CURRENT AFFAIRS WEEKLY

WEEK 3
APRIL 2025

MAINS ARTICLE

GS-II

- OPERATION MEGHDOOT AT 41
- TELANGANA FIRST INDIAN STATE TO IMPLEMENT SC SUB-CATEGORISATION
- FEDERALISM IN CRISIS
- SC LIMITS GOVERNORS' POWER TO DELAY BILLS
- SEPARATION OF POWERS IN INDIA (JUDICIARY VS LEGISLATURE)
- INDIA JUSTICE REPORT (IJR) 2025
- INDIA'S PUBLIC HEALTH LABOUR CRISIS

GS-III

- THE DILEMMA OF GROWTH WITHOUT INNOVATION
- INDIA RETHINKING ITS GLOBAL TRADE APPROACH
- UNDER-REPORTING OF INCOME BY WEALTHY INDIANS
- INDIA–US TRADE TALKS
- THE DIRE WOLF IS BACK
- STUBBLE BURNING THROUGH THE LENS OF GOVERNMENT POLICY
- INDIA'S CLIMATE FINANCE STRATEGY

PRELIMS ARTICLE

ART & CULTURE

- Kerala Temple Opens Sacred Space to All Communities
- Rongali Bihu 2025
- Bhagavad Gita, Natyashastra enter UNESCO's Memory of the World Register
- World Heritage Day

HISTORY

- ASI Launches Underwater Study to Unearth Ancient Dwarka

INTERNATIONAL RELATIONS

- AIKEYME 2025

POLITY & GOVERNANCE

- Kerala first state to achieve Digital Literacy
- US introduces bill to disband education department
- Chin State
- Odisha's Unified Health Coverage Scheme

ECONOMY

- Kerala's Dharmadam declared extreme poverty-free
- Index of Industrial Production (IIP)
- Equity Inflow Dips
- Insider Trading

ENVIRONMENT

- Flue Gas Desulphurisation (FGD)
- Leptobrachium aryatium, New frog species
- Clinidium Lalitae

SCIENCE & TECHNOLOGY

- Sign life on K2-18b
- Vehicle-to-Grid (V2G) Technology
- BatEchoMon (Bat Echolocation Monitoring)
- DRDO's Glide Bomb 'Gaurav'
- Laser-DEW System (Sahastra Shakti)
- GPS Spoofing
- Type 5 Diabetes
- India's first-ever seed germination database

DISCLAIMER

*T*he current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

CONTENT
3rd WEEK - APRIL, 2025

SECTION - A

SECTION - B

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SECTION -A

MAINS ISSUES

OPERATION MEGHDOOT AT 41

Context

April 13, 2025, marks **41 years since India launched Operation Meghdoot (1984)** and captured the **Siachen Glacier**.

Strategic Significance of Siachen

- **Siachen Glacier** is a **76-km long glacier** in the **Karakoram Range** of **Ladakh**.
- Located at a height of around 20,000 feet in the Karakoram Mountain range, the Siachen Glacier is known as the **highest militarised zone around the world**.
- It lies between:
  - **Pakistan-occupied Kashmir (PoK)** in the west
  - **Shaksgam Valley** (illegally given to China by Pakistan in 1963) in the north
  - **Depsang Plains** and **LAC with China** in the east
- **Strategic wedge**: Siachen sits like a "strategic wedge" between Pakistan and China — giving India control over a crucial triangular zone in the high Himalayas.
- **The region controls key high-altitude terrain**. It overlooks:
  - **Gilgit-Baltistan (PoK)** on the west
  - **Depsang Plains** and **Karakoram Pass** on the east
  - **Shaksgam Valley** (ceded to China) on the north
- Indian Army dominates **Saltoro Ridge**, giving a military advantage over both Pakistan and China.

What's the Dispute?

- After the **1947-48 war**, the **Karachi Agreement (1949)** defined a **Ceasefire Line (CFL)**.

- After the **1971 war**, the **Shimla Agreement (1972)** renamed it **Line of Control (LoC)**.
- BUT — from **Point NJ 9842** (a map reference), the LoC is **not clearly defined**.
- The CFL said it extends "northwards to the glaciers" — but **India and Pakistan interpret this differently**:
  - **Pakistan**: Wants the line to move **northeast to Karakoram Pass** (which would give it control of Siachen).
  - **India**: Interprets "northwards" as running along the **Saltoro Ridge**, which it captured in 1984.

How Did India Capture Siachen? (Operation Meghdoot)

- On **April 13, 1984 (Baisakhi Day)**, under PM **Indira Gandhi**, India launched **Operation Meghdoot**.
- Indian troops from **4 Kumaon Regiment** were airlifted to **Bilafond La** (a 17,880 ft mountain pass).
- The Indian Army **occupied key passes** along the **Saltoro Ridge** and **raised the national flag**.
- Pakistan tried to recapture these areas but failed.
- Today, nearly all the aircraft of the **Air Force, including Rafale, Su-30MKI, Chinook, Apache, Advanced Light Helicopter (ALH) Mk III and Mk IV, Light Combat Helicopter (LCH) Prachand, MiG-29, Mirage-2000, C-17, C-130 J, IL-76 and An-32** operate in support of **Operation Meghdoot.**

Why is China Now a Bigger Concern?

- China, not Pakistan, is now seen as the **bigger threat** around Siachen.
- **Chinese PLA** could launch a **westward military thrust** through the **Depsang Plains** to:

Figure No. 01

- ➤ **Cut off the DSDBO Road** (India's lifeline to Karakoram Pass)
- ➤ **Capture Saser La**, which could threaten the **Siachen base camp**
- ◉ **China's Silent Expansion Near PoK:** China is present in **PoK** under the **China-Pakistan Economic Corridor (CPEC)**. **Karakoram Highway** (part of CPEC) passes close to Siachen. China also sends workers as "dam and road builders" — increasing influence near **Indian positions**.
- ◉ India has deployed **tanks, artillery, advanced systems and troops** to stop such a move.
- ◉ **Strategic Infrastructure Nearby: DSDBO Road (255 km)** links Leh to **Daulat Beg Oldie**, near Karakoram Pass. If China cuts this road, Indian access to northern Ladakh is threatened.

TELANGANA FIRST INDIAN STATE TO IMPLEMENT SC SUB-CATEGORISATION

Context

Telangana became the first Indian state to **implement sub-categorization within the Scheduled Castes (SC)** **reservation system.** This initiative aims to distribute the **existing 15% SC reservation more equitably among various sub-castes** based on their socio-economic status and representation in education and employment.

Background

- ◉ Historically, the SC reservation system treated all SC communities as a single group.
- ◉ However, disparities existed, with some sub-castes benefiting more than others.
- ◉ Recognizing this, the Supreme Court, in a landmark judgment (2024), upheld the constitutional validity of **sub-classifying SCs for reservation purposes**. This decision overruled the **2004 E.V. Chinnaiah verdict**, which had previously deemed such sub-classification impermissible.
- ◉ Following the Supreme Court's decision, Telangana enacted the **Scheduled Castes (Rationalisation of Reservations) Act, 2025.**
- ◉ **The Three Groups:** Based on recommendations from a commission led by retired High Court judge **Justice Shameem Akther**, the 59 SC sub-castes in Telangana have been divided into three groups:
  - ➤ **Group I**: Comprises 15 sub-castes identified as the most disadvantaged, constituting approximately 0.5% of the state's population. They have been allocated 1% reservation.

> **Group II**: Includes 18 sub-castes that have received marginal benefits historically. This group has been granted 9% reservation.

> **Group III**: Consists of 26 sub-castes that have been relatively better placed in terms of opportunities. They have been assigned 5% reservation.

What is Sub-classification?

◎ Sub-classification involves breaking down a broader category, such as backward classes (BCs) or SCs, into distinct sub-categories like more BCs or SCs.

◎ Article 14 **of the Constitution** permits sub-classification within reserved categories as it recognises **Scheduled Castes, Scheduled Tribes and Other Backward Classes as a "backward class of citizens."**

Significance and Broader Implications

◎ This move addresses **long-standing concerns** about equitable distribution of reservation benefits among SC sub-castes.

◎ It sets a precedent for other states to consider similar measures, especially in light of the Supreme Court's affirmation of the constitutional validity of such sub-classifications.

◎ Politically, it also reflects efforts to consolidate support among marginalized communities by ensuring that affirmative action policies reach the most disadvantaged groups effectively.

FEDERALISM IN CRISIS

Context

Violent protests broke out in Murshidabad district, West Bengal over the **Waqf (Amendment) Act,** leading to communal tensions, deaths, and property destruction. Allegations of police inaction, mob violence, and selective targeting of community properties raised serious governance and federal concerns.

Federalism: Breakdown in Law and Order

◎ Law and order is a **State subject (List II, Seventh Schedule)** under the Indian Constitution.

◎ However, when **state machinery fails** or is **unable to control violence**, the **High Court or Centre can step in** to ensure rule of law.

◎ In West Bengal, State police allegedly failed to respond promptly to distress calls. High Court observed that it "**cannot turn a blind eye**" and ordered **Central Force deployment** under **Article 226**.

Relevant Constitutional Provisions:

◎ **Article 355** – Centre's duty to protect States against internal disturbance

◎ **Article 226** – High Court's power to enforce fundamental rights

◎ **Article 256** – Centre's power to ensure State compliance with laws

◎ However, it raises questions about:

> **State responsibility in maintaining order**

> Role of the **judiciary in federal checks**

> Need for **coordination between State and Centre** during internal disturbances

Pattern of Communal Mobilisation over Property Issues

◎ Disputes over **religious or community property** often **escalate into violence**, especially when:

> There is **unclear legal jurisdiction**

> Communities feel **excluded from policy dialogue**

◎ In this case, **alleged targeted attacks** on certain community homes and businesses show:

> Risk of **communal polarization**

> Failure to uphold the **secular mandate** of the State

SC LIMITS GOVERNORS' POWER TO DELAY BILLS

Context

In a key ruling, the Supreme Court set clear limits on governors' powers, holding they **cannot indefinitely delay action on state bills**. The court addressed growing concerns over **governors misusing discretionary powers** to obstruct elected state governments.

Supreme Court's Judgement (2024)

◎ **Governor must return bills "as soon as possible"** with reasons if withholding assent.

◎ If a bill is **repassed by the Assembly**, the **Governor is constitutionally bound to give assent** — cannot reserve it for the President.

◎ Indefinite delays or inaction are **unconstitutional**.

◎ **Governor's legislative conduct is subject to judicial review**.

◎ Used **Article 142** to grant **"deemed assent"** to 10 bills, bypassing the Governor entirely.

◎ **End of the Governor's 'Pocket Veto'**: The court **outlawed indefinite delays**, effectively ending the misuse of **pocket veto** by governors. It asserted that **"withholding without time limit or reason"** violates the Constitution. It introduced **timeframes** for actions:

> 1 month to assent or act on ministerial advice.

> 3 months to return/reserve bills if not following advice.

> 1 month to assent after repassage.

Why this ruling matters?

◎ The ruling reinforces **federalism and democratic accountability**. It protects **elected state legislatures** from unelected constitutional heads.

◎ It provides legal clarity amid rising **Centre–State tensions** (similar issues in Kerala, Punjab, Telangana, West Bengal).

◎ Furthermore, it strengthens the role of **judicial review in executive delay tactics**.

Key Provisions

◎ **Article 200:** Governor's powers to assent, withhold, or reserve state bills.

◎ **Article 163**: Governor to act on aid and advice of Council of Ministers (limited discretion).

◎ **Article 254(2)**: Bills conflicting with central laws may require Presidential assent.

◎ **Article 142:** Supreme Court's power to do "complete justice"; used to grant deemed assent.

SEPARATION OF POWERS IN INDIA (JUDICIARY VS LEGISLATURE)

Context:

Vice President Jagdeep Dhankhar recently criticised the Supreme Court for setting timelines for the President to grant assent to bills and described the Court's use of **Article 142** as a **"nuclear missile against democratic forces."** These remarks revive the **foundational debate on the doctrine of separation of powers** enshrined in the Indian Constitution.

