Gumbad** is a dramatic domed gateway that leads into a mosque with three domes.

⮞ **Khairpur Satpula Bridge:** A water bridge built by Nawab Mirza, a noble in Emperor Akbar's court, adding a Mughal connection to the garden.

JATRA UTSAV

Context

Tripura is set to organise a Jatra Utsav with the aim of preserving its traditional art forms, culture, and heritage.

About

⮞ **Jatra or Jatrapala** is a popular **traditional Bengali folk theatre form**, usually performed in open-air arenas, allowing interaction with the audience.

  ◆ The word **'Jatra' means "journey,"** indicating its origins as a travelling theatrical performance.

- **Region:** Jatrapala is popular in **West Bengal, Odisha, Assam, and Tripura**.
- **Features:** It combines dramatic **storytelling, music, dance, and social commentary.**
  - Performances are marked by elaborate costumes, dramatic gestures, loud dialogues, and often moral messaging.
- **Theme:** Mythological stories, historical tales and contemporary social issues.

MAHAVIR JAYANTI

> **Context**
>
> *Mahavir Jayanti has been celebrated with great devotion across India. It commemorates the birth of Lord Mahavir (the 24th and last Jain Tirthankar)*

Vardhaman Mahavira

- He has been accepted as the founder of Jainism as a religion though its initiation can be traced to **Rishabhadeva(Adinath)** the **1st Tirthankara of Jainism.**
- He was the **24th and the last Thirthankara (teacher)** of the Jains.
- He was born in 599 BC at **Kundanagrama** present-day Vaishali,Bihar.
  - His father Siddhartha was the chief of Jnatrika clan of Kshatriyas
  - His mother Trishala was sister of Chetaka-leader of the **Licchavi Republic.**
- He left worldly life at the age of thirty and after 12 years of rigorous austerities, he attained **Kevala Jnana** (omniscience) at 42 under a **Sal tree**.
- After he attained Truth, he was called Mahavira.
- For 30 years, he preached Jainism's core principles: *Ahimsa* (non-violence), *Satya* (truth), *Asteya* (non-stealing), *Brahmacharya* (chastity), and *Aparigraha* (non-attachment).
- His teachings, recorded in the Jain Agamas, emphasize karma, soul purification, and ethical living, profoundly shaping Jainism.
- He strongly believed in the importance of **celibacy or brahmacharya**
- He rejected the belief in **God, rituals, and the caste system**, advocating for equality among all people.
- He emphasized the path of Right Belief, Right Knowledge, and Right Conduct as the way to reach Moksha, or liberation from the cycle of birth and rebirth.
- His core principle was Ahimsa (non-violence), leading to practices like vegetarianism and extreme care to avoid harming even small life forms.
- Mahavira spent his life preaching in regions like Anga, Mithila, Magadha, and Kosala, and attained *Moksha* (liberation) at 72 in 527 BCE in Pavapuri, Bihar.

Do you know?

- The word Jaina is derived from a Sanskrit word jina, meaning the **'conqueror'**, i.e., conqueror of passion and desire.
  - The last tirthankara, **Mahavir** is called Jina as he conquered his passion after the attainment of the supreme realisation.
- Mahavira's teachings were widely accepted due to his use of the common language, **Ardha Magadhi.**
- Jainism later split into two sects**: Digambaras (sky-clad) and Swetambaras (white-clad).**
- Kings like **Bimbisara and Ajatsatru** adopted Jainism, and Jain art, architecture, and literature flourished under their patronage.

BR AMBEDKAR JAYANTI

> **Context**
>
> *Recently, India celebrated the legacy of Dr. Bhimrao Ramji Ambedkar on Ambedkar Jayanti, a towering figure in India's fight against caste-based discrimination.*

BR Ambedkar & 'Annihilation of Caste'

- **Origins of Annihilation of Caste:** Originally **written as a speech for a 1936** meeting of progressive Hindus under the **Jat-Pat Todak Mandal**, the address was never delivered due to its provocative content.
  - Instead, Ambedkar published it himself, making it a **foundational text for anti-caste thought in India**.

DR. BHIMRAO RAMJI AMBEDKAR (1891–1956)

- **Born:** April 14, 1891; Mhow, Madhya Pradesh, in **Hindu Mahar Family.**
- He was the **14th child** of Subedar Ramji Maloji Sakpal, a respected figure in the British Army and a **follower of Sant Kabir.**

Education

- B.A. in Economics and Political Science from Bombay University.
- M.A. and Ph.D. in Economics *(Thesis work: National dividend for India — A Historic and Analytical Study)* from Columbia University, and furthered studies at the London School of Economics.
  - His thesis was published as '*Evolution of Provincial Finance in British India*'.

Architect of the Indian Constitution

- **Chairman of the Drafting Committee** of the Constituent Assembly

- He emphasized the importance of **equality, liberty, and fraternity**.
- He was **India's first Minister of Law and Justice**
  - He **resigned his ministership in 1951**, expressing his differences on the Kashmir issue, India's Foreign Policy and Nehru's Policy towards the Hindu Code Bill.
- He was conferred with the **title of 'Bodhisattva'** by the Buddhist monks at **'Jagatik Buddhism Council' in 1954** in Kathmandu, Nepal.

Major Writings and Publications
- Mooknayak (fortnightly newspaper, in 1920)
- The Problem of the Rupee: Its Origin and Its Solution (1923)
- The Bahiskrit Bharat (newspaper, 1927)
- Annihilation of Caste (1936)
- The Untouchables: Who Are They?
- Who Were the Shudras? (1942)
- Thoughts on Linguistic States (1955)

Economic Contributions
- Ambedkar's recommendations to the **Hilton Young Commission** contributed to the establishment of the **Reserve Bank of India.**

Legal Advocacy
- In 1934, he defended the **All India Textile Workers Conference**, highlighting flaws in the **Trade Disputes Act of 1929.**
- His vision established a **democratic framework with checks and balances** among the Executive, Legislature, and Judiciary.
- He considered the **'Right to Constitutional Remedies',** enshrined in **Article 32**, as the **'heart and soul'** of the Indian Constitution.

