



**TAKSHASHILA**  
**SCHOOL OF CIVIL SERVICES**

# **CURRENT AFFAIRS**

# **FEBRUARY**

# **2025**



1800-212-4490, +916001657575

Unit - 6B & C, 6th Floor, Unique Avenue Building, Near Super Market,  
Guwahati, Assam - 781006



## Mains Daily Analysis – General Studies I

# 1. Concerns of PwDs Regarding Digital Personal Data Protection Rules

### Why in the News?

- The Ministry of Electronics and Information Technology (MeitY) is finalizing **public consultations on the Digital Personal Data Protection (DPDP) Act, 2023** and its draft rules by **March 5**.

### Key Concern – Section 9(1):

- Clubs **adult Persons with Disabilities (PwDs) with children**, requiring legal guardian consent for data processing.
- Undermines the **autonomy of PwDs** and reflects a **flawed understanding of guardianship laws**.

### PwDs & Activists' Concerns:

- **Undermines PwD Autonomy:**
  - Ignores the **Rights of Persons with Disabilities (RPWD) Act, 2016**, which promotes **supported decision-making over absolute guardianship**.
- **Legal Confusion Between the RPWD Act & the NT Act:**
  - **RPWD Act, 2016:** Allows **limited guardianship** with PwD decision-making rights.
  - **National Trust (NT) Act, 1999:** Allows **full guardianship** for individuals with **autism, cerebral palsy, or intellectual disabilities**.
  - **DPDP Act does not differentiate** between these categories.
- **Implementation Challenges:**
  - No clear **guidelines for digital platforms** on obtaining guardian consent.
  - **Risk of exclusion** from essential services like **banking, e-commerce, and healthcare**.
  - Gender-based **discrimination risks** for women with disabilities.

### Impact on Digital Rights of PwDs:

- **Mandatory guardian consent** can lead to:
  - Exclusion from **banking, government schemes, and education portals**.
  - **Increased control** of guardians over PwDs' choices.
  - **Legal ambiguity** for guardians, risking penalties if data misuse occurs.
- **Survey by PACTA and Saksham Disability:**
  - **27.4% of PwDs have legal guardians**, yet most manage their affairs independently.



## Government's Response & Way Forward:

- **Government's Stance:** Wants to limit PwD categories under **Section 9(1)** to address concerns.
- **Activists' Recommendations:**
  - Amend **Section 9(1)** to align with the **RPWD Act, 2016**, for decision-making autonomy.
  - Clear **guidelines for guardian-based consent**.
  - Address **digital accessibility barriers**.

## Conclusion:

- **Rigid guardianship rules** may **exclude PwDs from digital services** and decision-making.
  - A **balanced approach** incorporating **disability rights groups' input** is necessary.
- 

## 2. Language Policy in India – The Three-Language Formula & Its Challenges

### Context:

- **Tamil Nadu opposes the three-language formula**, adhering to its **two-language policy** for decades.
- The **three-language policy** has seen **mixed implementation** across India.

### Key Aspects of the Language Debate:

- **Post-independence language policies remain controversial.**
- **Constituent Assembly debates:**
  - **Hindi's adoption as an official language** was complex due to its **multiple varieties**.
  - **English retained prominence** despite expectations of its **gradual decline**.

### Three-Language Formula – Evolution & Challenges:

- **Introduced in 1968** under the **National Policy on Education**.
- **Mandates:**
  - **Regional language (mother tongue)**.
  - **Hindi**.
  - **English/A /a modern Indian language (for Hindi-speaking states)** .
- **NEP 2020:**
  - Retains the **three-language formula**.
  - Ensures **States & students have the choice** of languages.
- **Implementation Issues:**
  - **Hindi-speaking states** rarely include other Indian languages.



- **Private schools** in northern states **do not prioritize regional languages**.

## **Declining Language Standards in Education:**

- **Science & Math dominate the coaching culture**, while **language teaching is neglected**.
- **English is now compulsory**, but **proficiency remains low**.
- **Decline in Hindi & regional language learning** due to lack of reading habits.

## **Conclusion:**

- **Tamil Nadu's opposition** reflects concerns over **linguistic identity & federal policies**.
- **The focus should be on improving teaching standards** rather than just implementing policy formulas.

## **Significance of the Tea Horse Road in India-China Connections**

### **Why in the News?**

China's Ambassador to India, Xu Feihong, recently highlighted the historical Tea Horse Road, a trade route spanning over 2,000 km that connected China to India via Tibet.

### **Introduction**

- The Tea Horse Road was an ancient trade network linking China, Tibet, and India, facilitating commerce and cultural exchange for centuries.
- Though not as well-known as the Silk Road, it played a crucial role in transporting tea, horses, and other valuable goods through rugged terrains.
- Ambassador Xu Feihong emphasized its historical importance in strengthening India-China relations.