Legislature's Perspective:

◎ **Legislative Sovereignty:** Parliament is the **primary law-making body** in a representative democracy. It derives its legitimacy from the people. The Vice President's concerns reflect fears that **judicial actions are intruding into the legislative domain**, affecting democratic processes.

◎ **Presidential Discretion and Executive Primacy**: The legislature, through the **Council of Ministers**, advises the President. **Article 74(1)** mandates the **President to act on this advice**. Imposing judicial timelines on the President could be viewed as a restriction on executive functioning and an erosion of constitutional conventions.

◎ **Accountability vs Overreach:** Elected representatives are directly accountable to the people through elections. If judges dictate legislative or executive timelines, it can **shift the balance of accountability**. The legislature fears it will be answerable for decisions not entirely under its control.

Judiciary's Perspective:

◎ **Interpretation vs Legislation:** While the judiciary cannot legislate, it has the power to **interpret and enforce constitutional norms**. In the Tamil Nadu case, it held that indefinite withholding of assent to bills violates the spirit of the Constitution — thus, it acted within its interpretative role.

◎ **Use of Article 142:** Article 142 empowers the Supreme Court to deliver justice where the letter of the law is silent or insufficient. In the absence of a fixed time limit for gubernatorial assent, the Court filled the constitutional vacuum to uphold **federalism** and legislative supremacy of elected assemblies.

◎ **Judicial Independence**: The judiciary's role is to act as a check on potential executive or legislative excesses. It invokes constitutional morality to prevent misuse of authority, such as arbitrary delay in bill assent, which may undermine democratic processes in states ruled by opposition parties.

What is the 'Core Issue' (Inaction as Constitutional Evasion)?

◎ **Constitutional Silence ≠ Inaction License**: Articles 200 and 201 do not prescribe a timeline for the Governor or President to act on bills. However, indefinite silence effectively amounts to a **pocket veto,** violating democratic and federal principles.

◎ **Federal Structure and Political Abuse:** When a centrally appointed Governor stalls state bills, especially in opposition-ruled states, it raises serious questions on the **misuse of constitutional positions**. Judicial intervention seeks to protect states' autonomy and the **"will of the people."**

◎ **Invisibility of Inaction**: Unlike active decisions, delays leave no paper trail and are harder to challenge. Courts stepping in to counter inaction is not overreach but a constitutional necessity to prevent paralysis of democratic governance.

🔍 FACT BOX

Separation of Power

◎ Separation of powers is a fundamental principle of democratic governance that involves distributing the functions of government among different branches:

▸ **Legislative:** Parliament (Lok Sabha and Rajya Sabha), State legislative bodies

▸ **Executive:** President (central level), Governor (state level)

▸ **Judicial:** Supreme Court, High Court and all other subordinate courts

◎ This distribution aims to prevent the concentration of power in any single branch and to ensure that each branch operates independently yet cooperatively.

◎ While the Indian Constitution **does not explicitly use the term "separation of powers**," it implicitly incorporates the concept by allocating distinct functions and powers to the Legislature, Executive, and Judiciary.

◎ Separation of powers is not absolute. The Constitution establishes a functional overlap to ensure cooperation and checks.

Legislative Checks	Executive Checks	Judicial Checks
➤ **No-Confidence Motions:** The government must resign if it loses the confidence of the majority in Parliament. ➤ **Question Hour and Censure Motions:** Ministers must answer questions posed by Parliament members, and Parliament can express disapproval of the Executive's actions through censure motions.	◉ **Ordinances:** The Executive can issue ordinances during **Parliamentary recesses**, though these must be approved by Parliament to remain effective. ◉ The Executive operates within the framework set by the Legislature and is **subject to judicial review** of its actions.	◉ **Article 13**: If a statute is arbitrary or unconstitutional, the judiciary has the authority to invalidate it. Additionally, it has the authority to deem unconstitutional presidential actions void. ◉ **Impeachment and Removal Procedures:** Articles 61 and 124(4) of the Constitution detail the impeachment procedures for the President and Supreme Court judges, respectively.

Checks and Balances Mechanisms

◉ Checks and balances are **fundamental mechanisms** within a democratic system that prevent any single branch of government from gaining too much power.

◉ In India, these mechanisms are essential for maintaining a balanced governance structure where the **Legislature, Executive and Judiciary operate independently yet interdependently.**

◉ The **Indian Constitution's Doctrine of Checks and Balance** was introduced by the Supreme Court in the 1993 decision of *Kannadasan v. Tamil Nadu State.*

(See Table No. 01 above)

INDIA JUSTICE REPORT (IJR) 2025

Context

The **India Justice Report (IJR) 2025** has once again spotlighted the **severe overcrowding in Indian prisons**, the **growing number of undertrial prisoners**, and the **persistent shortfalls in judicial, legal aid, and prison reforms**. This is especially alarming as it comes amidst **global scrutiny of India's prison conditions**, which has even impacted high-profile **extradition cases**.

Notably, **two jails in Delhi's Tihar complex** are operating at over **400% capacity**, and across India, **undertrials form 76% of the prison population**, raising constitutional and human rights concerns.

Key Findings of the India Justice Report 2025 (IJR 2025)

◉ Overcrowding and Infrastructure Crisis

  ➤ **176 prisons** have an occupancy rate of **over 200%.**

  ➤ **12 prisons** are running at **400% capacity** or more.

  ➤ **Tihar Jail's Central Jails 1 and 4** have occupancy rates of **411%** and **467%**, respectively.

  ➤ **National average prison overcrowding** stands at **131%**.

    ♦ Only **68% of inmates** have access to **adequate sleeping space**.

◉ **Undertrial Crisis:** Undertrial inmates form 76% of the total prison population — the highest ever. In Delhi, undertrials make up 91% of the jail population. In 6 states and UTs, more than half the inmates have been in jail for over 3 years. Trial pendency is highest in Bihar (71%), followed by West Bengal and Odisha.

◉ **Legal Aid Gaps**: 38% drop in paralegal volunteers since 2019. Despite new schemes like **Legal Aid Defence Counsel (LADC)** and jail clinics, resource allocation for community-based interventions is shrinking. Haryana showed the most improvement in legal aid delivery.

◉ **Judicial Infrastructure and Human Resource Deficit**: India has only 15 judges per million people (against the Law Commission's 1987 recommendation of 50). Vacancies in lower judiciary are a key factor in trial delays and undertrial incarceration.

◉ **Budget Utilisation Paradox**: Prison budget allocation increased by 156%, and budget for prisoners by 192% in the last decade. Per day expenditure per prisoner increased from Rs 62 to Rs 121. Despite this, fund utilisation is poor, and infrastructure has not kept pace with rising demand.

What Does the IJR 2025 Tell Us About Indian Prisons?

◉ **Chronic Overcrowding, a Structural Problem**: The persistent overcrowding of jails is not just a symptom of crime, but a failure of legal processes, administrative delays, and judicial vacancies. The absence of effective bail systems, and lack of fast-track courts for petty offences, exacerbates this.

◉ **Undertrials:** The fact that 3 out of every 4 inmates are undertrials — presumed innocent in law — reflects a grave miscarriage of justice. This raises ethical, legal, and constitutional questions, particularly under **Article 21 (Right to Life and Liberty)**.

◉ **Legal Aid Mechanism is Uneven and Underperforming**: While initiatives like LADC systems and Lok Adalats are commendable, the erosion of paralegal and community legal networks shows a disconnect between policy vision and on-ground implementation.

◉ **Poor Prison Conditions Affect Diplomacy and Human Rights Image**: As noted by former SC judge Justice Lokur, India's poor prison conditions are cited in foreign courts to block extraditions — this has serious implications for transnational justice and India's international credibility.

◉ **Budget Increases Without Outcome-Focus is Futile**: The near doubling of prisoner-related expenditure hasn't led to better living standards or rehabilitation programs. This points to poor planning, lack of monitoring, and absence of accountability in the prison administration system.

◉ **Gender & Diversity Improvements Are Welcome but Not Sufficient:** Progress like a **rise in women in policing and judiciary (38%) is notable**. But the absence of adequate infrastructure, such as women's help desks in all stations, separate facilities in jails, or rehabilitation for marginalized groups, makes such progress fragile.

INDIA'S PUBLIC HEALTH LABOUR CRISIS

Context

For over two months now, a section of Kerala's 26,125-strong community of Accredited Social Health Activists (ASHAs) have been on a day-night agitation on the streets demanding better remuneration and retirement benefits. While the agitation gained much attention and was also raised in Parliament, the issues raised by the ASHAs remain unresolved.

Who are ASHA workers?

◉ ASHAs or Accredited Social Health Activists are female health workers who work at the village level.

◉ They are part of the National Health Mission which started in the year 2005.

▣ Their key tasks include:

➤ Mobilising women for institutional deliveries and antenatal care

➤ Supporting immunisation and family planning

➤ Promoting hygiene and nutrition

➤ Managing basic health data

➤ Supporting outreach during public health emergencies, as seen during COVID-19

◉ India has more than ten lakh ASHA workers. They form the backbone of the rural health system, especially in states with low doctor-patient ratios and limited infrastructure. Yet, they are still legally considered "volunteers", which means they do not get a fixed salary, job security, or social protection.

Key Issues in Focus

◉ **Informalisation of Public Sector Work:** ASHAs are technically government service providers but legally remain outside the formal workforce. This blurs the line between volunteerism and labour exploitation. It reflects a broader trend of informalisation of work in essential public services.

◉ **Gender and Labour Rights:** ASHAs are all women, and their under-compensated work reflects the undervaluation of women's labour, especially in care work. This also reinforces systemic gender inequality in the labour market.

◉ **Centre-State Fiscal Politics:** Health is a state subject under the Constitution. But national schemes like NHM depend on central funding. When the Centre delays payments or caps its share, states are forced to make tough choices. This case shows how vertical fiscal imbalance impacts service delivery and labour welfare.

◉ **Public Health Capacity and Soft Infrastructure:** ASHAs are essential for India's health outcomes — from maternal care to vaccination drives. Yet, their working conditions show a mismatch between policy intent and state capacity. Without investing in this soft infrastructure, public health goals cannot be achieved.

Required Measures (Way Forward)

◉ **Regularisation with Safeguards:** The government can gradually absorb ASHAs into the health system as contract or auxiliary staff with job protections, insurance, and pensions.

◉ **Reform NHM Employment Model:** The National Health Mission should be restructured to ensure guaranteed payments, annual revision of incentives, and a clear grievance redressal mechanism.

◉ **Ensure Centre-State Financial Coordination:** Timely release of NHM funds and a more flexible funding model is essential. States should be allowed to innovate while the Centre guarantees minimum standards.

◉ **Institutional Dialogue:** Instead of ignoring or discrediting unions like the Kerala ASHA Health Workers' Association, governments should engage with them to develop sustainable models of worker inclusion and welfare.

THE DILEMMA OF GROWTH WITHOUT INNOVATION

Context

Union Commerce and Industry Minister Piyush Goyal's recent remarks at the *Startup Mahakumbh* 2025 have reignited a national debate: *Are Indian startups innovating enough or merely scaling convenience?* By highlighting concerns that startups are focusing excessively on low-tech services like grocery and ice-cream delivery, the Minister underscored a deeper tension within India's economic trajectory— **whether its startup ecosystem is pushing the frontier of innovation or plateauing in market replication.**

The state of Indian Startups

◉ India has earned its place as the 3rd largest startup hub globally, with over 100 unicorns shaping the future of innovation and entrepreneurship.

◉ Recognised as a powerhouse of entrepreneurial spirit, the country boasts of 157,066 startups acknowledged by the department for promotion of industry and internal trade (DPIIT) with more than 1.6 million jobs created.

◎ However, Indian startups for being too narrowly focused on **low-tech, consumer-facing sectors** like grocery and ice cream delivery, and not much focused on real 'innovation'.

What counts as innovation?