Others
- Bahishkrit Hitakarini Sabha in 1924
- Led the **Mahad Satyagraha (1927)**
- **Kalaram Satyagraha in Nashik (1930)**, a temple entry movement for the untouchables.
- Formation of **Independent Labour Party (1936)**
- Foundation of **Bharatiya Bauddha Mahasabha (1955)**

Award
- In 1990, he was posthumously awarded the **Bharat Ratna** (highest civilian honour of India).

MAHATMA JYOTIRAO PHULE ANNIVERSARY

Context

Prime Minister Narendra Modi and Union Home Minister Amit Shah paid tribute to social reformer Mahatma Jyotirao Phule on his birth anniversary.

Jyotiba Phule
- He was a pioneering social reformer who challenged caste discrimination, promoted education, and worked for the upliftment of women and the oppressed in India.
- **Early Life:** He was born in a Mali (Gardner) family of Poona in 1827. The Malis belonged to shudra Varna and were placed immediately below the peasant caste of Maratha-kunbis of Maharashtra.
  - His resolve to fight casteism solidified after he was humiliated at a Brahmin wedding in 1848.
  - He was inspired by social thinkers and missionaries like Cynthia Farrar and Thomas Paine.
- **Key Contributions:** In 1848, Phule and his wife Savitribai Phule started **India's first school for girls**, later establishing 18 more.
  - He also started night schools for workers and farmers.
- He founded in 1873, "**Satya Shodhak Samaj**"i.e.,**"Society of Truth-Seekers"** which was an inclusive, anti-caste movement providing an alternative to upper-caste-led reforms like Brahmo Samaj and Arya Samaj.

Social Reforms
- He opposed **upper-caste dominance** in reform movements and clashed ideologically with figures like **Bal Gangadhar Tilak.**
  - Yet, he displayed compassion, helping bail out Tilak during imprisonment.
- He saw the Sepoy Mutiny not as a fight for freedom but a threat of return to Peshwa-era Brahminical rule, which oppressed the Dalits.
- He wrote **Gulamgiri**, which he dedicated to the **'People of America'** who fought for the 'American Revolution', comparing caste oppression in India to slavery in America, calling out Brahminical dominance as a system of **"selfish superstition and bigotry."**
- He pushed for **compulsory primary education** and incentives like scholarships and prizes to attract poor families to send their children to school.
- In his writings like **Sarvajanik Satya Dharma Pustak,** he rejected sectarian religion and emphasized universal human equality, criticizing religious dogma and caste-based supremacy.
- In **Shetkaryanche Asud,** he urged the government to educate farmers, promote irrigation, improve soil fertility, and involve the military in building infrastructure.
- He **argued against polygamy** and pointedly questioned double standards in religion regarding gender roles and marriage.

Legacy
- Phule rejected the divine sanction of caste, questioned religious orthodoxy, and envisioned a just, rational, and egalitarian society.

NOTE TO READERS

For Complementary reading of *"Savitribai Phule"*, refer Page 79 of January 2025 edition of NEXTIAS Current Affairs Magazine.

TRIBHUVANDAS PATEL

About

➲ **Tribhuvandas Kishibhai Patel** is Known as the **"father of the cooperative movement"** in India, who played a key role in the development of **dairy cooperatives.**

➲ **Kaira Cooperative Union**: In **1946**, Patel, urged by Morarji Desai, founded Kaira District Cooperative Milk Producers' Union (KDCMPUL) as a **protest against** the **exploitation of local farmers by Polson Dairy.**

➲ **His collaboration with Verghese Kurien,** who was appointed as the mechanical engineer at the Kaira Union, led to the **White Revolution** and later **establishment of Amul.**

➲ **Legacy:** Patel's contributions were vital in the creation of the
  ◆ National Dairy Development Board (NDDB)
  ◆ Gujarat Cooperative Milk Marketing Federation (GCMMF)
  ◆ Institute of Rural Management Anand (IRMA)

➲ Ardent **follower of Mahatma Gandhi** and was totally involved in the various movements of Mahatma Gandhi, like civil disobedience, rural development, and the drive against untouchability, alcoholism, etc.
  ◆ Was **jailed** first time for the **salt satyagraha** at Nashik in 1930.
  ◆ Served as the President of Harijan Sevak Samiti from 1948 to 1983.

➲ **Recognition:** Awarded the **Ramon Magsaysay Award** in 1963 and **Padma Bhushan** in 1964 for his community leadership.
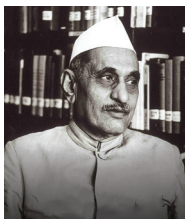
SARHUL FESTIVAL

About

➲ One of the most popular tribal festivals celebrated across the Jharkhand region, **Sarhul festival marks the beginning of New Year**.

➲ Sarhul, meaning **"worship of the Sal tree,"** celebrates the union of the Sun (male priest) and the Earth (priest's wife), symbolizing life's cycles.
  ◆ It marks the **beginning of agricultural activities after rituals.**
  ◆ **Sal trees (Shorea robusta)** are venerated in Adivasi tradition as the abode of Sarna Maa, the deity who protects villages from natural forces.

➲ **Festival Duration:** The festival lasts for three days.

➲ The main rituals happen on day two at Sarna Sthals.
  ◆ These communally protected "sacred groves" can be found near villages across Chhotanagpur, which includes Jharkhand, parts of Chhattisgarh, Odisha, and Bihar.

➲ **Cultural Significance:** Sarhul is celebrated by tribes like Oraon, Munda, Santal, Khadia, and Ho, with each having unique ways of celebrating.
  ◆ The festival has evolved from a hunting tradition to one focused on agriculture.

➲ **Spread of Sarhul:** The festival spread beyond Chhotanagpur with tribes migrating as indentured labor, now celebrated in places like Assam, Andaman and Nicobar Islands, Nepal, Bangladesh, and Bhutan.

Additional Information

➲ The tribals of Jharkhand are demanding a separate religious code for them, called the **"Sarna Code"** for **Sarna Dharam** followers.

➲ Their demand to include 'Sarna' as a separate religion for indigenous people in the next census.

➲ At present, **under the census, there are codes for only six religions: Hinduism, Islam, Christianity, Sikhism, Buddhism and Jainism.**

Sacred Grooves

➲ Sacred groves are natural forest patches revered as sacred by communities, often dedicated to deities, spirits, or ancestral forces in various religious and cultural traditions, particularly in India. They hold spiritual, ecological, and social significance, protected through rituals, taboos, and community practices.