### **Origins of the Tea Horse Road**

- The route dates back to the Tang Dynasty (618-907 CE), when trade between Southwest China, Tibet, and India began to flourish.
- Buddhist monk Yijing (635-713 CE) documented early exchanges, mentioning Chinese exports like sugar, textiles, and rice noodles, while Tibet supplied gold, saffron, and medicinal herbs.
- By the 10th century (Song Dynasty), official trade markets were set up along the route, regulating the tea-for-horses trade between China and Tibet.

### **Challenging Yet Vital Trade Network**

- The Tea Horse Road was a network of paths connecting Southwest China to the Indian subcontinent, Nepal, and Bangladesh.
- **Key Features:**
  - **Length:** Over 2,000 km
  - **Major Cities:** Dali, Lijiang (Yunnan), and Lhasa (Tibet)



- **Elevation:** Reached 10,000 feet in the Himalayas
- **Challenges:** Extreme weather, rough terrain, and high altitudes made travel dangerous
- Despite the difficulties, traders transported tea from Sichuan to Tibet and India, returning with horses and other essential goods.

### Tea and Horses – The Backbone of Trade

- Tea was crucial for Tibetan nomads, who relied on yak butter tea for warmth and energy in harsh climates.
- Horses were vital for China's military, as the central plains lacked sufficient breeding grounds. Tibetan horses were especially valued in China's defense against Mongolian invasions.
- The Song Dynasty established official markets to regulate and stabilize this trade.

### Strategic Role in Modern History

- **Expansion in the Early 20th Century:** After the fall of the Qing Dynasty in 1912, Yunnan's tea industry grew, integrating with global markets and bringing new trade opportunities.
- **World War II:** When Japan occupied much of China's coastline, the Tea Horse Road became a crucial alternative route for transporting supplies to China's resistance forces.
- **Post-1949 Decline:** After the People's Republic of China was founded, modern transportation and land reforms led to the route's decline. However, Lijiang, a former trade hub, was designated a UNESCO World Heritage Site in 1997 for its historical significance.

### Revival as a Cultural Landmark

- China has promoted tourism along the Tea Horse Road, preserving its legacy as a historical and cultural treasure.
- Lijiang, a key trade center in the past, has been transformed into a major heritage site, drawing global visitors.
- According to UNESCO, Lijiang was a vital trade distribution center, intersecting with the southern Silk Road. Today, it stands as a testament to the Tea Horse Road's rich history.

### Conclusion

The Tea Horse Road was more than just a trade route—it was a vital link connecting China, Tibet, and India for centuries. Though its relevance in commerce has faded, it remains a symbol of historical and cultural exchange. Ongoing efforts to preserve and promote its legacy underscore its significance in shaping regional history and India-China relations.

---

### Weaponization of the Special Marriage Act



## Context

- The Special Marriage Act, 1954 (SMA), designed to facilitate interfaith and inter-caste marriages, is often misused to harass couples, especially in religiously sensitive cases.
- A recent case in Bhopal highlights this issue, where an interfaith couple faced violent attacks while attempting to register their marriage.

## Case Study: Bhopal Incident

- A Hindu-Muslim couple sought to marry under the SMA, which mandates a 30-day public notice before marriage.
- Their details were leaked, attracting a violent mob that attacked them at the court.
- Instead of ensuring transparency, this provision exposed them to communal hostility.

## Key Issues with the Special Marriage Act (SMA), 1954

- **Mismatch Between Purpose and Reality:**
  - The SMA was introduced to provide a secular framework for marriage, allowing interfaith and inter-caste unions outside religious personal laws.
  - However, the 30-day public notice often leads to societal interference, endangering couples.
- **Violation of Privacy:**
  - The Supreme Court's **Justice K.S. Puttaswamy vs. Union of India (2017)** ruling recognized privacy as a fundamental right under **Article 21 (Right to Life and Personal Liberty)**.
  - The public notice requirement undermines individual autonomy by exposing private decisions to public scrutiny.
- **Social and Religious Backlash:**
  - Personal details leaked from marriage registrars' offices often enable vigilante groups, moral policing, and extremist attacks.
- **Misuse of the Objection Clause:**
  - The law allows objections on arbitrary grounds, often fueled by communal bias, personal vendettas, or family coercion rather than genuine legal concerns.

## Need for Reforms

- **Abolish the public notice requirement** to protect couples from harassment and privacy breaches.
- **Align the SMA with constitutional values** of individual liberty and freedom of choice.
- **Strengthen legal protections** in accordance with privacy rights. to prevent societal and communal interference.
- **Ensure confidentiality in marriage registration** and take strict action against the harassment of couples exercising their right to marry.

## Conclusion



The Special Marriage Act, originally intended to promote progressive social values, has instead become a tool for targeting interfaith and inter-caste couples. Urgent reforms, particularly in **Section 7** (which allows public objections), are needed to prevent its misuse. Ensuring legal protection and privacy will uphold the constitutional principles of secularism, equality, and personal freedom.