◎ Innovation in the startup context is not monolithic. It can be categorized as:

➤ **Incremental innovation** (e.g., improving delivery logistics)

➤ **Disruptive innovation** (e.g., ride-sharing or fintech platforms)

➤ **Deep-tech or science-led innovation** (e.g., AI chips, quantum computing, 3D manufacturing)

◎ Piyush Goyal's critique is implicitly aimed at the **lack of deep-tech innovation**—where startups serve as **bridges between fundamental science and commercial application**.

Why is Deep-Tech Innovation Scarce?

◎ High capital requirements

◎ Long gestation periods

◎ Absence of early revenue

◎ Need for skilled researchers and advanced infrastructure

◎ Lower risk appetite among Indian VCs and banks

➤ Despite over 1,65,000 startups, only a small fraction operate in robotics, clean energy, AI/ML, or advanced manufacturing. This is not for lack of ambition, but due to **ecosystem constraints**—a classic structural bottleneck.

Innovation and the Role of Capital:

◎ **Domestic vs Foreign Capital Divide:** India's startup ecosystem is primarily funded by foreign venture capital (VCs)—mostly from the U.S., Japan, and China. Domestic capital, especially risk capital from Indian investors or institutions, remains scarce. Piyush Goyal's call for greater domestic investment points to a need for financial sovereignty and resilience.

◎ **Short-Termism in Indian Capital:** Indian capital tends to chase:

➤ Fast-scaling platforms

➤ Low-capex ventures

➤ Proven business models from the West

◎ This short-term orientation undermines experimental and patient capital, which is essential for building futuristic technology and global competitiveness.

◎ **Structural Problem in VC Logic**: Venture capital logic often requires:

➤ Scalability within 3-5 years

➤ Exit via acquisition or IPO

➤ Demonstrable market traction

➤ Deep tech doesn't align neatly with this. Without IP-driven competitive advantage, investors will hesitate. Therefore, market failure in venture funding limits the types of innovation pursued.

Required Measures (Towards a Mature Innovation Ecosystem)

◎ **Strategic Deep Tech Missions**: There is need to lnk startups to national missions (clean energy, space, semiconductors).

◎ **Reform Venture Funding Logic**: Provide blended finance (government + VC) for patient capital in R&D.

◎ **Encourage Indian LPs (Limited Partners)**: The government should incentivise Indian family offices, banks, pension funds to invest in VC.

◎ **Decentralised Innovation Clusters**: Build regional tech hubs linked with local universities.

◎ **IP and Patent Ecosystem**: There is need to strengthen India's IP infrastructure and expedite patent approvals.

◎ **Regulatory Sandboxes**: Let startups test products without full compliance during early stages.

◎ **Enhance Corporate Governance**: Cases like Byju's show the need for stronger transparency and audit norms.

🔍 FACT BOX

Comparison with China and the United States

China's Model: Techno-Nationalism and Scale

➤ Centralised planning

➤ Heavy state subsidies for AI, EVs, chip fabrication

➤ Protected domestic markets

➤ Strong incentives for private players to align with national goals

India lacks such strategic clarity, though it aspires to technological self-reliance.

U.S. Model: Risk-Tolerant Capitalism

➤ Deep and patient private capital

➤ University-VC-startup triad

➤ National procurement (NASA, DARPA) to support deep tech

India has parts of both models, but lacks the **institutional cohesion** and **mission-driven orientation** of either.

INDIA RETHINKING ITS GLOBAL TRADE APPROACH

Context

External Affairs Minister S. Jaishankar has called for **accelerated trade deals with Western economies**, following the **US's new import tariffs** under the **Trump**

Tariffs 2.0 policy. His remarks reflect India's shift in **strategic trade alignment** and highlight the urgency in finalising **free trade agreements (FTAs)** with the **US, EU, and UK** amid rising **US–China rivalry**.

Why this shift is significant?

- For many years, India was more open to trading with countries in East and Southeast Asia (like China), but that openness led to **cheap imports hurting Indian industries**, especially small businesses.

- India is now accelerating trade negotiations with the US, EU, and UK, recognising that these economies offer **rule-based systems**, legal contract enforcement, and higher absorption for value-added exports.

- **India has historically been** hesitant on FTAs **due to fears of import surges and industry backlash (e.g., RCEP withdrawal).**

- But today's shift is *not ideological,* it's strategic and necessity-driven, powered by:
  - ‣ China's overcapacity export model
  - ‣ **Fear of being excluded from Western supply chains**
  - ‣ **The need to** anchor domestic reforms to global competition

Why the timing is perfect for the shift?

- **Disruption:** Protectionist waves, supply chain vulnerabilities, and rising geopolitical competition have severely disrupted international trade in recent years.

- **Bipolar Competition:** The world is moving into a "US vs China" economic rivalry, and supply chains are shifting. India has a chance to replace China in some areas — but it must act fast. FTAs can help India become part of trusted global supply chains and reduce dependency on uncertain markets.

- **Demography**: India is entering its **prime-age labour force boom (25–54 yrs)**, just as China's workforce begins to shrink.

- **Geopolitics**: The West wants to **de-risk supply chains away from China**, and India is among the few with both **scale and democracy**.

- **Technology**: India has the human capital for **semiconductors, AI, and clean tech manufacturing**, but lacks global supply chain access — which FTAs can unlock.

🔍 FACT BOX

Steps taken by India to diversify trade

- **FTAs:** India is negotiating Free Trade Agreements (FTAs) with USA, European Union (EU), United Kingdom (UK) and others. These deals will help India to export more textiles, medicines, IT services, and food products and get easier access to rich and stable markets.

- **Restarted Trade Talks with New Zealand**: After 10 years, India and New Zealand have restarted FTA talks. Earlier, India was cautious because of its **dairy sector**, which supports many small farmers. Now, both sides are open to compromise.

- **Stronger Trade with Australia**: India signed a trade deal (ECTA) with Australia in 2022. The goal is to increase trade from **USD 31 billion to USD 50 billion.**

UNDER-REPORTING OF INCOME BY WEALTHY INDIANS

Context

A recent study (*Delhi School of Economics*), reveals that **India's wealthiest individuals** significantly underreport their income relative to their wealth. This underreporting leads to a **regressive tax structure** and underestimation of income inequality.

Key Findings:

- **Inverse Relationship between Wealth and Reported Income**: The study found that as family wealth increases by 1%, the reported income-to-wealth ratio decreases by more than 0.6%.

- **Disparity in Income Reporting**:
  - ‣ Bottom 10% of families report incomes exceeding 188% of their wealth.
  - ‣ Top 5% report incomes just 4% of their wealth.
  - ‣ Top 0.1% report incomes less than 2% of their wealth.
  - ‣ Forbes-listed families report incomes less than 0.6% of their wealth.

- **Underreporting of Capital Income**: Over 90% of capital returns for the wealthiest families do not appear in reported incomes, indicating significant tax avoidance.

- **Tax Liability Discrepancies**:
  - ‣ Wealthiest 0.1% have tax liabilities amounting to approximately 0.7% of their wealth.
  - ‣ Super-wealthy individuals pay taxes that are less than 0.2% of their wealth, which is lower than the tax liability for middle-wealth groups.

- **Underreporting of Rental and Agricultural Income**: Rental incomes are frequently underreported, and some individuals misclassify taxable income as tax-free agricultural income to evade taxes.

- **Influence of Public Scrutiny**: Individuals exposed to higher levels of media and public scrutiny are more likely to report higher incomes, suggesting that visibility and accountability influence income disclosure practices.

Implications:

- This study highlights the need for policy reforms to address income underreporting and ensure a more **equitable tax system.**

◉ Enhancing transparency and accountability, especially among the ultra-wealthy, is crucial for reducing income inequality and increasing tax revenues.

Tax Evasion

◉ Tax evasion is the illegal act of deliberately and knowingly underreporting, concealing, or misrepresenting information on a tax return to reduce tax liability.

◉ It involves activities such as hiding income, inflating deductions, or using offshore accounts to avoid paying the taxes owed to the government.

◉ It is distinguished from **tax avoidance**, which is the legal practice of minimizing tax liability through legitimate means such as deductions and tax credits.

◉ **Steps taken by India to curb tax evasion:**
   ➤ Income-tax Act, 1961 (Search and Seizure)
   ➤ Treaties such as Double Tax Avoidance Agreement (DTAA)
   ➤ Tax Information Exchange Agreement (TIEA)
   ➤ Benami Transactions Informants Reward Scheme

INDIA–US TRADE TALKS

Context

India and the US signed the "Terms of Reference" for the initial phase of a new trade deal. This means they've agreed on a basic roadmap for talks. The aim is to finalise the first phase by the end of 2025 with a view to reaching bilateral trade worth USD 500 billion by 2030.

What is in the Agreement?

◉ India and the US signed the "Terms of Reference" for the initial phase of a new trade deal.
   ➤ This means they've agreed on a basic roadmap for talks.
   ➤ The aim is to finalise the first phase by the end of 2025.

◉ **Goal:** Both sides want to boost bilateral trade to USD 500 billion by 2030. (Current India–US trade is around USD 190–200 billion.)

◉ India has officially chosen the path of "trade liberalisation" with the US.
   ➤ This implies India is willing to reduce tariffs, open markets, and improve regulatory coordination, but in a phased and careful manner.

◉ The first round of virtual discussions is scheduled this month (April), and in-person talks are planned for mid-May 2025.

Trade Friction

◉ India and the United States are **strategic partners** in areas like defence, energy, Indo-Pacific cooperation, and technology.

◉ However, on trade issues, relations have **frequently faced tensions**.

◉ **Key issues over the past few years:**
   ➤ The **US has a trade deficit** with India (currently around **USD 45.6 billion**).
   ➤ Former President Trump has often referred to India as the "**tariff king**", claiming Indian duties on American goods are unfair.
   ➤ The **US removed India from GSP (Generalised System of Preferences)** in 2019, ending tariff-free access for many Indian exports.
   ➤ Tariffs were imposed on Indian goods like **steel, aluminium, and agricultural products**.
   ➤ Despite repeated negotiations, a **comprehensive trade deal was never finalised** in Trump's first term.

What This Means for India–US Relations?

◉ This trade engagement offers a **fresh opportunity** to rebuild economic ties.

◉ India is trying to:
   ➤ Resolve long-standing tariff disputes
   ➤ Retain its strategic autonomy
   ➤ Ensure fair and balanced access for its exporters

◉ The trade talks are also important because:
   ➤ They can **prevent further economic friction** under Trump's protectionist policies.
   ➤ A successful deal would strengthen the **overall strategic relationship**, including cooperation in the **Quad and Indo-Pacific**.

THE DIRE WOLF IS BACK

Context

In a significant development, a biotechnology firm in Texas (Colossal Biosciences), announced the birth of **genetically modified wolf pups** — claimed to be "resurrected" dire wolves, extinct for over 12,000 years.

What Has Been Achieved?

• Colossal Biosciences used **genome editing** to make **gray wolves** genetically resemble the extinct dire wolf:
   ➤ The **gray wolf (Canis lupus)** and the **dire wolf (Aenocyon dirus)** share **99.94% genetic similarity**.
   ➤ The company edited **20 loci across 14 genes** in the gray wolf genome, focusing on traits like size and fur — largely **cosmetic traits**.
   ➤ Embryos with edited DNA were implanted in **dog surrogates**, resulting in pups named **Romulus and Remus**.

◉ **However, o**nly **a fraction (possibly 0.02%)** of the actual genetic difference between the two species was altered. Crucially, **behavioral, social, and ecological traits** are shaped by the entire genome and environment — not just appearance.

◉ These are not true dire wolves, but genetically modified gray wolves **engineered to look like** them.

Why is De-Extinction Controversial?

◉ **Ecological Risks:** Habitats have changed drastically since these species went extinct. Climate, prey species, and ecosystems have evolved — reintroducing ancient species may cause unintended disruptions.

◉ **Genetic Uncertainty**: Partial genome editing can't recreate the full complexity of extinct species. Behavioral traits, immunity, reproduction, and adaptability are unknown variables.