➲ **Notable Examples in India:**
  ◆ **Mawphlang Sacred Grove (Meghalaya):** A 700-year-old Khasi grove, rich in biodiversity and spiritual lore.
  ◆ **Than Sacred Grove (Rajasthan):** Dedicated to local deities, it supports wildlife and community rituals.
  ◆ **Kavu Groves (Kerala):** Linked to snake worship and temple traditions, these are integral to local ecosystems.

9 CULTURE & HISTORY

CHITTORGARH FORT

Context

The Rajasthan government informed the Supreme Court that it is "actively considering" a complete ban on mining activities up to 10 kilometres from the outer boundary of the historic Chittorgarh Fort.

About

➲ Chittorgarh Fort was constructed in the 7th century AD by **Chitrangada Mori**, a ruler of the **Maurya dynasty of Rajasthan.**

➲ In 728 AD, it was captured by the **rulers of Mewar,** who made it their capital and turned it into a center of Rajput power and resistance.

➲ The fort gained prominence as a **stronghold of Mewar's pride and sovereignty.**

➲ As per **Malik Muhammad Jayasi's epic poem Padmavat**, **Alauddin Khilji besieged the fort** in his quest to obtain Queen Padmini, the wife of Rana Ratan Singh.

➲ It was declared a **UNESCO World Heritage Site in 2013** under the Hill Forts of Rajasthan.

➲ The fort is accessed through seven massive gates (pols). It is surrounded by thick stone walls with strong ramparts for defense.

➲ Internal complexes include **Vijay Stambh (Tower of Victory) and Kirti Stambh (Tower of Fame).**

◆ **Vijay Stambh (Victory Tower):** Built by Rana Kumbha to celebrate victory over Malwa; 9 stories tall, intricately carved.

◆ **Kirti Stambh (Tower of Fame):** Dedicated to Jain Tirthankaras; adorned with Jain sculptures.

GURU TEGH BAHADUR

Context

The Prime Minister paid tribute to Sri Guru Teg Bahadur on the auspicious Parkash Purab.

About:

➲ He was born on 1 April 1621 in Amritsar and he was the **ninth Sikh Guru** and the **youngest son of Guru Hargobind Sahib.**

◆ He was originally named Tyag Mal, he earned the title Tegh Bahadur after displaying bravery in battle.

➲ He married Mata Gujri and had a **son, Guru Gobind Singh.**

➲ He lived a life of meditation, selfless service, and sacrifice.

➲ He traveled widely, preaching Sikhism, promoting social reform, and establishing new preaching centers.

Sacrifice

➲ In 1675, he was martyred in Delhi by the Mughal emperor Aurangzeb for refusing to convert to Islam and defending religious freedom, especially for persecuted Kashmiri Pandits.

➲ His sacrifice earned him the title **"Hind di Chadar" (Shield of India).**

BODH GAYA TEMPLE

Context

Since February 2025, Buddhist monks and organisations across India and abroad have been protesting the Bodh Gaya Temple Act (BTA), 1949.

What is the Controversy all about?

➲ The Buddhist Community demands **exclusive control of the Mahabodhi Temple**—one of the four holiest sites in Buddhism(other being Lummbini,Sarnath and Kushinagara.

➲ Under the **BTA 1949, Bodhgaya Temple Management Committee (BTMC)** was established comprising **four Hindus and four Buddhist** with the **District Magistrate of Gaya as the ex-officio Chairperson** which currently runs and controls the temple.

➲ Buddhist Monks demand the **dissolution of the current BTMC** & establish a **Buddhist-only management committee.**

Why are there Hindus in a Buddhist Temple Management Committee?

➲ In the late 16th century, Hindu monk **Ghamandi Giri established the Bodh Gaya Math at the site** which controlled the temple till post-independence period.

➲ **Post-Independence:** Bihar government enacted the Bodh Gaya Temple Act,1949 transferring management to a joint committee having equal representation from Hindu community to avoid any conflict and smooth functioning of the Temple management.

Nirvana (Nibbana) or Enlightenment

➲ In Buddhist traditions, **Nibbana (Pali)** or **Nirvana (Sanskrit)** refers to the ultimate goal of spiritual practice, a state of complete liberation from suffering, desire, and the cycle of birth and death (samsara). It is the cessation of all mental defilements (greed, hatred, and delusion) and the realization of ultimate peace and freedom.

➲ Of the four great events associated with Lord Buddha (Birth, Enlightenment, First Sermon, and Parinirvana). Nibbana is most directly tied to two of these:

➲ **Enlightenment (Bodh Gaya):** When Siddhartha Gautama became the Buddha at age 35, he attained Nibbana with remainder (*Sa-upadisesa Nibbana*), meaning he was fully liberated but still lived in his physical body, free from mental suffering.

➲ **Parinirvana (Kushinagar):** At his death at age 80, the Buddha entered *Parinibbana* (*Anupadisesa Nibbana*), or Nibbana without remainder, signifying complete liberation from the physical body and samsara.

Types:

➲ **Sa-upadisesa Nibbana:** Liberation during life, as experienced by an enlightened being (e.g., the Buddha before his death).

➲ **Anupadisesa Nibbana:** Final liberation at death, with no further rebirth.

Gupta Architecture

➲ Gupta architecture, flourishing during the Gupta Empire (circa 4th to 6th century CE), represents a **golden age of Indian art and architecture**, known for its refined temple designs, rock-cut caves, stupas, and intricate sculptures. It laid foundational principles for later Hindu, Buddhist, and Jain architectural styles. Below is a concise overview of its key aspects.

Key Features of Gupta Architecture

➲ **Temple Architecture:**
   ◆ Early stone and brick temples with a square sanctum (garbhagriha) for the deity, often with a porch or small hall.
   ◆ Simple, elegant designs with flat roofs or early forms of the shikhara (tower).
   ◆ **Examples:**
      ◆ **Temple 17 at Sanchi:** A compact, flat-roofed Buddhist temple, an early model of Gupta design.
      ◆ **Bhitargaon Temple (Kanpur):** A brick temple with arched niches and decorative panels, showcasing structural innovation.