## Earthquakes and India's Preparedness: Strengthening Seismic Resilience

### Geological Causes of Earthquakes

- Earthquakes occur due to the continuous collision between the Indian and Eurasian Plates.

### Background

- Natural disasters have played a major role in shaping landscapes and civilizations.
- Among these, earthquakes are particularly unpredictable and destructive.
- Recent quakes in Türkiye, Syria, China, and India highlight the need for proactive preparedness and planning.
- It is crucial to examine their impact, underlying geological causes, media and government responses, and necessary mitigation measures.

### Recent Earthquake Disasters

- On February 6, 2023, a 7.8-magnitude earthquake devastated Türkiye and Syria, killing over 17,000 people.
- A second tremor further intensified the destruction.
- Similarly, on January 7, 2025, a 7.1-magnitude earthquake struck Tibet, affecting Nepal and northern India.
- These events demonstrate that earthquakes are not restricted to specific areas but can have widespread repercussions.

### Tectonic Activity and Seismic Risks

- The Indian Plate moves northward at approximately 5 cm per year, colliding with the massive Eurasian Plate.
- This ongoing collision has created the Himalayas, making it one of the most tectonically active regions.
- The accumulated pressure in this zone increases the likelihood of future earthquakes.
- Scientists warn that the region is under immense tectonic stress, which could lead to a major rupture at any time.
- Past major earthquakes include:
  - **1934 Bihar-Nepal Earthquake (Mw 8.0)** – Over 10,000 casualties.
  - **2005 Kashmir Earthquake (Mw 7.6)** – More than 87,000 fatalities.
  - **2015 Nepal Earthquake (Mw 7.8)** – Nearly 9,000 deaths and widespread destruction.



## Seismic Fault Lines in the Himalayan Region

- Fault lines are fractures in the Earth's crust where stress builds up.
- These remain dormant for long periods, creating a false sense of security before a sudden release of energy causes an earthquake.
- Key fault lines in the region:
  - **Main Frontal Thrust (MFT)** – Responsible for some of the most destructive earthquakes.
  - **Main Boundary Thrust (MBT)** – Contributes significantly to seismic activity.
  - **Main Central Thrust (MCT)** – Facilitates the movement of the Indian Plate under the Himalayas.

## The Rising Risk and Future Predictions

- The prolonged quiet period between major quakes suggests increasing stored energy along fault lines.
- Experts believe a major seismic event could be imminent.
- The January 7, 2025, Tibet earthquake reinforces the vulnerability of the region.
- Since seismic activity does not adhere to national borders, tremors were felt in Nepal and northern India.
- A large earthquake in the Himalayan region is not a question of 'if' but 'when.'

## The Overlooked Threat: Human Activities and Seismic Risks

- While tectonic activity is natural, human interventions have intensified risks.
- Large infrastructure projects, including dams, tunnels, and road networks, weaken the region's fragile geological formations.
- Deforestation and unchecked urban expansion further heighten vulnerability by reducing natural shock absorbers and increasing landslide risks.
- The Himalayas must be recognized not just for their beauty but also as a high-risk seismic zone requiring stringent safety measures.

## Media and Government Response

- Media coverage has played a crucial role in raising awareness about earthquake hazards.
- While precise earthquake prediction is not yet possible, strict building codes can help minimize damage.
- The February 17 tremors in Delhi and Bihar show that even existing regulations may not be sufficient.
- Prime Minister Narendra Modi's call for calm was reassuring, but long-term preparedness must be prioritized through structural and policy interventions.

## Key Steps for Disaster Mitigation and Preparedness

1. **Regulating Construction** – Limiting infrastructure projects in high-risk zones to prevent geological disturbances.



2. **Updating Seismic Maps** – Ensuring accurate risk assessment for critical structures like dams and nuclear plants.
3. **Seismic Insurance** – Promoting earthquake insurance to mitigate financial burdens post-disaster.
4. **Strengthening Emergency Response** – allocating resources for rapid disaster relief and rehabilitation.
5. **International Collaboration** – Learning from global best practices in earthquake preparedness and infrastructure resilience.

## Conclusion

- While earthquakes cannot be stopped or precisely predicted, their damage can be minimized through proper planning and resilience measures.
  - The recent seismic events should serve as a wake-up call for India to reinforce its infrastructure, enforce stricter regulations, and invest in earthquake forecasting research.
  - Implementing these steps will ensure that when a major earthquake strikes, the loss of life and property is significantly reduced.
- 

## Tackling Heatwaves: Strengthening India's Resilience

### Context

- Climate change has made extreme weather events more frequent and intense.
- Heat waves have emerged as silent killers in India, impacting public health, infrastructure, and the economy.
- However, public awareness about heatwave risks remains alarmingly low.