◉ **Ethical and Regulatory Concerns**: Animal welfare during gene editing and surrogacy is questionable. May divert attention and funding from protecting endangered species and conserving ecosystems.

◉ **Policy Misuse**: Colossal's announcement was used to justify regulatory rollbacks in the U.S., as seen with the Trump-era rhetoric that "innovation, not regulation" would protect biodiversity.

Can Ancient Species Thrive in Today's World?

◉ **Conservation is shifting** toward high-tech interventions. Conservation efforts should prioritize ecosystem resilience, biodiversity corridors, and habitat protection — not nostalgia-driven rewilding of prehistoric species.

◉ Ancient species evolved under **specific environmental conditions** — temperature, food sources, competitors — that no longer exist.

◉ Modern human-dominated landscapes may **not support** their reintroduction.

◉ Risk of becoming **invasive species** or failing to survive is high.

About Extinct Dire Wolf

◉ The dire wolf was a very large carnivore that lived in the Americas about 10,000 years ago.

◉ Anatomically, it resembled a big, muscular, extra-toothy grey wolf: the species alive today that everyone thinks of when they say "wolf".

◉ Dire wolves belong to a **separate canid lineage**, not closely related to modern wolves.

　▸ They have since been reclassified as **Aenocyon dirus**, not *Canis dirus*.

　▸ Their evolution, behavior, and ecological niche were **fundamentally different** from gray wolves.

De-Extinction

◉ De-extinction, or resurrection biology, is the process of recreating extinct species using biotechnology.

◉ **Methods**:

　▸ **Cloning**: Cloning is creating a copy of cells.

　▸ **Genome editing**: Genome editing involves recreating extinct species by modifying the genome of a closely-related species, using the extinct species' genome. Advanced biotechnology such as CRISPR-cas9 could be used.

　▸ **Back-breeding:** In back-breeding, ancestral phenotypes may be resurrected after many generations, but the genes that underlie these phenotypes may differ from those that were present in the extinct species.

Genome Editing

◉ Genome editing technology creates hybrids between living and extinct organisms.

◉ Scientists insert edited DNA from an extinct species into the nucleus of a reproducing cell.

◉ They use this technique to resurrect more species, including those whose remains are not well-preserved.

◉ Genome editing blends the desired traits that made the species unique with genes from the donor species.

◉ That is why the resulting organism is not completely identical to the extinct species but is a hybrid.

STUBBLE BURNING THROUGH THE LENS OF GOVERNMENT POLICY

Context:

A recent study analyses the problem of stubble burning from the lens of 'governmentality' and market failure.

Why is stubble burning a recurring issue?

◉ Every year during **October and November**, parts of North India—especially the **Indo-Gangetic Plain**—experience a sharp spike in air pollution.

◉ This is due to a **combination of factors** like:

　▸ reduced wind movement

　▸ cooler temperatures

　▸ persistent emissions from vehicles and industries

◉ However, one **additional seasonal factor** significantly worsens the air quality: "**stubble burning".**

◉ After harvesting the paddy crop, many farmers in Punjab, Haryana, and parts of Uttar Pradesh burn the leftover straw (or "stubble") in their fields.

◉ **Impact**

　▸ **Pollution:** Stubble burning emits toxic pollutants in the atmosphere containing harmful gases like **Carbon Monoxide (CO), methane (CH4), carcinogenic polycyclic aromatic hydrocarbons, volatile organic compounds (VOC).**

➤ **Soil fertility:** Soil becomes less fertile and its nutrients are destroyed when the husk is burned on the ground

➤ **Heat penetration:** Stubble burning generates heat that penetrates into the soil, causing an increase in erosion, loss of useful microbes and moisture.

Why farmers still opt for it:

➤ Stubble burning **quickly clears the land in time for sowing wheat**, the next crop in the Rabi season.

➤ Burning stubble is **fast, cheap, and efficient for farmers** with limited time and money—but it's also disastrous for the environment and public health.

What does the new study say?

◉ A recent study looks at the problem from a different angle. Instead of just blaming individual farmers, they examine how government policies and market structures actually push farmers towards stubble burning.

◉ They use the concept of "**governmentality"**, developed by **French philosopher Michel Foucault,** which refers to how governments shape citizen behavior through indirect influence, rather than through direct control.

◉ In this case, farmers are encouraged—through policy incentives like the Minimum Support Price (MSP)—to grow only rice and wheat.

How the system works against the farmer

◉ **MSP and monoculture**: While MSP offers guaranteed prices for these crops, it also discourages **crop diversification**. Over time, this leads to **mono-cropping** (growing the same crop repeatedly), which makes managing crop residue more difficult.

◉ **No affordable alternatives**: While stubble burning is penalized, farmers are not provided viable, low-cost options like machinery or market incentives to recycle the waste.

◉ **Market dependence and exploitation**: Farmers often sell their crops through commission agents (arhatias) who control prices and access to credit. This creates a cycle of dependency and debt.

◉ **Double standards**: Farmers feel the government is quick to blame them for pollution but turns a blind eye to industrial sources of pollution. They see this as a **bias favoring urban over rural interests.**

◉ **Financial stress:** With input costs rising and MSP rates remaining stagnant (e.g., wheat MSP rose just 5% in a decade), farmers are under pressure to cut costs—and stubble burning is the cheapest way to clear fields.

What can be done?

◉ **Create a stubble market**: There is potential to turn stubble into something useful—like fuel pellets, packaging material, or fodder. Developing this market would make stubble economically valuable rather than a waste product.

Important Artificial Machines

◉ **Happy Seeder** (used for sowing of crop in standing stubble)

◉ **Rotavator** (used for land preparation and incorporation of crop stubble in the soil)

◉ **Zero till seed drill** (used for land preparations directly sowing of seeds in the previous crop stubble)

◉ **Bale**r (used for collection of straw and making bales of the paddy stubble)

◉ **Paddy Straw Chopper** (cutting of paddy stubble for easily mixing with the soil)

◉ **Reaper Binder** (used for harvesting paddy stubble and making into bundles)

◉ **Strengthen the value chain**: The government should help build the supply chain for stubble-based products. This includes supporting technologies, storage, processing units, and transportation.

◉ **Incentivize alternatives**: Subsidies or support schemes should make stubble-removal equipment like happy seeders and super straw management systems more accessible to small and marginal farmers.

◉ **Market reforms**: Farmers need a fair and transparent market system. Improving MSP mechanisms, reducing dependency on middlemen, and providing better price discovery could improve their financial health and decision-making.

INDIA'S CLIMATE FINANCE STRATEGY

Context

India is actively revising its climate finance approach in response to evolving global dynamics, particularly following the United States' withdrawal from the Paris Agreement in January 2025.

US's Emission Levels (UNEP Report 2024)

◉ The US is the **second largest carbon dioxide emitter** in the world currently (after China), but historically remains the largest polluter.

◉ The US is responsible for 20% of historical CO2 emissions globally between 1850 and 2022, with per capita emissions of 18 tCO2e/capita compared to the global average of 4.7 tCO2e/capita, according to the **United Nations Environment Programme's Emissions Gap report of 2024.**

US Withdrawal & Impact

◉ The United States' exit from the Paris Agreement has created a substantial void in global climate finance.

◉ Notably, the US had pledged significant contributions to the **USD 300 billion annual climate finance goal** and was a key participant in the **Loss and Damage Fund**, designed to support countries severely affected by climate change.

◉ The absence of US support places additional pressure on other developed nations, especially the European Union, to fulfill financial commitments.

India's Climate Finance Landscape

◉ India's climate initiatives have predominantly been financed through domestic resources. As of February 2024, India received approximately USD 1.16 billion from international climate funds, including:

➤ **Green Climate Fund (GCF):** USD 803.9 million

➤ **Global Environment Facility (GEF):** USD 346.52 million

➤ **Adaptation Fund:** USD 16.86 million

◉ Despite these contributions, the funding remains insufficient relative to India's climate action requirements.

◉ **Domestic Financial Commitments:** India has made substantial domestic investments in climate adaptation and mitigation:

➤ **Adaptation Expenditure**: In 2021-22, India allocated 5.6% of its GDP to climate adaptation efforts, amounting to approximately Rs 13.35 lakh crore.

➤ **Future Requirements**: The **Economic Survey 2024-25** estimates that India will need around Rs 56.68 lakh crore (approximately USD 700 billion) by 2030 for climate adaptation measures.

Strategic Financial Instruments

To bolster climate finance, India is leveraging various instruments:

◉ **Sovereign Green Bonds**: The Reserve Bank of India issued Rs 1,697.40 crore in 10-year Sovereign Green Bonds in the first half of 2024-25 to fund green infrastructure projects.

◉ **Blended Finance Models**: India is exploring concessional financing to attract private investments, thereby amplifying the impact of public funds.

◉ **Climate Finance Taxonomy:** The government is developing a taxonomy to standardize and enhance the transparency of climate-related financial flows.

Loss and damage

◉ "Loss and damage" is a term used in **UN climate negotiations** to refer to the consequences of climate change that go beyond what people can adapt to; for example, the loss due to rising sea levels or the loss of homes and lives during extreme floods.

◉ It covers both immediate climate disasters and slow onset events including cyclones, droughts and heatwaves, sea level rise, desertification, glacial retreat, land degradation, ocean acidification and salinization.

Other important Global Climate Funds

◉ **Green Climate Fund (GCF):** It was established to limit or reduce Greenhouse Gas (GHG) emissions in developing countries and to help vulnerable societies adapt to the unavoidable impacts of climate change.

◉ **Adaptation Fund (AF):** It was established under the Kyoto Protocol in 2001 and has committed USD 532 million to climate adaptation and resilience activities.

◉ **Global Environment Fund (GEF):** GEF has served as an operating entity of the financial mechanism since the Convention came into force in 1994.

➤ It is a private equity fund focused on seeking long-term financial returns through investments in clean energy under climate change.

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SECTION -B

QUICK BYTES

KERALA TEMPLE OPENS SACRED SPACE TO ALL COMMUNITIES

Context

In a significant move, the **centuries-old Pilicode Rayaramangalam temple** in Kasaragod district, Kerala, has opened its **inner quarter (nalambalam)** to devotees from all communities, marking the end of caste-based entry restrictions.

About the Temple

- Sree Rayaramangalam Bhagavathy temple is located at Thottam-Padne Road at Pilicode in Kasaragod district, Kerala.
- The temple is dedicated to Goddess Bhadrakali.
- Its rituals are managed by priests from the Kalagattathil illam, an ancestral Brahmin family.
- The temple has long adhered to strict customs.
- Only the tantri has access through the narrow passageway between the inner quadrangle and the sanctum sanctorum. Complex rituals are performed in that space.
- Traditionally, only Brahmins and Ambalavasis had unrestricted access to the nalambalam, while individuals belonging to certain other castes, including Nairs and the Maniyani community, were permitted entry only on specific ceremonial occasions such as poorolsavam and patolasavam.

RONGALI BIHU 2025

Context

Rongali Bihu, also known as Bohag Bihu, is being celebrated from **April 14 to April 20, 2025** in Assam. It marks the **Assamese New Year** and the beginning of the **agricultural season**, making it one of the most culturally significant festivals in the state.

About Rongali Bihu (Bohag Bihu)

- "Rongali" comes from "Rong" meaning **joy or happiness**, reflecting the vibrant and festive spirit of the celebration.
- **Rongali Bihu (Bohag Bihu) marks the onset of spring** and the **start of the sowing season** for farmers.
- It is a festival of **gratitude and hope**, where farmers seek blessings for a good harvest.

Pan-India Resonance

- Rongali Bihu coincides with other regional harvest/ New Year festivals:
  - **Baisakhi** (Punjab)
  - **Puthandu** (Tamil Nadu)
  - **Vishu** (Kerala)
  - **Pohela Boishakh** (West Bengal)

- It is part of the **triannual Bihu cycle**:
  - **Rongali Bihu (Bohag Bihu)** – April (spring/new year)
  - **Kati Bihu** – October (sowing season)
  - **Magh Bihu** – January (end of harvest)
- It is celebrated with **community feasts**, **folk songs (Bihu geet)**, and the famous **Bihu dance**, especially by the youth.