➲ **Rock-Cut Architecture:** Refined rock-cut caves for Buddhist, Hindu, and Jain worship, with polished surfaces and intricate carvings.
   ◆ **Examples:**
      ◆ **Ajanta Caves (Maharashtra):** Gupta-era caves (e.g., Caves 1, 2, 16, 17, 19) feature chaitya halls (prayer halls with stupas) and viharas (monasteries), adorned with frescoes and sculptures.
      ◆ **Ellora Caves (Maharashtra):** Early Buddhist caves from the Gupta period, later expanded with Hindu and Jain caves.
      ◆ **Udayagiri Caves (Madhya Pradesh):** Buddhist and Hindu caves with reliefs, including Vishnu's Varaha avatar.

➲ **Stupas:** Enhancements to existing stupas and construction of new ones, with refined proportions and decorative gateways.
   ◆ **Example:** Sanchi Stupa was expanded with additional carvings on its toranas (gateways), depicting Buddhist narratives.

➲ **Sculpture and Iconography:**
   ◆ Idealized, serene sculptures with spiritual and aesthetic balance.
   ◆ Buddhist icons, like the Sarnath Buddha in the Dharmachakra mudra, and Hindu deities (e.g., Vishnu, Shiva) were prominent.
   ◆ Narrative reliefs often depicted key religious events, such as the life of the Buddha.
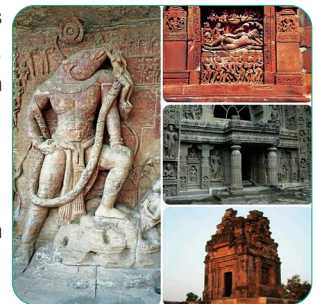
Characteristics

➲ **Materials:** Primarily stone and brick, with precise craftsmanship.

➲ **Aesthetic:** Emphasis on symmetry, simplicity, and spiritual symbolism, with minimal yet elegant ornamentation.

➲ **Innovations:** Early shikhara forms, arched niches, and advanced rock-cutting techniques.

➲ **Influence:** Shaped later Indian architecture (e.g., Chalukya, Pallava) and influenced Buddhist architecture in Southeast Asia.

Significance

➲ Gupta architecture is celebrated for its synthesis of art, religion, and engineering, creating sacred spaces that inspired devotion.

➲ Its Buddhist contributions (e.g., Ajanta, Sarnath) and early Hindu temples set standards for Indian architecture, reflecting the cultural and spiritual zenith of the Gupta period.

Bodhgaya Temple Management Committee

Hindus
Four members representing the Hindu community.

Buddhist
Four members representing the Buddhist community.

Chairperson
District Magistrate of Gaya, ex-officio chairperson.

Mahabodhi Temple

- Associated with the Nirvana *(Nibbana)* i.e., the enlightenment of Lord Buddha(566-486 B.C.),under the sacred Bodhi Tree (*Ficus religiosa* i.e. Peepal) ,a progeny of which is still in the compound attached to the temple.
- **Emperor Ashoka** visited **Bodh Gaya** around **260 B.C.** and **constructed a small temple near Bodhi Tree.**
- **Fahien(404-05 A.D)** and **Hieun Tsang(637 A.D)** have made reference to the main temple and the Bodhi Tree.
- The present structure of the Mahabodhi Temple dates back to the **5th or 6th century A.D.**, reflecting the architectural style of the Gupta period.
- It is one of the earliest Buddhist temples **built entirely in brick**.
- Recognised as a **UNESCO World Heritage Site** in **2002.**
- Historically managed by Buddhists until the 13th century invasion by Bakhtiyar Khilji.
- During the 13th century and again in 19th century,Burmese rulers undertook restoration of the Temple.

Mahabodhi Temple: Before and after restoration

- In the 1880's British undertook restoration under the direction of **Alexander Cunningham** and **Joseph David Beglar.**
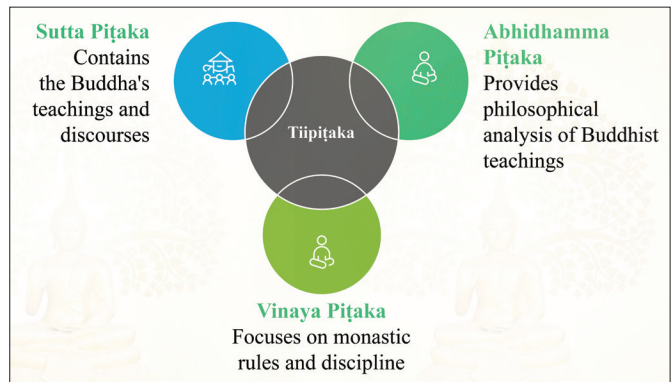
TIPITAKA

Context

Prime Minister Narendra Modi was presented with 'The World Tipitaka: Sajjhaya Phonetic Edition' by his Thai counterpart, Paetongtarn Shinawatra, in a diplomatic exchange.

About Tipitaka

- The Tripitaka *(Sanskrit: "Three Baskets"; Pali: Tipitaka)* is the traditional term for the Buddhist canon, a collection of sacred texts that form the foundation of Buddhist teachings.
- It is the earliest and most authoritative compilation of the Buddha's teachings, preserved primarily in the Pali language in the Theravada tradition, though other versions exist in Mahayana and other schools.

The Tripitaka is divided into three "baskets" (pitaka), each containing a distinct category of texts:

- **Vinaya Pitaka (Basket of Discipline):**
  - Focuses on the rules and regulations for monastic life, governing the conduct of monks and nuns.
  - Includes codes of ethics, procedures for communal living, and disciplinary measures.
  - **Key texts: Patimokkha** (monastic rules), **Suttavibhanga** (commentaries on rules), and **Khandhaka** (monastic procedures).
  - **Purpose:** Ensures the harmony and ethical conduct of the Sangha (monastic community).
- **Sutta Pitaka (Basket of Discourses):**
  - Contains the Buddha's sermons, dialogues, and teachings on doctrine, ethics, and meditation.
  - Organized into five collections (Nikayas in Pali):
    - **Digha Nikaya:** Long Discourses.
    - **Majjhima Nikaya:** Middle-Length Discourses.
    - **Samyutta Nikaya:** Connected Discourses.
    - **Anguttara Nikaya:** Numerical Discourses.
    - **Khuddaka Nikaya:** Minor Collection, including texts like the Dhammapada (verses on the path) and Jataka (stories of the Buddha's past lives).
  - **Purpose:** Provides guidance on the path to enlightenment, including the Four No
- **Abhidhamma Pitaka (Basket of Higher Teachings):**
  - Offers a detailed, analytical exposition of Buddhist philosophy and psychology.
  - Focuses on the nature of mind, matter, and reality, systematizing the Buddha's teachings.
  - **Key texts:** Seven books, including Dhammasangani (classification of phenomena) and Kathavatthu (points of controversy).