### Escalating Heatwave Threats in India

- India is witnessing a rise in heatwave frequency, duration, and intensity.
- By January 2025, global temperatures had surpassed the 1.5°C threshold for 18 of the last 19 months.
- The Paris Climate Agreement's goal of limiting global warming to 2°C is becoming increasingly unattainable.

### Impacts of Heatwaves

#### 1. Public Health Crisis

- 90% of India's population is vulnerable to heat-related illnesses.
- Rural healthcare systems are overwhelmed by heat-induced medical conditions.

#### 2. Economic Consequences

- Heat stress could lead to **34 million job losses** in India by 2030 (World Bank).
- Outdoor workers face significant productivity losses.



### 3. **Water Scarcity and Food Security**

- India has only **4% of the world's freshwater** but supports **18% of the global population**.
- **54% of India's land** faces high-to-extreme-high water stress.
- Declining groundwater levels and rising irrigation demands threaten agriculture.
- Heat waves increase the risk of crop failures and reduce yields.

### 4. **Energy Sector Challenges**

- Increased cooling demands strain the energy supply.
- **70% of India's power** is generated by thermal plants reliant on water, making them vulnerable to heatwave-induced inefficiencies.

## **Government Response and Policy Initiatives**

### 1. **National Disaster Management Authority (NDMA) Initiatives**

- Recognize heat waves as a serious hazard.
- Develop national workshops on preparedness.
- Conduct **Heat Action Plans (HAPs)** to mitigate heatwave effects.
- Issues state and local government guidelines.

### 2. **National Framework for Heatwave Mitigation (2024)**

- Focuses on long-term mitigation over short-term relief.
- Involves local vulnerability assessments, community engagement, and inter-departmental coordination.
- Encourages states to classify heatwaves as disasters for better funding.
- Advocates for data-driven updates to HAPs.

## **Implementation Challenges and Strategies**

### 1. **Enhancing Local-Level Interventions**

- Promoting cool roofs and green infrastructure.
- Strengthening early warning systems via NDMA-IMD collaboration.
- Utilizing the **Common Alerting Protocol (CAP)** for better information dissemination.

### 2. **Protecting Vulnerable Populations**

- Adjusting working hours and providing cooling vests for outdoor laborers.
- Setting up cooling shelters with water supplies in urban areas.
- Equipping hospitals with heatwave management protocols.

### 3. **Water Conservation Measures**

- Promoting **rooftop rainwater harvesting**.
- Establishing community water kiosks.

## **Conclusion**

- With over 250 Heat Action Plans in place, effective execution remains the key challenge.
- India must prioritize building **heat-resilient cities and communities** to combat rising temperatures effectively.



## Addressing the Escalating Threat of Forest Fires

### Context

- Forest fires have become a growing global crisis, worsened by human activities and climate change.
- Recent wildfires in Los Angeles have underscored the devastating impacts of such disasters, highlighting the urgent need for preventive measures.
- Unfortunately, these concerns often surface only after significant losses in life, property, and biodiversity.
- In India, the situation is equally alarming, as a large portion of the country's forests remain susceptible to fires.

### The Rising Risk of Forest Fires in India

- India's forests play a crucial role in biodiversity conservation and in supporting local communities but are increasingly vulnerable to fires. Reports indicate that over 36% of the country's forest cover is at risk.
- Shockingly, forest fire incidents have increased tenfold over the past two decades, even as the overall forest cover has grown marginally by 1.12%.
- States like Uttarakhand, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, and Karnataka experience frequent and severe fires.
- Human activities are the primary cause, with nearly 90% of incidents linked to practices like land clearing, slash-and-burn agriculture, and unattended campfires.
- Climate change exacerbates the problem by creating favorable conditions for wildfires, with rising temperatures and prolonged dry spells increasing their intensity and spread.

### The Devastating Consequences of Forest Fires

#### ● Environmental Damage

- The destruction of forests disrupts ecosystems and threatens endangered species.
- Wildfires significantly contribute to carbon emissions, intensifying global warming.
- Indian forest fires alone release around 69 million tonnes of CO<sub>2</sub> annually.
- Soil degradation and water cycle disturbances pose long-term environmental risks.

#### ● Economic Losses

- The destruction of timber and non-timber forest products negatively impacts forest-dependent communities.
- A 2018 report by the Ministry of Environment, Forest, and Climate Change estimated annual economic losses from forest degradation, including fires, at ₹1.74 lakh crore.

#### ● Social Disruptions

- Displaced wildlife seeking refuge in human settlements increases human-animal conflicts.



- Smoke and air pollution exacerbate respiratory illnesses, particularly affecting vulnerable populations.