- Traditional attire and musical instruments like the *dhol*, *pepa*, and *gagana* are central to the festivities.
- Households are cleaned and decorated to welcome the New Year with prosperity and good luck.

BHAGAVAD GITA, NATYASHASTRA ENTER UNESCO'S MEMORY OF THE WORLD REGISTER

Context

The Shrimad Bhagavad Gita and Bharat Muni's Natyashastra have been inscribed in UNESCO's Memory of the World Register — a global initiative that preserves documentary heritage of outstanding value.

The Bhagavad Gita

- Bhagavad Gita is a **philosophical text** consisting of 700 verses in 18 chapters, embedded in the Bhishmaparva (Chapters 23–40) of the Mahabharata.
- It is found in the **sixth book** of the world's longest epic poem, the **"Mahabharata,"** the Gita was likely composed between the **third century B.C.E**. and the **third century C.E.**
- Written in **Sanskrit**, it is presented as a dialogue between Krishna and Arjuna on the battlefield of Kurukshetra.
- **Global Significance:** It is recognized as a spiritual-philosophical guide advocating:
  - ➤ Nishkaam Karma (selfless action)
  - ➤ Dharma (righteous duty)
  - ➤ Detachment and inner balance

The Natyashastra by Bharat Muni

- Natyashastra is the earliest literature on music and drama – written somewhere around 500 BC by Bharata Muni.
- Comprising **6000 couplets in Sanskrit** and spread over thirty-six chapters, Natyashastra's focus was on dance and drama, with music as an aid.
- It is associated with **Nāṭyaveda**, the sacred text of drama and performance.
- It categorically characterizes fundamentals such as *Natya, Vithi, Bhav, Vyabhichari Bhav, Satvik Bhav, Vibhav, Anubhav, Rasa, Rasa Sutra, Nishpatti, Model Spectator*, and highly spiritual concept of *Shantih.*
- It is preserved at the **Bhandarkar Oriental Research Institute**, Pune.
- **Core Concepts:**
  - ➤ **Nāṭya** (drama), **Abhinaya** (expression), **Rasa** (aesthetic essence), **Bhāva** (emotion), and **Saṅgīta** (music).
  - ➤ Introduces the **Rasa theory**—the foundation of classical Indian aesthetics.

What is the Memory of the World Register?

- It is an initiative by **UNESCO launched in 1992** to preserve **documentary heritage of global significance**.
- It includes manuscripts, archives, oral traditions, rare texts, and audiovisual materials that reflect the world's diverse cultural memory.
- India now has **14 entries** in this prestigious list.

WORLD HERITAGE DAY

Context

World Heritage Day is celebrated every year on **18th April** to honor and protect cultural and natural heritage. This year theme is "**Heritage under Threat from Disasters and Conflicts: Preparedness and Learning from 60 years of ICOMOS Actions.**"

About

- World Heritage Day is celebrated every year on **18th April**. It is also called the International Day for Monuments and Sites.
- The day is meant to honor and protect human heritage. It also appreciates the people and groups who work to preserve it.
- The day was started in **1982 by ICOMOS (International Council on Monuments and Sites).**
- Later, in **1983**, **UNESCO** officially adopted it.
- Every year, ICOMOS gives a special theme for the day. Based on this theme, people and groups hold events and activities around the world to celebrate and protect heritage.
- **World Heritage Convention: United Nations Educational, Scientific and Cultural Organization (UNESCO)** works to protect and preserve important cultural and natural heritage around the world. To help with this, UNESCO's member countries adopted the **World Heritage Convention in 1972.**
- **World Heritage Sites:** World Heritage Sites are special places on Earth that have great value for all of humanity. These can be **cultural, natural, or a mix of both.** They are protected under an international agreement led by **UNESCO.** UNESCO gives the World Heritage title to places that are culturally, historically or scientifically important.
  - ➤ As of October 2024, there are 1,223 World Heritage Sites across 196 countries (952 cultural, 231 natural, 40 mixed).
  - ➤ India has 43 **World Heritage Sites, with Agra Fort, Taj Mahal, Ajanta, and Ellora Caves** among the first listed in 1983.

History

Government's Initiatives to Promote India's Rich Cultural Heritage

- **Retrieval of Antiquities**: Archaeological Survey of India is committed to the protection of cultural property. Government has retrieved 655 antiquities from foreign countries from the year 1976 to 2024, of which 642 antiquities have been retrieved since 2014.

- **Adopt a Heritage' Scheme:** The "Adopt A Heritage" 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.

- **Building Monuments of National Importance**: India has 3,697 ancient monuments and archaeological sites declared of national importance.
    - ➤ The **Archaeological Survey of India (ASI)** is responsible for their conservation and maintenance. It also ensures basic amenities at these sites, such as pathways, signages, benches, facilities for differently-abled visitors, sound and light shows, and souvenir shops.

- **Revival and Redevelopment of Heritage Sites**: India has revived key heritage sites through conservation and development projects.
    - ➤ The **Kashi Vishwanath Corridor** in Varanasi, **Mahakaal Lok in Ujjain**, and **Ma Kamakhya Corridor** in Guwahati enhance pilgrim experiences and boost tourism.
    - ➤ The **Chardham Road Project** improves connectivity to sacred sites.
    - ➤ Additionally, projects in **Somnath and the Kartarpur Corridor** promote cultural heritage and easier access for devotees.

- **Must See Portal:** ASI has created a portal to showcase "Must-See Monuments and Archaeological Sites of India." It highlights nearly a hundred prominent sites, including World Heritage properties and UNESCO Tentative List sites.

- **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. So far, over 12.3 lakh antiquities and 11,406 heritage sites have been recorded.

- **Status of Classical Languages**: In 2024, the Government granted classical language status to Assamese, Marathi, Pali, Prakrit, and Bengali, raising the total to 11 classical Indian languages. This move reflects India's strong commitment to preserving its diverse and ancient linguistic heritage.

- **India's Literary Milestone on the MOWCAP Register**: In a historic achievement, three of India's literary treasures: **Ramcharitmanas, Panchatantra, and Sahrdayāloka-Locana**, were inscribed into the 2024 Memory of the World Committee for Asia and the Pacific (MOWCAP) Regional Register.

ASI LAUNCHES UNDERWATER STUDY TO UNEARTH ANCIENT DWARKA

Context

The Archaeological Survey of India (ASI) has initiated a comprehensive onshore and offshore archaeological expedition at **Dwarka and Beyt Dwarka in Gujarat** to scientifically date and document submerged heritage linked to India's ancient cultural history.

About Dwarka

- The submerged city of Dwarka is of great relevance to Hindus, and is believed to have been founded by **Lord Krishna.**
    - ➤ After killing his uncle Kamsa, Krishna migrated from Mathura to Dwarka with his Yadava clan, and founded his kingdom here by reclaiming **12 *yojana* land from the sea**.
    - ➤ Dwarka is considered Krishna's karmabhoomi (land of action).
    - ➤ As per the epic Mahabharata, this fortified city of Krishna spanned nearly 84 km and was situated at the confluence of the Gomti River and the Arabian Sea.
    - ➤ Dwarka is believed to be the first capital of Gujarat, and has been referred to as "Mokshapuri," "Dwarkamati," and "Dwarkavati".

- Present-day Dwarka is a coastal town located at the mouth of the Gulf of Kutch, facing the Arabian Sea.

- The town is a part of the **Krishna pilgrimage circuit**, which **includes Vrindavan, Mathura, Govardhan, Kurukshetra and Puri,** and is home to the **13th-century Dwarkadheesh temple dedicated to Lord Krishna.**

🔍 FACT BOX

Underwater Archaeology Wing (UAW)

- **Established in:** 2001
- The Underwater Archaeology Wing (UAW) of the Archaeological Survey of India (ASI) is responsible for:
    - ➤ conducting and overseeing underwater archaeological research
    - ➤ protecting India's underwater cultural heritage
    - ➤ regulating underwater activities
- However, the Wing has been defunct for about a decade.

India's Untapped Underwater Cultural Heritage

- India's underwater cultural heritage remains largely unexplored despite its rich maritime history and vast coastline.

- **UNESCO's 2001 Convention** aims to protect underwater cultural heritage, but India has not ratified it yet.
- In India, known shipwrecks like SS Rita (Goa) and MV Mars (Andaman) are used for recreational diving, with minimal research or protection.
- **Project Mausam (2014)** was India's first major initiative to promote maritime heritage but has failed to meet its objectives.

Key Submerged Temples and Cities

- ➤ Poompuhar – The Lost Port of Tamilakam
- ➤ Mahabalipuram (Tamil Nadu) – Temples Beneath the Tides
- ➤ Muziris – The Vanished Port of the Malabar Coast
- ➤ Kuntalpur – Odisha's Forgotten Maritime Hub
- ➤ Vithalapur – Gujarat's Sunken Shrine

India's defence engagement with Africa

- **India-Africa Defence Dialogue (IADD):** First launched in 2020, IADD seeks to enhance cooperation in maritime security, cybersecurity, counter-terrorism, and capacity-building.
- **Africa-India Defence Ministers' Conference**: The Conference aims to strengthen and improve synergy between militaries of India and African nations as part of regional cooperation mechanism.
- **Africa-India Field Training Exercise (AFINDEX)**: In 2019, India hosted the Africa-India Field Training Exercise (AFINDEX) in Pune, with the participation of 17 African nations.
- **Indian Ocean Ship (IOS) Sagar**: India will also launch another first-of-its-kind initiative, **Indian Ocean Ship (IOS) Sagar**, under which a joint crew of Indian sailors and 44 personnel from nine partner countries will man the offshore patrol vessel **INS Sunayna**.

AIKEYME 2025

Context

India, in partnership with nine African countries, launched a major naval exercise called **AIKEYME 2025** off the coast of **Dar-es-Salaam, Tanzania**. This exercise, held over six days, is a significant step in enhancing **maritime security collaboration** between India and the African continent.

What is AIKEYME?

- **AIKEYME** stands for **Africa-India Key Maritime Engagement**.
- It is a **multilateral naval exercise** co-hosted by the **Indian Navy** and **Tanzania People's Defence Force**.
- AIKEYME is part of India's evolving strategy to become a **net security provider** in the Indian Ocean Region (IOR), while also fostering **South-South cooperation** in alignment with its **Act East and Africa policy**.
- It's the first edition of this initiative, aiming to strengthen maritime cooperation between India and key African maritime nations.
- In addition to India and Tanzania, the participating African countries are: **Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Seychelles and South Africa.**
- The exercise supports **India's MAHASAGAR Vision** — *"Mutual and Holistic Advancement for Security and Growth Across Regions"*.
- This vision focuses on:
    - ➤ Strengthening ties with the **Global South**
    - ➤ Promoting **collective security**
    - ➤ Enhancing **regional development**

KERALA FIRST STATE TO ACHIEVE DIGITAL LITERACY

Context

Kerala became the first state in India to achieve total digital literacy. This milestone was achieved through the 'Digi Kerala' initiative, implemented by the Local Self-Government (LSG) department.

What is Digital Literacy?

- Digital Literacy refers to the "The ability of individuals and communities to understand and use digital technologies for meaningful actions within life situations."
- It goes beyond just being able to use a computer or smartphone; it involves the ability to use the internet for various purposes such as communication, accessing government services, online banking, and using social media responsibly.

Government's Key Initiatives to Improve Digital Literacy:

- **National Digital Literacy Mission (NDLM):** The NDLM is a national government program aimed at enhancing digital literacy across India, particularly targeting rural and underprivileged populations. The mission provides training for basic digital skills, focusing on using the internet, mobile devices, and applications for financial inclusion, accessing government services, and improving livelihoods.
- **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan):** Launched by the Ministry of Electronics and Information Technology (MeitY), this scheme aims to digitally empower rural people by providing them with digital literacy.