- **Purpose:** Provides a theoretical framework for understanding the nature of existence and liberation.

Historical Context

- ⮎ **Compilation:** The Tripitaka was Compiled after the **Buddha's death** (483 BCE) at the **First Buddhist Council in Rajagaha (Rajgir), India** was orally transmitted by the Buddha's disciples and was first written down in Sri Lanka around the 1st century BCE
- ⮎ **Language:** The Pali Canon, used by Theravada Buddhists, is the most complete surviving version. Other versions exist in Sanskrit, Chinese (Agamas), and Tibetan.
- ⮎ **Authority:** Considered the word of the Buddha (Buddhavacana) in Theravada, it is the primary scripture, though Mahayana traditions supplement it with additional sutras (e.g., Lotus Sutra).

ASI DOCUMENTS ROCK, TEMPLE INSCRIPTIONS IN T.N.'S PUDUKKOTTAI

Context

The Archaeological Survey of India's (ASI) Epigraphy Division recently documented inscriptions from Malayadipatti and Ponnamaravathi in Tamil Nadu's Pudukkottai district using the estampage method on maplitho paper.

Malayadipatti

- ⮎ It is located near **Kudambeeswarar Temple** and is a **16th-century inscription**, though partially damaged, it records a **land partition agreement** between Sundara Chozhapuram and Sevvalur villages for excavating a **pond (oorani).**
- ⮎ Near a **spring (sunai)**, another inscription mentions King Raja Rajan Sundarapandyan and credits Udaiyan Perumal of Sevvalur for his contribution to the creation of the waterbody.

Ponnamaravathi

- ⮎ It is an inscription on the western side of the sanctum dates to the 8th regnal year of Maravarman Kulasekara Pandiyan.
- ⮎ It refers to the temple as **Chozheeswarar Udaiya Nayanar Temple**, under Uzhavalai Nadu, and records a donation of 40 panam for lighting five temple lamps.
  - Earlier inscriptions from the same temple, copied by ASI in 1909 and 2000, include one from the 6th regnal year of Raja Raja III, placing the temple under **Rajendra Chola Vala Nadu.**

Importance

- ⮎ These inscriptions offer valuable insights into regional governance, religious patronage, and community contributions to water management in historical Tamil Nadu.

106TH ANNIVERSARY OF JALLIANWALA BAGH MASSACRE

Context

Prime Minister Modi paid homage to the martyrs of Jallianwala Bagh.

About

- ⮎ The Jallianwala Bagh massacre, also known as the **Amritsar massacre**, occurred on **13th April 1919** and marked one of the darkest chapters in India's colonial history.
- ⮎ To celebrate the Baisakhi festival and protest the arrest of prominent nationalist leaders **Dr. Saifuddin Kitchlew and Dr. Satyapal** under the **Rowlatt Act**, a large crowd of men, women, and children had gathered at the Jallianwala Bagh.
- ⮎ **Genaral Dyer** ordered British Indian Army troops to open fire on a peaceful gathering of thousands, without issuing any warning or order to disperse.
- ⮎ According to official British records, at least **379 people** were killed and many wounded.

The Rowlatt Act

- ⮎ The Rowlatt Act, officially known as the **Anarchical and Revolutionary Crimes Act of 1919**, was passed on March 10, 1919.
- ⮎ It gave the British government extraordinary powers to **detain individuals suspected of sedition without trial.**
- ⮎ This act was based on the recommendations of the **Sedition Committee,** chaired by **Sir Sidney Rowlatt,** and was modelled on the **wartime Defence of India Act of 1915.**

British response to Jallianwala Bagh Massacre

- ⮎ **Martial Law:** The shooting was followed by the proclamation of martial law in Punjab.
- ⮎ **The Hunter Commission,** also called the **Disorders Inquiry Committee,** was set up by the British government in **October 1919** to investigate the massacre.
- ⮎ The Commission criticized Colonel Reginald Dyer for his actions at Jallianwala Bagh.
  - It censured Dyer but did not impose any significant penalties. It did, however, recommend his **resignation from the military.**

Nationalist Response

- ⮎ **Rabindranath Tagore,** the Nobel laureate poet, renounced his knighthood in protest against the brutality of the British actions.
- ⮎ **Mahatma Gandhi,** launched the **Non-Cooperation Movement in 1920,** urging Indians to boycott British goods and institutions.
  - He also gave up the title of **Kaiser-i-Hind,** bestowed by the British for his work during the **Boer War.**

➲ This incident marked a significant turn in India's struggle for independence.

Chettur Sankaran Nair

PM Modi recently paid tribute to Chettur Sankaran Nair, highlighting his fight for justice in the aftermath of the Jallianwala Bagh massacre.
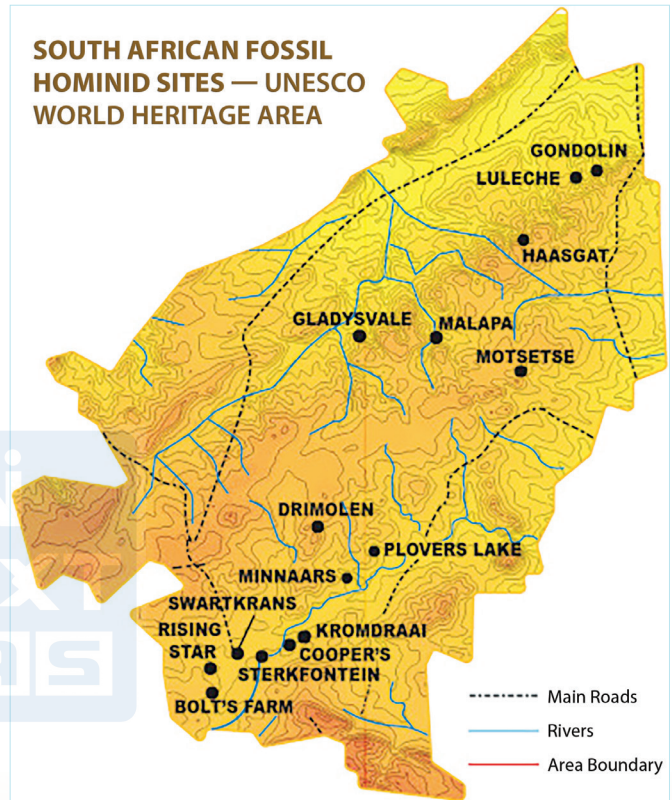
About

➲ **Sir Chettur Sankaran Nair** was a **nationalist, jurist, and social reformer** known for his fierce independence and commitment to justice.