### Limitations in Existing Policies

#### ● Budget Constraints

- Inconsistent funding for the Forest Fire Prevention and Management Scheme (FFPMS) has hindered sustained prevention efforts.
- For instance, allocations fluctuated from ₹46.40 crore in 2019-20 to just ₹28.25 crore in 2022-23, reflecting unreliable financial support.

#### ● Technological Gaps

- The Forest Fire Alert System struggles to distinguish forest fires from other types of blazes, causing delays in response.
- The absence of advanced predictive modeling and real-time data integration weakens early warning systems.

### A Comprehensive Approach to Forest Fire Management

#### ● Strengthening Financial and Policy Support

- A consistent and increased budget for fire prevention programs is crucial.
- Long-term strategies, such as afforestation and sustainable land management, should be prioritized.

#### ● Leveraging Technology for Early Detection and Response

- Predictive modeling using climatic and geographic data can help identify high-risk areas.
- Drones equipped with thermal imaging can enhance fire detection, damage assessment, and targeted firefighting.
- Data from agencies like the Forest Survey of India, India Meteorological Department, and ISRO should be integrated for better decision-making.

#### ● Enhancing Community Participation

- Strengthening early warning systems through mobile applications, toll-free helplines, and SMS-based reporting can improve local response.
- Expanding initiatives like those in Uttarakhand and Himachal Pradesh, where self-help groups collect pine needles to reduce fire risks, can be effective.
- India can learn from global models like Nepal's Community Forest User Groups and Indonesia's FireFree Village Program, which involve local communities in fire prevention efforts.

#### ● Educating and Training Local Populations

- Awareness campaigns can promote behavioral changes to reduce fire risks.
- Training local youth as forest fire scouts can create a dedicated early detection and prevention workforce.

### Conclusion

- Forest fires are not just environmental disasters; they also have severe social and economic ramifications, demanding urgent action.
- Addressing this challenge requires collaboration among policymakers, scientists, civil society, and local communities.



- A multi-pronged approach—spanning policy reforms, increased funding, technological advancements, and community engagement—is essential to mitigate wildfire risks.
  - Only through sustained and proactive efforts can we safeguard our forests, wildlife, and communities from the devastating impact of forest fires.
- 

## **Regulating Live-in Relationships: Challenges and Concerns**

### **Context**

- The implementation of the Uniform Civil Code (UCC) in Uttarakhand marks a significant shift in civil law, particularly regarding live-in relationships.
- The new provisions require mandatory registration of opposite-sex live-in relationships and criminalize noncompliance.
- While the regulation seeks to protect individuals in such relationships, it raises concerns about personal autonomy, privacy, and state interference.

### **The Rationale Behind Regulating Live-in Relationships: Protection of Vulnerable Individuals**

- A key objective of regulation is to protect vulnerable individuals, particularly women and children.
- The UCC grants legal recognition to children born from live-in relationships, a right previously limited to children from void or voidable marriages.
- It also provides a legal remedy for maintenance in cases where one partner is deserted, ensuring financial security for those at risk.

### **Shortcomings of the Uttarakhand UCC**

- However, the law does not address cases where a live-in relationship is voluntarily terminated rather than abandoned.
- Since termination only requires a statement to the registrar, one partner may be left without financial support.
- This contradiction weakens the law's ability to provide adequate protection while maintaining the informal nature of such relationships.
- The exclusion of same-sex relationships from these provisions further highlights the law's limitations.
- By recognizing only opposite-sex live-in relationships, the UCC denies LGBTQ+ individuals legal protections, reinforcing discrimination.

### **Additional Concerns with the Uttarakhand UCC**

#### **● Defining Live-in Relationships**

- The UCC's definition, drawn from the Protection of Women from Domestic Violence Act, 2005, describes live-in relationships as "like marriage."



- However, many live-in arrangements do not resemble marriage—some are temporary, while others lack economic interdependence or shared domestic responsibilities.
- The requirement to register a live-in relationship within one month fails to recognize their fluid nature.
- Unlike marriage, live-in relationships often evolve gradually without a clear starting point.
- Imposing rigid registration requirements may force individuals to formalize relationships that do not fit traditional legal frameworks, creating unnecessary bureaucratic complications.

### ● **Infringement on Sexual Autonomy and Privacy**

- The Supreme Court, in ***Shakti Vahini v. Union of India*** (2018), upheld the right of adults to make autonomous decisions regarding their relationships.
- However, the UCC introduces provisions that could lead to familial and societal interference.
- For instance, if one or both partners are below 21, their parents or guardians must be notified.
- This clause violates an individual's right to privacy and could endanger those in inter-caste or inter-religious relationships, where family disapproval may result in honor-based violence.

### ● **Treating Live-in Relationships as a Law-and-Order Issue**

- Requiring that information about live-in relationships be shared with local police further suggests state control over personal relationships.
- Criminalizing non-registration reinforces the idea that the government has the authority to determine the legitimacy of private partnerships.