- **Digital India Programme**: The Digital India initiative, launched in 2015, aims to transform India into a digitally empowered society and knowledge economy. The program covers a broad range of areas, from improving internet connectivity to enhancing e-governance, digital infrastructure, and digital literacy.

Digital Saksharta Abhiyan (DISHA): Under the DISHA initiative, the government partners with various stakeholders, including NGOs, academic institutions, and private organizations, to promote skill development & digital literacy in India.

National Digital Library of India (NDLI): The NDLI is a digital repository of learning resources that provides access to a vast collection of e-books, e-journals, and other educational materials.

Others:

- Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre)
- Scheme for Promotion of Information Technology in Rural India (SPIRIT)

US INTRODUCES BILL TO DISBAND EDUCATION DEPARTMENT

Context

The United States' **"Returning Education to Our States Act,"** proposes the elimination of the U.S. Department of Education. This initiative aligns with the Trump administration's broader agenda to decentralize federal control over education, as outlined in the Project 2025 framework. In contrast, India's education system operates under a **dual framework** where both the Central and State governments play pivotal roles.

Key Provisions of the Bill:

- **Abolition of the Department**: The bill seeks to dismantle the Department of Education, redistributing its responsibilities to other federal agencies.
- **Reallocation of Programs:**
  - ➤ The Department of Health and Human Services would assume control over programs under the Individuals with Disabilities Education Act and Impact Aid.
  - ➤ The Department of the Interior would manage the Office of Indian Education.
  - ➤ The Department of the Treasury would oversee federal student aid programs, including Pell Grants and federal student loans.
- **State-Controlled Block Grants:** States would receive federal education funds through block grants, granting them discretion over the use of these funds for elementary, secondary, and postsecondary education.

- **Civil Rights Oversight**: The Department of Justice's Civil Rights Division would be responsible for enforcing federal civil rights laws applicable to these block grant programs and federal student aid programs.

India's Dual Governance Structure in Education

- Education in India is a **Concurrent List** subject, meaning both the Centre and the States are responsible for enacting and implementing education policy.
- The Central Government sets broad educational policies and standards, such as the **National Education Policy (NEP) 2020**, which outlines the vision for the country's education system.
- State governments, on the other hand, have the autonomy to adapt and implement these policies based on regional needs and priorities.

Decentralization Efforts in India

- ➤ **NEP 2020** emphasizes the importance of local governance in education, advocating for the empowerment of local bodies and school complexes to manage educational institutions effectively.
- ➤ **Rashtriya Madhyamik Shiksha Abhiyan (RMSA)** aims to provide financial assistance to states for the development of secondary education, allowing for region-specific interventions

CHIN STATE

Context

The situation in **Myanmar's Chin State** is directly impacting **India's northeastern region**, particularly Manipur and Mizoram. The conflict in Chin State has led to an influx of refugees into these states, straining resources and escalating ethnic tensions.

About

- Chin State shares a 398-kilometer border with India's northeastern states, including Manipur and Mizoram.
- It is located in western Myanmar.
- Ethnically, the Chins are closely related to the Kukis of Manipur and the Mizos of Mizoram, forming part of the larger Zo ethnic group.
- The region has been embroiled in conflict since the military coup in Myanmar, with various ethnic armed organizations (EAOs) resisting the junta's rule.
- The **Chin National Front (CNF)** and its armed wing, the **Chin National Army (CNA),** have been at the forefront of this resistance.
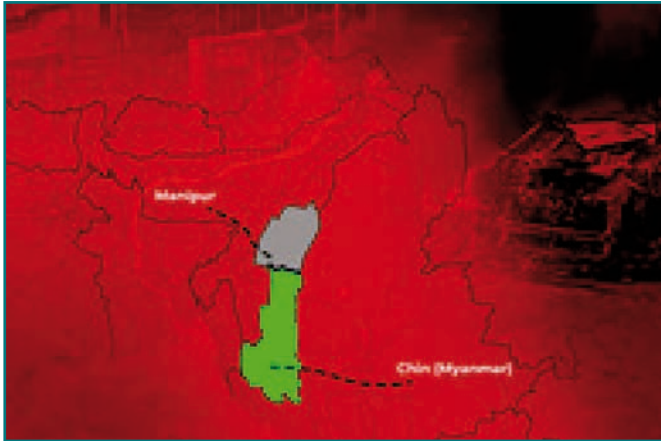
Figure No. 01

FACT BOX

Manipur Conflict

- Manipur has been experiencing significant ethnic conflict primarily between the **Meitei community**, which is predominantly Hindu and resides in the valley regions, and the **Kuki-Zo tribes**, mainly Christian, who inhabit the surrounding hills.

- This tension has historical roots, with past conflicts between the Kuki and Naga communities also playing a role.

- **Key Factors Contributing to the Conflict:**

  ➤ **Ethnic Demographics and Historical Tensions**: Manipur's population comprises three main ethnic groups:

    ♦ Meiteis (53%): Primarily Hindu, living in the Imphal Valley.

    ♦ Nagais (24%) and Kuki-Zo (16%): Both groups are predominantly Christian and reside in the hill districts surrounding the valley.

      ♦ Historical conflicts, such as the Kuki-Naga clashes, have left deep-seated mistrust and territorial disputes among these communities.

  ➤ **Recent Triggers**: Increased ethnic violence erupted when the Meitei community sought "Scheduled Tribe" status, aiming to gain affirmative action benefits.

  ➤ **Impact of the Myanmar Conflict:** Manipur shares a nearly 400 km border with Myanmar. The political instability and military actions in Myanmar have led to an influx of refugees into Manipur, many of whom are from the Kuki and Chin communities.

ODISHA'S UNIFIED HEALTH COVERAGE SCHEME

Context

Odisha has rolled out a unified health insurance scheme aimed at expanding access to quality healthcare for its residents. This marks the first time Odisha has implemented the **Central scheme**, after years of running its own health program separately.

About the Scheme:

- **The unified health coverage scheme** aims to provide free and cashless healthcare to all eligible families in Odisha.

- The scheme integrates the Centre's **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)** with the state-sponsored **Gopabandhu Jan Arogya Yojana (GJAY).**

- **Coverage:**

  ➤ **1.03 crore families** (3.46 crore people)

  ➤ Health cards for **every family member**

  ➤ **Free treatment for over 23 lakh senior citizens**

- **Hospital Access:** It is valid in over **29,000 hospitals** in Odisha and across India.

- **Special Focus:** It combines the **benefits of both state and central schemes** to ensure universal and equitable health coverage.

KERALA'S DHARMADAM DECLARED EXTREME POVERTY-FREE

Context

Kerala Chief Minister Pinarayi Vijayan's **Dharmadam constituency** in Kannur has been declared the **state's first 'extreme poverty-free' constituency** (April 2025). This milestone is part of Kerala's broader plan to **eradicate extreme poverty across the state by 1 November 2025**, making it a model for inclusive development.

What is Extreme Poverty?

- **Extreme poverty** refers to **a condition where a household lacks access to the basic minimum requirements of human survival**, including:

  ➤ **Food availability**

  ➤ **Healthcare**

  ➤ **Basic income**

  ➤ **Adequate housing**

- These four indicators were used by the Kerala government to **identify and classify extremely poor families** through a grassroots-level survey.

◉ Extreme poverty is defined by the UN as living on less than USD 1.90 a day.

◉ India's poverty line

➤ In India, the official consumption-based poverty line is still the **Tendulkar Line**, which is close to the World Bank's USD 1.9 a day line.

➤ The **Tendulkar Expert Group** chaired by economist **Suresh Tendulkar** in 2009 was formed to review the methodology for poverty estimation.

➤ The committee finalised the per person per day consumption figure of **Rs 32 a day for urban areas** and **Rs 26 a day for rural areas.**

➤ The national poverty line for 2011-'12 was estimated at Rs 816 per capita per month for rural areas and Rs 1,000 per capita per month for urban areas.

Rangarajan Committee

◉ In 2012, due to the widespread criticism of the Tendulkar Committee's approach, the Rangarajan Committee was formed.

◉ This panel's report, submitted in 2014, raised the daily per capita expenditure to Rs 47 per day for urban areas and Rs 32 for rural areas.

◉ They recommended a monthly per capita consumption expenditure of Rs 972 in rural areas and Rs 1,407 in urban areas as the all-India poverty line.

◉ However, the government did not adopt this report and has continued using the Tendulkar Line.

Major Government Initiatives to Eradicate Poverty in India:

◉ **Pradhan Mantri Awas Yojana (PMAY):** Provides affordable housing to urban and rural poor.

◉ **National Food Security Act (NFSA):** Ensures subsidized food grains for low-income families.

◉ **Ayushman Bharat - PM-JAY:** Health insurance scheme for economically vulnerable families.

◉ **MGNREGS:** Guarantees 100 days of wage employment to rural households.

◉ **Deendayal Antyodaya Yojana (DAY-NRLM):** Promotes self-employment and women's SHGs in rural areas.

◉ **PM Garib Kalyan Yojana:** Economic support and free foodgrain during COVID-19.

◉ **Direct Benefit Transfer (DBT):** Transfers subsidies directly to beneficiaries, reducing leakages.

INDEX OF INDUSTRIAL PRODUCTION (IIP)

Context

India's **Index of Industrial Production (IIP)** growth **slowed sharply to 2.9% in February 2025**, marking the **lowest**

expansion in six months. The slowdown was primarily driven by weaker performance in **manufacturing and mining sectors**. This data is crucial as it reflects the **health of core industries** and **overall economic momentum**.

Key Highlights

◉ **Headline IIP Growth Slows**: Industrial output grew by only 2.9% in February 2025, compared to 5.2% (revised) in January 2025. This is the lowest growth since August 2024, when IIP had registered zero growth.

Sectoral Performance

➤ **Manufacturing** (77.6% weight in IIP): Grew by **2.9%**, down from **5.8% in January**.

➤ **Mining** (14.4% weight): Slowed to **1.6%**, from **5.6%**.

➤ **Electricity** (7.9% weight): Growth moderated to **3.6%**, from **4.4%**.

Use-Based Classification Insights

➤ **Consumer Durables**: Grew by **3.8%**, lowest in **15 months**—indicating **weak rural and semi-urban demand**.

➤ **Consumer Non-Durables**: Contracted by **-2.1%**, **third consecutive month of decline**.

➤ **Capital Goods**: Strong growth of **8.2%**, indicating **continued investment momentum**.

➤ **Infrastructure/Construction Goods**: Grew by **6.6%**, showing steady **construction sector activity**.

➤ **Primary Goods**: Slowed to **2.8%**, from **5.5%** in January.

➤ **Intermediate Goods**: Slowed to **1.5%**, from **5.3%**—suggesting weaker production pipeline.

What Does This Data Indicate?

➤ **Uneven Growth**: Capital and infra goods are holding up, but consumption-related sectors (durables, non-durables) are struggling.

➤ **Volatile Momentum**: Experts see a risk of stagnation in industrial recovery, especially with **global headwinds and domestic consumption fatigue**.

➤ **Policy Relevance**: Slowing industrial output may influence monetary and fiscal policy choices, especially as **GDP growth targets remain ambitious**.

🔍 FACT BOX

About the Index of Industrial Production (IIP)

◉ The Index of Industrial Production (IIP) measures Short-term changes in volume of production across key industrial sectors

◉ **Compiled by:** Central Statistical Organisation (CSO), Ministry of Statistics and Programme Implementation (MoSPI)

- **Base Year:** 2011-12
- **Released Frequency:** Monthly
- **Broad Categories:** Manufacturing, Mining, Electricity
- **Use-Based Categories**: Primary, Capital, Intermediate, Consumer Durables & Non-Durables, Infrastructure

EQUITY INFLOW DIPS

Context

In March 2025, India's mutual fund industry witnessed a notable shift in investor behavior. While the overall **Assets Under Management (AUM)** grew, equity mutual funds experienced a decline in net inflows, marking the third consecutive month of reduced investments in this category.