➲ **In 1897**, he became the **youngest president of the Indian National Congress** at the Amaravathi Session.

➲ **By 1908,** he was a **permanent judge of the Madras High Court.**

➲ At the time of the Jallianwala Bagh massacre, CS Nair served as **Education Minister** and the **sole Indian representative in the Viceroy's Executive Council.**

  ◆ Deeply affected by the massacre, he resigned from the **Viceroy's Council in protest against British atrocities.**

➲ He later accused **Michael O'Dwyer,** the Lieutenant Governor of Punjab during the massacre, of enabling the killings.

  ◆ O'Dwyer sued Nair for defamation in an English court in 1924.

  ◆ The trial lasted five and a half weeks, making it the **longest-running civil case at that time.**

➲ **Nair was ordered to pay £500 and court costs, but refused to apologize,** despite an offer from O'Dwyer to waive the fine if he did.

➲ The trial exposed the **prejudice of the British legal system,** fueling nationalist sentiment in India.

◆ Key discoveries include **"Mrs Ples",Australopithecus africanus skull** and **"Little Foot",** a nearly complete **Australopithecus skeleton.**

◆ These findings suggest that early human ancestors lived in the region as far back as **3.5 million** years ago.

➲ It was designated as Part of **UNESCO World Heritage Site** in **1999.**

SOUTH AFRICAN FOSSIL HOMINID SITES — UNESCO WORLD HERITAGE AREA

STERKFONTEIN CAVES

Context

South Africa's Sterkfontein Caves, part of the Cradle of Humankind, have reopened to the public after three years.

About

➲ **Location:** Approximately 50 km northwest of Johannesburg, South Africa.

➲ **Geological Formation:** Composed mainly of dolomitic limestone, with striking rock formations such as stalactites and stalagmites formed over millions of years.

➲ **Palaeoanthropological Significance:**

  ◆ Known as one of the richest sources of hominid fossils in the world.

10 MISCELLANEOUS

TIME USE SURVEY

Context

The Time Use Survey (TUS) 2024 revealed significant data on how people in India allocate their time across various activities.

About

➲ The National Statistics Office (NSO) under the **Ministry of Statistics and Programme Implementation (MoSPI)** conducted the **first all-India Time Use Survey (TUS)** from January to December 2019, and the second survey for 2024 was released in February 2025.

➲ It provides data on time spent on paid and unpaid tasks, learning, socializing, leisure, and self-care activities.

Additional Information

India, alongside countries like Australia, Japan, and the USA, conducts the National Time Use Survey to analyze the participation of men and women in various activities.

Recent Findings

➲ **Delhi residents** spend the **most time on work-related activities**, averaging 563 minutes daily, far surpassing the national average of 440 minutes.
  ◆ Goa follows closely with 536 minutes, showing a notable increase from 2019.

➲ The survey highlights a **gender gap in unpaid domestic services,** with women dedicating 289 minutes daily compared to men's 88 minutes.

➲ **Learning activities have slightly declined,** with the national average dropping from 424 minutes in 2019 to 414 minutes in 2024. Andhra Pradesh and Tamil Nadu remain high in learning time.

➲ **Socializing and community participation show** varying trends across states, with **Nagaland** reporting increased social engagement.

➲ **Leisure** activities have risen nationwide, with **Uttarakhand** seeing a notable increase.

➲ **Self-care time,** including sleep and hygiene, has decreased nationally, with some states like Meghalaya and Jammu & Kashmir showing an increase.

BREAKTHROUGH PRIZE 2025

Context

The 2025 Breakthrough Prizes recognized top scientists in Life Sciences, Mathematics, and Fundamental Physics.

About

➲ The awards were established in **2013 by Mark Zuckerberg and his wife Priscilla Chan**, former Google chief Sergey Brin, genomics company 23&Me founder Anne Wojcicki, and tech investor couple Yuri and Julia Milner.

➲ It is also known as the **"Oscars of Science,"** and recognizes top scientists annually in **Life Sciences, Fundamental Physics, and Mathematics**, with each prize valued at $3 million.

Latest Winners

➲ **The Fundamental Physics prize** went to 13,508 physicists across four CERN collaborations for their work on the Higgs boson and particle research.

➲ **Life Sciences** awards were given for breakthroughs in weight-loss drugs, Multiple Sclerosis treatment, and gene-editing technologies.

➲ Dennis Gaitsgory won the **Mathematics** prize for his work on the Langlands conjecture.

KHELO INDIA YOUTH GAMES (KIYG) 2025

Context

Bihar is going to host the 7th edition of the Khelo India Youth Games 2025 from May 4 to 15, across cities including Patna, Gaya, Rajgir, Begusarai, and Bhagalpur.

About:

➲ The 7th edition has the mascot **"Gajsimha"**—symbolizing an elephant's power and a lion's heart—draws inspiration from **Pala dynasty carvings.**

➲ Khelo India was **launched in 2017** and it promotes grassroots sports in India through Youth, University, Para, and Winter Games, fostering young athletic talent nationwide.

➲ It is a flagship event of the **Ministry of Youth Affairs and Sports.** The games will feature around 27 disciplines, including popular sports like volleyball, football, boxing, kabaddi, and indigenous games like Malkhamb and Sepak Takraw.

Scheme for Setting up of Plastic Parks
- India ranks 12th globally in plastic exports, with exports growing from $8.2 billion in 2014 to $27 billion in 2022.

Mission Amrit Sarovar
- As of March 2025, over 68,000 Sarovars have been completed.