### ● **A Flawed Approach to Relationship Regulation**

- Internationally, laws regulating non-marital cohabitation typically aim to extend rights and protections, such as inheritance benefits, joint property ownership, and healthcare access.
- However, the Uttarakhand UCC appears to approach live-in relationships as a problem requiring state oversight rather than as a legitimate partnership model.
- Instead of empowering individuals, it imposes legal scrutiny and exposes them to potential social backlash.

## **Conclusion**

- While Uttarakhand's UCC seeks to provide legal safeguards for individuals in live-in relationships, it raises significant concerns about autonomy, privacy, and state overreach.
- Mandatory registration, parental notification, and criminalization of noncompliance undermine personal freedoms.
- Rather than ensuring protection, the law risks exposing individuals to greater vulnerability by legitimizing societal control over private relationships.



- Moving forward, a more balanced legal framework is needed—one that provides protections without imposing excessive state intervention, recognizing the diverse nature of modern relationships.

## **Technology and the Challenge of Equitable Education**

### **Context**

- Over the last three decades, digital technology has rapidly evolved in India, creating both opportunities and challenges in the education sector.
- The COVID-19 pandemic accelerated digital adoption in rural India, significantly boosting digital education.
- ASER data highlights the increasing availability of smartphones, the integration of digital learning tools, and the potential for technology to bridge educational gaps.
- However, despite progress, significant hurdles persist in ensuring equitable access and improving learning outcomes, particularly for disadvantaged communities.

### **Growth of Digital Technology in Rural Education**

- Before the pandemic, digital education remained out of reach for most rural students due to limited access to devices, poor connectivity, and low digital literacy.
- ASER data reveal a sharp increase in smartphone ownership in rural households, rising from 36% in 2018 to 84% in 2024.
- The growing use of smartphones among teenagers indicates an increasing familiarity with digital tools, which can enhance learning experiences through access to online content, courses, and training.
- During the pandemic, digital resources such as worksheets, video lessons, and online assignments supplemented traditional textbooks.
- While some of these practices declined post-pandemic, the digital skills acquired during this period have laid a foundation for ongoing engagement with technology.
- With advancements in artificial intelligence (AI), digital learning is evolving to offer more personalized, accessible, and interactive education.

### **Challenges in Implementing Digital Education**

#### **1. Limited Access to Devices and Connectivity**

- Despite the rise in smartphone ownership, many students lack personal access, as families often share a single device.
- Rural areas continue to face challenges like weak network coverage, slow internet speeds, and high data costs.

#### **2. Low Digital Literacy and Awareness**

- Many rural students, parents, and teachers struggle with basic digital literacy, making it difficult to navigate online learning platforms.
- A large proportion of rural mothers have little to no formal education, limiting their ability to support their children's digital learning.
- Teachers often lack experience with digital tools, hindering the integration of technology into classrooms.



### 3. Irregular School Attendance and Learning Gaps

- While school access has improved, attendance remains inconsistent due to economic pressures, seasonal migration, and lack of parental oversight.
- Educational experiences vary across government schools, private institutions, and informal tuition centers, making it difficult to implement uniform digital learning strategies.
- Many digital learning tools function independently rather than complementing existing school curricula, reducing their overall impact.

### 4. Language and Content Barriers

- A significant portion of high-quality digital content is in English, making it less accessible to non-English-speaking students.
- While AI-driven translation tools are improving, there remains a shortage of engaging, high-quality content in regional languages.
- Many digital learning resources are designed with a Western perspective, making them less relatable for rural Indian students.
- Text-heavy digital content poses challenges for students with limited literacy skills.

### AI and Future Prospects in Digital Learning

- AI-driven tools can personalize learning, offer real-time feedback, and improve access to educational content across multiple languages.
- Language barriers are gradually being addressed through AI-powered translation and voice recognition.
- However, to ensure that technology benefits marginalized communities, careful planning and strategic implementation are necessary.

### The Way Forward: Ensuring Equitable Digital Education

- The profit-driven nature of technology companies raises concerns about universal access to digital education without strong philanthropic and government support.
- While some initiatives offer free educational resources, large-scale implementation requires robust investment in infrastructure and policies.
- Establishing **digital learning hubs** in rural communities could provide structured educational support through AI-powered tools.
- Expanding **community-driven digital education programs**, similar to Maharashtra's pandemic-era broadcast learning, can improve accessibility and engagement.

### Conclusion

- The widespread availability of smartphones has created new learning opportunities, but addressing key challenges is crucial for meaningful progress.
- AI and emerging technologies have immense potential, but their benefits must reach all students, especially the underprivileged.
- A balanced approach that promotes innovation, affordability, and inclusivity is essential for realizing the full potential of digital education in India.



## General Studies II

### 1. Importance of India-EU Partnership

#### Why in the News?

A significant delegation from the European Commission College of Commissioners is in New Delhi for a two-day visit.