Key-highlights (India's mutual fund industry)

- **Overall Growth:** The total Assets Under Management (AUM) rose by 23.11% year-on-year to Rs 65.74 lakh crore, indicating a growing investor base and market appreciation.

- **Equity Mutual Funds:** Net inflows into equity mutual funds declined by 14.4% month-on-month to Rs 25,082 crore, marking the lowest in 11 months. This decrease is attributed to profit booking, year-end redemptions, and market volatility influenced by global tariff concerns.

- **Systematic Investment Plans (SIPs): S**IP contributions remained robust at Rs.25,926 crore, showing a 34.53% year-on-year increase. However, there was a slight month-on-month dip from February's Rs.25,999 crore. The number of SIP accounts decreased marginally from 10.16 crore to 10.05 crore, with a stoppage ratio rising to 127.5% from 122% in February.

- **Fund Categories Performance:**
  - **Large-Cap Funds**: Experienced net outflows ofRs.2,479 crore, despite an increase in AUM from Rs 3.25 lakh crore to Rs 3.59 lakh crore, primarily due to market gains.

  - **Mid and Small-Cap Funds**: Continued to attract investors, with inflows of Rs 3,439 crore and Rs.4,092 crore respectively, indicating sustained retail enthusiasm in these segments.

  - **Sectoral/Thematic Funds**: Saw a significant drop in net flows toRs.170 crore from Rs.5,712 crore in February, possibly due to increased market volatility and underperformance in certain sectors.

- **Gold ETFs:** Recorded net outflows ofRs.77 crore, a reversal from the Rs.1,980 crore inflows in February. This shift is largely attributed to profit booking and portfolio rebalancing strategies among investors.

FACT BOX

Key Concepts

- **Mutual Fund:** It is an investment vehicle pooling money from multiple investors to invest in diversified assets like equities, stocks, bonds, government securities.
  - It is an investment portfolio managed by a professional organization known as an **asset management company (AMC).**
  - Mutual funds are regulated by SEBI through a strong regulatory framework.

- **Assets Under Management (AUM):** AUM refers to the total market value of all investments managed by a financial institution, entity, or individual on behalf of investors.

- **Systematic Investment Plan (SIP):** It is a method of investing fixed amounts regularly in mutual funds, promoting disciplined investing.

- **Equity Funds:** Also known as stock funds, they are mutual funds that invest primarily in **stocks**, aiming for capital growth.

- **Large-Cap, Mid-Cap, Small-Cap Funds:** Market capitalization (or **market cap**) is the **total value of a company's shares** on the stock market. Based on this, companies are classified into:
  - **Large-Cap Funds**: These funds invest in large, well-established companies that are ranked in the top 100 by market capitalization. These companies are known as **blue-chip companies**, with a market value of Rs 20,000 crores or more.
  - **Mid-Cap Funds**: These funds invest in medium-sized companies, ranked 101 to 250 by market capitalization. The market value is between Rs 5,000 crores and Rs 20,000 crores.
  - **Small-Cap Funds:** These funds invest in smaller companies, ranked 251 and below by market capitalization. The market value is below Rs 5,000 crores.

- **Gold ETFs:** Gold ETF is an exchange-traded fund (ETF) that aims to track the domestic physical gold price. They are passive investment instruments that are based on gold prices and invest in gold bullion.

INSIDER TRADING

Context

US President Trump is facing **insider trading allegations**, an unprecedented development in US history, raising serious legal and ethical concerns.

What is insider trading?

- **Insider trading** occurs when someone with a vested interest in a company uses **non-public information** to make a trading decision.

- ➤ **Insider trading** usually **involves company executives or employees** leveraging confidential company information to gain an advantage in the stock market.

- ➤ On the other hand, **front-running typically involves brokers or fund managers** exploiting knowledge of their clients' upcoming trades.

- ◉ In India, insider trading is prohibited under the **SEBI Act, 1992. SEBI** has established the **SEBI (Prohibition of Insider Trading) Regulations, 2015,** which outline the rules for prohibiting and restricting insider trading.

- ◉ These practices undermine **investor confidence** in the **fairness** and **transparency of financial markets**.

FLUE GAS DESULPHURISATION (FGD)

Context

A new study by the **National Institute of Advanced Studies (NIAS), Bengaluru** recommends a rollback of the Environment Ministry's 2015 mandate requiring **all 537 coal-fired power plants** in India to install **Flue Gas Desulphurisation (FGD)** systems.

What is FGD?

- ◉ **Flue Gas Desulphurisation (FGD)** is a pollution control technology that removes **sulphur dioxide (SO_2)** from the exhaust flue gases of fossil-fuel power plants.

- ◉ It was mandated in 2015 to tackle India's rising SO_2 emissions. The deadline for installation was 2018, but due to slow compliance, it has been **extended to 2027–2029**, depending on plant category.

- ◉ SO_2 contributes to **acid rain**, respiratory illnesses, and **air pollution**. FGDs were intended to curb these health and environmental risks.

What Does the NIAS Study Argue?

- ◉ **FGD Not Needed at All Plants: 92% of Indian coal** is low-sulphur (0.3%–0.5%). Thus, FGD should only be mandated for plants using **imported/high-sulphur coal**.

- ◉ **Low Risk of Acid Rain in India:** Acid rain is **not a significant issue** in India. **Stack heights** (minimum 220 m) and **climatic conditions** disperse SO_2 adequately.

- ◉ **Environmental Trade-Off:** Installing FGDs would:

  - ➤ Increase CO_2 emissions by **69 million tonnes (2025–2030)** due to higher energy and water use.

  - ➤ Reduce SO_2 by 17 million tonnes — but this trade-off may **worsen global warming**.

- ◉ **Focus on Particulate Matter (PM) Instead:** PM pollution from coal plants is more harmful due to **high ash content** in Indian coal.

FACT BOX

Sulphur dioxide (SO2)

- ◉ Sulphur dioxide (SO2) is a heavy, colourless, and poisonous gas with a pungent and irritating odour. Its smell is often described similar to that of a burnt matchstick.

- ◉ The gas forms secondary particulate matter (PM2.5) when it oxidizes to sulphuric acid (H2SO4) by combining with water vapour.

- ◉ It also reacts with ammonia (NH3) to create another dangerous compound called ammonium sulphate ((NH4)2SO4).

- ◉ SO2 also contributes to sulphurous smog, which results from a high concentration of sulfur oxides (SOx) in the atmosphere and is exacerbated by dampness and particulate matter (PM).

- ◉ **Health impact of sulphur dioxide**: Lung function, worsen respiratory diseases, Wheezing, shortness of breath, chest tightness, Aggravation of asthma and chronic bronchitis, Inflammation of the respiratory tract (coughing, mucus secretion), Eye irritation

- ◉ **Environmental impact:** Acid rain, Damaging of vegetation, Depriving soil of essential nutrients (calcium, aluminum, magnesium)

LEPTOBRACHIUM ARYATIUM, NEW FROG SPECIES

Context

A new species of frog has been discovered in Assam and named *Leptobrachium aryatium*. The frog was found in **Garbhanga Reserve Forest** near Guwahati.

About the Species

- ◉ The species is named ***Leptobrachium aryatium*** to honour **Arya Vidyapeeth College**, an esteemed educational institution in Guwahati.

- ◉ **Taxonomic Placement:** The species belongs to the genus *Leptobrachium*, family **Megophryidae.** These frogs are known for their stocky bodies, large heads, short hind limbs, and uniquely coloured eyes.

  - ➤ The genus ***Leptobrachium*** includes 38 known species, primarily found across South and Southeast Asia. Many of these species are morphologically similar, making field identification difficult — highlighting the importance of molecular and acoustic studies.

Distinctive Traits of the New Species:

- ➤ Fiery orange-and-black eyes

- ➤ Net-like (reticulated) throat pattern

➤ Smooth, rhythmic calls at dusk

➤ Differentiated from other frogs through morphological, acoustic, and DNA analysis

Garbhanga Reserve Forest

- The Garbhanga Reserve Forest, located on the outskirts of Guwahati, is a rich biodiversity zone with a variety of species such as elephants, butterflies, and rare birds.

- It is considered a "green lung" for the city, helping regulate the microclimate and water systems.

- However, the forest is under threat due to rapid urbanisation, habitat fragmentation, and land-use change. This discovery raises critical concerns regarding the need for conservation.

- The Northeast is part of the **Indo-Burma Biodiversity Hotspot** — one of the most species-rich and least explored regions in the world.

CLINIDIUM LALITAE

Context

A team of scientists from the Zoological Survey of India (ZSI) has discovered a new beetle species in the Talle Valley Wildlife Sanctuary in Arunachal Pradesh. The species, named Clinidium lalitae, honours the late Dr. Lalita Ray Chaudhury, a pioneering Indian coleopterologist.

About

- The beetle belongs to the **subfamily Rhysodinae**, a rare group of **ground beetles**.

- This group of beetles typically resides in **forest floors** and is **morphologically distinct**, indicating a high degree of specialization.

- **Ecological Role of Clinidium lalitae**

  ➤ These beetles play a vital role in **nutrient cycling**, **decomposition of organic matter**, and **soil health**.

  ➤ As ground beetles, they are part of a **larger forest ecosystem web**, contributing to **forest floor dynamics**.

  ➤ Their presence signals a **healthy ecosystem**, and their sensitivity to habitat changes makes them useful **bioindicators**.

FACT BOX

Talle Valley Wildlife Sanctuary

- Talle Valley Wildlife Sanctuary is a **protected area in Arunachal Pradesh** known for its rich biodiversity, endemic flora and fauna, and fragile ecosystem.

- Established in 1995, it covers 337 square kilometres in the **Subansiri district.**

- It features **subtropical** and **temperate broadleaved and conifer forests.**

- Notable mammal species in the sanctuary include the **clouded leopard (Neofelis nebulosa), Malayan giant squirrel (Ratufa bicolour), Indian muntjac (Muntiacus muntjak), Asian palm civet (Paradoxurus hermaphroditus).**

- The sanctuary is home to the Apatani tribe, known for their unique customs, traditions, and handicrafts.

SIGN LIFE ON K2-18B

Context

Scientists at the **University of Cambridge**, using data from **NASA's James Webb Space Telescope (JWST)**, have detected potential **biosignatures** — molecules associated with life — in the atmosphere of **exoplanet K2-18b**, located 124 light years away. While not conclusive, this is the **strongest signal yet** in the search for extraterrestrial life.

What Did Scientists Detect?

- The **James Webb Space Telescope (JWST)** has detected traces of **Dimethyl Sulphide (DMS)** and **Dimethyl Disulphide (DMDS)** in the planet's atmosphere.

  ➤ On Earth, DMS and DMDS are considered **biosignatures** — produced by **simple life forms**. If confirmed, this would be the **first strong evidence of life** beyond Earth.

- On Earth, these gases are **only produced by living organisms**, especially **marine phytoplankton and bacteria**.

- The detected quantity is **thousands of times higher** than levels on Earth—suggesting the possibility of **abundant biological activity** (if the source is life-related).

- **How Was This Detected?** Using **infrared spectroscopy**, JWST studied how the planet's atmosphere **absorbs starlight**. This absorption pattern gives scientists clues about **what chemicals are present** in the atmosphere.

- **Alternate Explanations**: Gases could be produced through **non-biological (abiotic)** processes such as:

  ➤ **Geological reactions**.

  ➤ **Molten oceans** (not conducive to life).

  ➤ **Mini gas giant structure** with no solid surface.

What is K2-18b?

- **K2-18b** is an **exoplanet** (planet outside our solar system) orbiting a **red dwarf star** in the constellation Leo.

- It is roughly **2.5 times the size of Earth**.

- It is located **124 light years** (approx. 700 trillion miles) away.
- It is likely situated within its star's **habitable zone** — where conditions might allow for liquid water.
- K2-18b is part of the **"sub-Neptune"** class of nearly 6,000 exoplanets that have been discovered beyond the solar system since the 1990s.