Biosphere Reserve
- In India, 18 Biosphere Reserves cover 73,073.87 km^2 (9.29% of India's forest area).
- Of the total 18 Biosphere Reserves 12 are included in the MAB's World Network of Biosphere Reserves (WNBR).

Arsenic Pollution
- The World Health Organization's provisional guideline value for arsenic in drinking water is 0.01 mg/l (10 µg/l).
- In India the permissible limit of arsenic in the absence of an alternative source is 0.05 mg/l (50 µg/l).

Indian Silk
- India's raw silk production increased from 31,906 MT in 2017-18 to 38,913 MT in 2023-24.
- Silk accounts for only 0.2 % of the world's total textile production.
- Exports of silk and silk goods rose from ₹1,649.48 crores in 2017-18 to ₹2,027.56 crores in 2023-24.
- Country exported 3348 MT of silk waste in 2023-24.
- 92% of the country's total raw silk production comes from mulberry.

Asian Development Outlook 2025:
- It revised India's GDP growth forecast for FY26 to 6.7%, down from its earlier estimate of 7%.
- For FY27, the growth forecast has been set at 6.8%.
- The economies of Developing Asia and the Pacific are expected to grow at a rate of 4.9% in 2025, which is a slight decrease from 5% in 2024.

NITI Aayog's Report
- Global tools market was valued at ~$100 billion in 2022, projected to grow to $190 billion by 2035.
- China dominates the global export market, commanding nearly 50% of the trade with $16 billion in hand tools and $22 billion in power tools exports.
- India exports $600 million in hand tools (1.8% global market share) and $425 million in power tools (0.7% global market share).
- India faces a 14-17% cost disadvantage compared to China.

Indian Agriculture to 2047 Report
- India's aggregate food demand is projected to exceed twice the current demand by 2047.
- By 2047, India's demand for nutrient-rich foods is expected to increase three to four times.
- Agricultural land is expected to shrink to 176 million hectares (mha) from the current 180 mha.
- The cropping intensity is likely to increase to 170% from the current 156%.
- By 2047, Agriculture's contribution to the national income may decrease to 8% from the current 18%.
- Agriculture is a major consumer of water (83 per cent), and by 2047, its demand will be approximately 18 per cent higher than its current use.
- India spends only 0.43% of AgGDP on R&D (vs. global average of 0.93%); private sector share is low (7%).

Periodic Labour Force Survey
- Share of women in India's formal manufacturing sector fell from 20.9% in 2015-16 to 18.9% in 2022-23.
- Tamil Nadu employs 41% of all women in formal manufacturing.
- Women make up 43% of the informal manufacturing workforce.

Northeast
- The Region covers 7.97% of the country's geographical area and 3.78% of its population.
- It has 5,484 km of international border viz. Bangladesh (1,880 km), Myanmar (1,643 km), China (1,346 km), Bhutan (516 km) and Nepal (99 km).

Rare Earth Elements
- China dominates the global supply of critical minerals including 87% of rare earth processing.
- India faces acute vulnerability with over 40% dependency on China for six key minerals

India's Global Pharmaceutical Footprint
- Country's pharmaceutical sector will touch the 130 billion US dollar mark by 2030.
- Contributes to around 1.72% of the country's GDP.
- India is the 3rd largest producer of API accounting for an 8% share of the Global API Industry
- UNICEF's largest vaccine supplier for the past six to seven years, contributing 55% to 60% of total volume procured.
- 99%, 52% and 45% of the WHO demand for DPT, BCG and the measles vaccines, respectively.
- **Domestic Production:** Increased from Rs.1.90 lakh crore in FY 2014-15 to Rs.9.52 lakh crore in FY 2023-24 at a CAGR of more than 17%.

➲ **Exports:** The exports of electronic goods have also increased from Rs.0.38 lakh crore in FY 2014-15 to Rs.2.41 lakh crore in FY 2023-24 at a CAGR of more than 20%

➲ India's electronics production will reach USD 300 billion by 2026.

➲ **Increased Budget:** Allocation for electronics manufacturing rose from Rs 5,747 crore (2024-25) to Rs 8,885 crore (2025-26).

➲ **Vande Bharat:** As on December 26, 2024, a total of 136 Vande Bharat train services are running across the railway network. In 2024 alone, 62 Vande Bharat train services were introduced.

Cruise Tourism in India

➲ In FY 2023- 24, the number of cruise passengers was 4.71 lakhs.

➲ MV Ganga Vilas, the world's longest river cruise, was launched to cover a 3,200-kilometer journey from Varanasi to Dibrugarh. It traversed 27 river systems across five Indian states and Bangladesh.

India's Aviation Industry

➲ India's domestic air passenger traffic reached a historic milestone, surpassing 5 lakh passengers in a single day in 2024.

➲ Over the past decade, domestic air passenger traffic has grown 10-12% annually.

➲ India boasts 13–18% of women pilots, which ranks among the highest globally.

➲ Since 2016, the UDAN scheme has operationalised 619 routes and connected 88 airports.

➲ In 2024, 102 new routes were launched, including 20 in the North East.

Edible Oils in the India's Economy

➲ Contributes about 5-6% of the world's oilseeds production.

➲ Total consumption stood at around 25.5 million tonnes.

➲ India imports 55-60% of its edible oil requirements.

NMEO-OP

➲ It aims to increase oil palm cultivation from 3.7 lakh hectares to 10 lakh hectares by 2025-26.

➲ India aims to boost the domestic oilseed production to 70 million tonnes by 2030-31 from the current 39 million tonnes.

World Economic Outlook Report

➲ **India's Growth outlook:** 6.2 percent in 2025 and 6.3 percent in 2026.

➲ **Global Growth outlook:** 2.8 percent in 2025 and 3.0 percent in 2026.

Nano-Sulphur

➲ Increases the yield of mustard by 30-40%.

India's Air Pollution Concern

➲ Thirteen of the world's top 20 most polluted cities are in India.

➲ India is the fifth most polluted country in the world

➲ Delhi continues to be the most polluted Capital city in the world.

Plastic Pollution

➲ Over 11 million metric tons of plastic find their way into the oceans annually,could triple by 2040.

Energy Statistics India 2025

➲ Electricity losses due to transmission and distribution decreased significantly from 23% in 2014-15 to 17% in 2023-24.