#### Introduction:

- A high-level delegation, including 22 out of 27 European Commissioners and led by European Commission (EC) President Ursula von der Leyen, visited New Delhi.
- This unprecedented visit highlights the growing engagement between India and the EU in various sectors, such as trade, technology, green energy, and defence.
- The visit coincided with meetings of the India-EU Trade and Technology Council (TTC), bilateral discussions between Indian ministers and EU Commissioners, and a leaders' summit aimed at enhancing cooperation and investments.

#### A Strong Partnership Over the Years:

- India established diplomatic relations with the European Economic Community (EEC), the predecessor of the EU, in 1962.
- Over the years, the partnership has evolved through key milestones:
  - 1993: Joint Political Statement signed
  - 1994: Cooperation Agreement established
  - 2000: First India-EU Summit held in Lisbon
  - 2004: Relations upgraded to a Strategic Partnership
  - 2020: Adoption of the India-EU Strategic Partnership Roadmap (2025)
- Frequent interactions between Prime Minister Narendra Modi and EC President Ursula von der Leyen have strengthened diplomatic ties, covering areas like climate change, global trade, and regional security.

### Key Aspects of India-EU Collaboration

#### Trade and Investment:

- India and the EU have been negotiating a Free Trade Agreement (FTA) for over 15 years, with discussions resuming in 2021.
- The EU is India's largest trading partner for goods, with trade volumes increasing by 90% in the last decade.
- **Key trade figures (FY 2023-24):**
  - Bilateral trade in goods: \$135 billion (Indian exports: \$76 billion; imports: \$59 billion)
  - Bilateral trade in services: \$53 billion (Indian exports: \$30 billion; imports: \$23 billion)
  - EU's FDI in India (2000-2024): \$117.4 billion (16.6% of total FDI equity inflows)
  - Indian FDI in the EU (2000-2024): \$40.04 billion



- The FTA aims to lower tariffs, encourage investment, and boost trade between both economies.

### Technology and Digital Cooperation:

- India and the EU are collaborating on emerging technologies, particularly in response to China's digital expansion.
- The India-EU TTC, launched in 2022, focuses on:
  - Digital and Strategic Technologies
  - Clean and Green Technologies
  - Trade, Investments, and Supply Chain Resilience
- **Key initiatives:**
  - **Semiconductor Collaboration:** A Memorandum of Understanding (MoU) on semiconductor R&D was signed in November 2023.
  - **Supercomputing:** In 2022, both sides agreed to collaborate on High-Performance Computing (HPC).
  - **AI & Cybersecurity:** The EU participated in the 2023 Global Partnership on AI Summit in New Delhi.

### Green Energy Cooperation:

- Sustainability plays a crucial role in the India- EU collaboration, particularly in green hydrogen and renewable energy.
- **Major initiatives:**
  - **Green Hydrogen Cooperation:** India was the exclusive partner at the 2024 European Hydrogen Week in Brussels.
  - **Financial Support:** The European Investment Bank (EIB) has pledged €1 billion to fund Indian hydrogen projects.
  - **Future Plans:** India and the EU aim to establish a green hydrogen ecosystem in India by 2030.
- These efforts align with India's Net-Zero target for 2070 and the EU's carbon neutrality goals.

### Defence and Space Collaboration:

- India and the EU have strengthened defence and maritime security cooperation, especially in the Indo-Pacific, under the Enhanced Security in and with Asia (ESIWA+) program.
- **Key developments:**
  - **The first India- EU Joint Naval Exercise** took place in October 2023 in the Gulf of Guinea.
  - **Security and Counterterrorism:** Both sides cooperate on tackling piracy, cyber threats, and disaster response.
  - **Space Collaboration:**
    - ISRO launched the EU's PROBA-3 mission in December 2024.
    - India-EU joint efforts in Chandrayaan-3, Aditya-L1, and Gaganyaan missions.

### People-to-People Ties:



- The Indian diaspora in the EU includes students, professionals, and researchers, fostering closer socio-economic ties.
- **Key programs:**
  - **Erasmus Scholarships:** Over 6,000 Indian students have benefited in the last two decades.
  - **Research Grants:** More than 2,700 Indian researchers have received funding through Marie Skłodowska-Curie Actions since 2014.
  - **Workforce Mobility:** Indian professionals received 20% of EU Blue Cards in 2023-24, facilitating skilled migration.

### Conclusion:

The visit of the European Commission College of Commissioners marks a significant step in India-EU relations. Enhanced collaboration in trade, technology, green energy, and defence will further solidify their strategic partnership. The success of the FTA, semiconductor R&D, and hydrogen projects will drive economic growth and global leadership. Amid shifting geopolitical dynamics, India and the EU remain committed to fostering a resilient, sustainable, and secure future.