VEHICLE-TO-GRID (V2G) TECHNOLOGY

Context

The Kerala State Electricity Board (KSEB) and IIT Bombay have launched a pilot project to explore V2G technology. The goal is to assess the feasibility of using electric vehicles (EVs) to support Kerala's electricity grid, especially during peak demand hours.

What is V2G?

- **Vehicle-to-Grid (V2G)** refers to a system where **electric vehicles (EVs)** not only consume electricity but also **send power back to the grid** when needed.
- This is made possible through **bi-directional chargers** that allow EVs to **both charge and discharge**.

- **Key Modes:**
  - **G2V (Grid-to-Vehicle)**: EVs **draw power** from the grid to charge.
  - **V2G (Vehicle-to-Grid)**: EVs **supply power** back to the grid.
  - **Other variants:**
    - **V2H (Vehicle-to-Home)**: Powers household appliances.
    - **V2V (Vehicle-to-Vehicle)**: Transfers charge between vehicles.

Global Applications:

- It is widely tested in **Europe**, **U.S.**, and **Japan**.
- In countries like the **U.K.** and **The Netherlands**, EV users are **paid** for supplying electricity during peak hours.
- **California** uses V2G for **grid stability** and **emergency backup** during climate disasters.
- **Electric buses** have been successful in V2G pilot programs globally.

BATECHOMON (BAT ECHOLOCATION MONITORING)

Context

India has developed its first automated bat monitoring and detection system – BatEchoMon, marking a major technological and ecological milestone in wildlife research.

What is BatEchoMon?

- BatEchoMon (Bat Echolocation Monitoring) is India's first automated bat monitoring system.
- It detects and analyses **bat echolocation calls** in real-time using a combination of:
  - Ultrasonic detector (Audiomoth)
  - Raspberry Pi microprocessor
  - AI-based algorithm (convolutional neural network)
- It identifies bat species, records activity patterns, and generates audio and visual data (spectrograms).
- It runs autonomously—activating at sunset—and is powered by solar energy with Wi-Fi-enabled data transmission.
- Developed by researchers at the **Indian Institute for Human Settlements (IIHS),** it is a low-cost, modular, and efficient solution for large-scale bat ecology research in India.

DRDO'S GLIDE BOMB 'GAURAV'

Context

The DRDO has successfully tested a new indigenous weapon – the Long-Range Glide Bomb (LRGB) named 'Gaurav', by releasing it from a Su-30 MKI fighter aircraft. These trials showed it can hit land targets with precision from around 100 km away.

About the Glide Bomb 'Gaurav':

- "Gaurav" is a **1,000-kg class glide bomb** (heavy-duty bomb) designed and developed indigenously by the **DRDO.**
- DRDO has developed two glide bombs - **Gaurav and Gautham**.
  - While the winged version of LRGB Gaurav weighs around 1,000 kg, the non-winged Gautham weighs 550 kg.
  - With a diameter of 0.6 mentre, both the bombs are four metre long and the wingspan of Gaurav is 3.4 metre.
- **Range**: It can strike targets **up to 100 km away**
- **Precision**: **Pin-point accuracy**, even from long distances
- **Launch Platform**: It can be launched from **Su-30 MKI** aircraft
- **Made in India**: It is designed by **DRDO** labs (like Research Centre Imarat), with support from Indian companies like **Adani Defence** and **Bharat Forge**

Figure No. 02

What is a Glide Bomb?

- A **glide bomb** is a bomb that **doesn't have its own engine**.
- After release from an aircraft, it **glides through the air** toward the target using **aerodynamic surfaces (like wings)**.
- It **travels longer distances** compared to traditional free-fall bombs.

LASER-DEW SYSTEM (SAHASTRA SHAKTI)

Context

India has successfully tested its **indigenously developed Laser-Directed Energy Weapon (DEW)** system, placing it among a select group of countries (US, China, Russia) possessing **high-power laser-based military technology**.

What is the Laser-DEW System (Sahastra Shakti)?

- Directed Energy Weapons (DEWs) use **high-energy laser beams** to damage or destroy enemy targets.
- Unlike traditional kinetic weapons, laser systems offer **instantaneous engagement**, **precision targeting**, and **low per-shot cost**, making them ideal for neutralizing low-RCS (Radar Cross Section) threats like drones and incoming munitions.
- It is developed indigenously by the **Defence Research and Development Organisation (DRDO).**
- Apart from India, only the **US, China and Russia** can disable weapons using the technology.

How does it work?

- The **Mk-II(A) Laser- Directed Energy Weapon (DEW)** is one of the most potent counter drone systems in the world due to its **lightning speed of engagement, precision and lethal action within a few seconds.**
- The laser system engages fixed-wing drones from a long range and can thwart multiple drone attacks at a time, destroying surveillance sensors and antennae.

- Once a target is identified by the Laser-DEW system's radar or its inbuilt **Electro Optic (EO) system**, it uses an intense beam of **powerful light (Laser Beam)** to cut through the target, causing structural failures or even more lethal damage.
- The development of this laser weapon can lower the risk of collateral damage and reduce reliance on expensive ammunition during conflict.

GPS SPOOFING

Context

India sent military aircraft to Myanmar to deliver earthquake relief materials under Operation Brahma. While flying over Myanmar, some Indian Air Force (IAF) aircraft faced **GPS spoofing** — a type of cyberattack that sends false GPS signals to confuse aircraft about their actual location.

What is GPS Spoofing?

- GPS spoofing refers to an attempt or a **cybersecurity threat** to alter the initial location of a GPS-enabled device.
- GPS spoofing sends false data to a receiver to divert traffic, goods, or people with falsified information.
- **How is it done?** GPS spoofing involves a radio transmitter near a target that interferes with the actual GPS signals being transmitted.
  - GPS signals are often weak and transmitted through satellites.
  - A stronger radio transmitter can be used to override the weaker signal and send illegitimate coordinates and information to the receiver.

Figure Nol 03

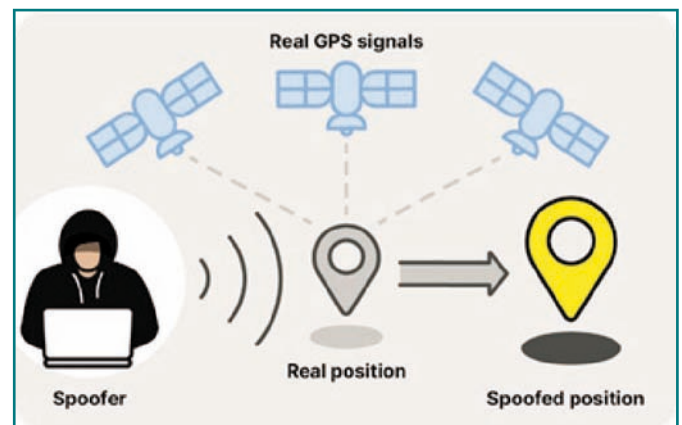- GPS spoofing can then send people off course or say that someone is somewhere that they are not.
- **Types of Spoofing:** Spoofers overpower relatively weak GNSS signals with radio signals carrying false positioning information. There are two ways of spoofing:
  - Rebroadcasting GNSS signals recorded at another place or time (so-called meaconing)
  - Generating and transmitting modified satellite signals

GPS System

◉ GPS is one of the **global navigation satellite systems (GNSS)** used in the world.

◉ Along with delivering location information, it is also used to keep accurate time.

◉ These functions can also be disrupted through spoofing or jamming.

TYPE 5 DIABETES

Context

At the recently concluded **World Diabetes Congress** in Bangkok, the **International Diabetes Federation** officially recognised **Type 5 diabetes** as a new condition.

About Malnutrition-Related Diabetes (Type 5 Diabetes):

◉ Type 5 diabetes is a **malnutrition-related diabetes**, typically affecting lean and malnourished teenagers and young adults in low- and middle-income countries.

➤ Today, there are an estimated **20-25 million people worldwide**, mainly in Asia and Africa, who are afflicted by this disease.

◉ It is characterized by a significant deficiency in insulin secretion, distinguishing it from **Type 1 (autoimmune destruction of beta cells)** and **Type 2 (insulin resistance) diabetes.**

◉ Insulin therapy, effective in Type 1 diabetes, can be harmful in Type 5 due to the risk of **hypoglycemia.**

◉ First identified in Jamaica in 1955 as J-type diabetes, the condition was recognized by the **World Health Organization (WHO)** in 1985 but was later removed from classification in 1999 due to insufficient evidence.

◉ Recent studies have provided substantial evidence leading to its **reclassification** as Type 5 diabetes.

How Does Type 5 Differ from Other Types?			
	Cause	**Typical Patient Profile**	**Insulin Response**
Type 1	Autoimmune destruction of insulin-producing cells	Children and adolescents	Requires insulin therapy
Type 2	Insulin resistance, often linked to obesity	Adults, often overweight	May require insulin or oral medications
Type 5	Malnutrition leading to impaired insulin secretion	Young, undernourished individuals	Poor response to insulin therapy; risk of hypoglycemia

INDIA'S FIRST-EVER SEED GERMINATION DATABASE

Context

India is set to launch its **first-ever public database on native seed germination**, a major initiative by the **Ecological Restoration Alliance-India (ERA-I)**. This database will offer more than **1,000 germination techniques covering 465 native plant species**, aiming to aid ecological restoration, promote native biodiversity, and support India's **land restoration commitments**.

Why This Database Matters?

◉ It will serve as a **free-access platform** for restoration practitioners, nursery managers, and plant conservation enthusiasts.

◉ One of the key challenges in ecological restoration is **growing native plants**, which requires knowledge of **seed germination** — often acquired informally or through years of experimentation.

➤ **Problem**: Low success rates in seed germination due to lack of systematic knowledge.

➤ **Solution**: The database provides **tested protocols** that increase the efficiency of native plant propagation.

➤ **Benefit**: Greater success in creating native nurseries, crucial for **restoring degraded ecosystems**.

◉ The database now allows even older nurseries to expand the range of species they can successfully grow.

◉ **Species Included:** Some notable species in the database include:

➤ **Ficus benghalensis** (banyan) – National tree of India, keystone species in ecosystems

➤ **Madhuca longifolia** (mahua) – Source of livelihood and food in tribal areas

➤ **Withania somnifera** (ashwagandha) – Medicinal plant with rising global relevance

➤ **Vachellia nilotica** (babool) – Important for arid land restoration

◉ **India's Land Restoration Commitments and Global Goals:** India has committed to restoring **26 million hectares of degraded land** under the **Bonn Challenge**, a global pledge to restore 350 million hectares by 2030.

◉ This database directly supports that goal by:

➤ Facilitating the creation of **native nurseries** across India.

➤ Equipping local communities and professionals with **practical knowledge**.

◉ Providing an open-source model that promotes **community-led ecological restoration**.

Native Plants:

- Native plant species are those that have evolved naturally in a region, adapting to its **soil, climate, and ecological relationships** over centuries.

- **Key ecological roles** of native species include:

  ➤ Supporting local **pollinators**, **insects**, **birds**, and **fungi**.

  ➤ Requiring **minimal human intervention** once established.

  ➤ Promoting **climate-resilient landscapes**.

  ➤ Enhancing **biodiversity, soil health, and water conservation**.

- In degraded ecosystems, where every seed counts, scientifically-backed germination protocols help turn seeds into thriving plants — something nature alone may not manage under stressed conditions.

★ ★ ★ ★ ★

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4	9	10	13	15	16	20	22
23	24	26	27	28	29	32	38	43
47	52	54	55	58	59	60	61	62
64	68	69	72	77	78	81	82	83
86	88	89	90	91	93	95	97	100

TOP 100 ALL INDIA RANKING CSE 2022

1	2	3	11	12	13	15	16	18	22
26	33	34	37	42	46	48	56	57	58	60	62
65	66	68	72	73	75	77	83	86	87	91	98

TOP 100 ALL INDIA RANKING CSE 2021

02	04	07	12	24	25	29	31
32	43	44	45	46	49	52	53	54
66	67	68	80	83	89	92	93	95