➲ Coal remains dominant, with 79% of total domestic energy supplied and 60.21% share in TPES.

➲ Renewable Energy potential reached 21,09,655 MW

➲ Per capita energy consumption increased to 18,410 MJ/person, a 25% rise in 10 years.

India's Shipping Sector

➲ **Cargo Traffic Growth:** Coastal cargo traffic surged by 119% from 2014-2024, with a target of 230 million tonnes by 2030.

➲ **Achievements:** increased cargo handling capacity by 103% in the last decade.

➲ India's port ranking improved from 54th in 2014 to 38th in 2023, with nine Indian ports now in the top 100 globally.

➲ India has outlined investments of US$ 82 billion in port infrastructure projects by 2035 to bolster the maritime sector.

India-USA Trade: Key Highlights

➲ **Total Trade:** $129.2 billion in 2024.

➲ **US Exports to India:** $41.8 billion, up 3.4% from 2023.

➲ **US Imports from India:** $87.4 billion in 2024, up 4.5% from 2023.

➲ **Trade Deficit:** $45.7 billion in 2024, a 5.4% increase over 2023.

➲ India's exports to the US are only 2% of GDP.

World Health Day 2025

➲ 300,000 women lose their life due to pregnancy or childbirth each year over 2 million babies die in their first month of life and around 2 million more are stillborn.

➲ Based on current trends, 4 out of 5 countries are off track to meet targets for improving maternal survival by 2030.

➲ MMR (Maternal Mortality Ratio) in India dropped from 130 (2014-16) to 97 (2018-20) per 1,00,000 live births – a decline of 33 points.

➲ IMR (Infant Mortality Rate) dropped from 39 (2014) to 28 (2020) per 1,000 live births.

➲ NMR (Neonatal Mortality Rate) reduced from 26 (2014) to 20 (2020) per 1,000 live births.

➲ TB incidence fell by 17.7% between 2015 and 2023.

Time Use Survey

➲ Delhi residents spend the most time on work-related activities, averaging 563 minutes daily, far surpassing the national average of 440 minutes.

➲ Gender gap in unpaid domestic services, with women dedicating 289 minutes daily compared to men's 88 minutes.

Test Yourself

Objective Questions

Mains Questions

GS PAPER-I

1. The Jallianwala Bagh massacre, marking its 106th anniversary, remains a symbol of colonial repression. Reflect on its legacy in shaping India's freedom movement and post-colonial identity. *(10 Marks, 150 Words)*

2. BR Ambedkar's vision for social justice and constitutional morality continues to shape India's democracy. Discuss the relevance of his ideas in addressing contemporary social challenges. *(15 Marks, 250 Words)*

3. India's urban air pollution hotspots are linked to vehicular emissions, construction, and biomass burning. Discuss multi-sectoral strategies needed for sustainable air quality management. *(10 Marks, 150 Words)*

GS PAPER-II

4. The Waqf (Amendment) Act, 2025 aims to streamline the administration of Waqf properties. Examine the key provisions of the amendment and assess its impact on transparency and dispute resolution. *(15 Marks, 250 Words)*

5. The Supreme Court's verdict on the Tamil Nadu Governor's reservation of bills has implications for federalism and legislative procedure. Analyze the judgment and its significance for the functioning of constitutional offices. *(15 Marks, 250 Words)*

6. India's relations with Chile are marked by convergence in multilateral forums and growing economic engagement. Discuss the scope of India-Chile ties and the challenges in diversifying the relationship. *(10 Marks, 150 Words)*

7. The BIMSTEC Summit 2025 has renewed focus on regional connectivity and cooperation. Evaluate BIMSTEC's strategic importance in India's neighbourhood policy. *(15 Marks, 250 Words)*

8. The India-UAE strategic partnership has grown multifold in trade, defence, and diaspora engagement. Examine the key milestones in the bilateral relationship and emerging areas of cooperation. *(15 Marks, 250 Words)*

9. The Supreme Court's observation on the Speaker's role in anti-defection cases addresses the need for neutrality and time-bound decisions. Critically assess the court's recommendations in strengthening legislative integrity. *(15 Marks, 250 Words)*

10. The World Pandemic Treaty proposal finalised by WHO seeks to enhance global health governance. Examine India's stance on the treaty and its implications for future pandemic preparedness. *(10 Marks, 150 Words)*

11. The suspension of the Indus Waters Treaty by India marks a major diplomatic move. Analyze the rationale, legal validity, and strategic consequences of this decision in the backdrop of regional tensions. *(15 Marks, 250 Words)*

12. Regional Rural Banks (RRBs) play a key role in rural credit delivery. Examine the current challenges facing RRBs and suggest measures for their modernization and sustainability. *(10 Marks, 150 Words)*

13. India's growing air pollution crisis is a serious threat to public health and sustainable development. Critically evaluate government initiatives and suggest a way forward. *(15 Marks, 250 Words)*

GS PAPER-III

14. Stand-Up India, now completing 9 years, aimed to foster entrepreneurship among SCs, STs and women. Evaluate the achievements, limitations, and future scope of the scheme. *(15 Marks, 250 Words)*

15. The Energy Statistics India 2025 report presents key insights into India's energy production and consumption trends. Discuss the implications of the report for India's energy transition strategy. *(10 Marks, 150 Words)*

16. India's border with Jammu & Kashmir is being strengthened through an advanced electronic surveillance system. Examine its strategic significance and challenges in implementation. *(10 Marks, 150 Words)*

17. The Digital Threat Report 2024 highlights rising vulnerabilities in India's cyberspace. Analyze the major findings and assess the need for robust cyber defense architecture. *(15 Marks, 250 Words)*

18. The Indo-Pacific strategy offers India new strategic and economic opportunities. Evaluate the role of Latin American partners like Chile in India's expanded outreach. *(10 Marks, 150 Words)*

19. In the post-pandemic era, digital entrepreneurship and surveillance have grown simultaneously. Discuss the balance between promoting digital innovation and ensuring privacy safeguards. *(15 Marks, 250 Words)*

20. Disaster preparedness and response frameworks in India are being redefined post-COVID. Analyze the lessons for local governance and inter-agency coordination in light of the pandemic treaty proposals. *(15 Marks, 250 Words)*