---

## 2. Supreme Court Stays Lokpal Order on Corruption Complaint Against High Court Judge

### Why in the News?

The Supreme Court has put on hold a Lokpal order that had taken cognizance of a corruption complaint against a High Court judge. The Lokpal bench, chaired by former SC judge A.M. Khanwilkar, claimed authority under the Lokpal and Lokayuktas Act, 2013. However, the Supreme Court found this concerning and halted proceedings. The next hearing is scheduled for March 18.

### Why the Supreme Court Stayed the Lokpal Order

- **Judicial Independence:** The SC emphasized the need to protect judicial autonomy while balancing judicial accountability.
- **Concerns Over Executive Overreach:** As a statutory body under the executive, allowing Lokpal to investigate judges could set a precedent threatening judicial independence.
- **Established Procedures:** The SC warned that the Lokpal's order might bypass the legally established process for handling complaints against judges.

### Legal Framework for Complaints Against Judges

- **Relevant Laws:**
  - **Indian Penal Code (IPC) & Bharatiya Nyaya Sanhita (BNS):** Sections 77 (IPC, 1860) and 15 (BNS, 2023) protect judges from legal action for official duties.
  - **K. Veeraswami v. Union of India (1991):**



- Judges can be investigated for corruption under the Prevention of Corruption Act, 1988.
- However, Presidential sanction, based on the Chief Justice of India's (CJI) advice, is required before proceeding with criminal charges.
- **Judicial Impeachment vs. Criminal Prosecution:**
  - Impeachment requires parliamentary approval, whereas criminal charges follow separate legal procedures.

## The Lokpal's Case Against the High Court Judge

- **Allegations:**
  - Two complaints accused an HC judge of influencing cases linked to a private company that was allegedly his former client.
- **Lokpal's Interpretation of Jurisdiction:**
  - The Lokpal and Lokayuktas Act applies to public servants but does not explicitly mention judges.
  - The Lokpal argued that HC judges fall under its jurisdiction, as some High Courts were established under colonial-era laws, which qualify as Acts of Parliament.
- **Distinction Between SC and HC Judges:**
  - Lokpal ruled that SC judges are outside its purview since the Supreme Court was established by the Constitution, not an Act of Parliament.
- **Consultation with CJI:**
  - Despite asserting jurisdiction, the Lokpal referred the case to the CJI before proceeding.

### Conclusion:

The Supreme Court's intervention highlights concerns over judicial independence and executive overreach. The ruling on this case will significantly impact the accountability framework for India's higher judiciary.

## India's Need for a Department of Government Efficiency (DOGE)

Prime Minister Narendra Modi's recent visit to Washington and his meeting with Elon Musk have sparked discussions on the possibility of India adopting a governance model similar to the U.S. Department of Government Efficiency (DOGE). This institution focuses on reducing waste, streamlining bureaucracy, and improving efficiency. Implementing such a framework in India could help achieve the vision of "Minimum Government, Maximum Governance."

### Why is DOGE Relevant to India?

1. **Large Government Workforce** – India's bloated government structure, with 48.47 lakh employees and 67.95 lakh pensioners, consumes a significant portion of the budget, leaving limited resources for development.
2. **Overlapping Ministries** – Multiple ministries perform similar functions, such as the Ministry of Agriculture and Farmers Welfare and the Department of Animal Husbandry and Dairying. Additionally, outdated ministries like the Ministry of Information and Broadcasting remain operational despite their limited relevance.



3. **Inefficiencies in Administration** – Many government offices still operate with excessive staffing, reflecting inefficiencies inherited from the socialist era.
4. **Outdated Bureaucratic Positions** – Positions such as district collectors, a colonial legacy, continue to exist despite their redundancy in modern governance.
5. **Economic Losses** – According to a 2021 McKinsey Global Institute report, inefficiencies in public service delivery cost India nearly 3% of its GDP annually.
6. **Delayed Reforms and Public Discontent** – Key policy changes, including labor reforms and land acquisition laws, face bureaucratic delays. Slow service delivery erodes public trust in the government.

### Potential Benefits of DOGE Implementation

1. **Expenditure Optimization** – DOGE could help rationalize spending, especially on salaries and pensions, aligning with Modi's vision of "Make India Great Again" (MIGA).
2. **Better Fiscal Management** – Funds currently wasted on redundant ministries and overstaffed offices could be redirected to essential sectors like healthcare, education, and infrastructure.
3. **Improved Governance** – A more streamlined bureaucracy would enhance service delivery, curb corruption, and improve responsiveness.
4. **Boost to Private Sector Growth** – Reducing bureaucratic hurdles would attract foreign investment and create more job opportunities.
5. **Enhanced Global Competitiveness** – A leaner government structure would improve India's Ease of Doing Business rankings.

### Challenges in Implementing DOGE

1. **Political Opposition** – Downsizing ministries and cutting government jobs would face resistance from bureaucrats and politicians who benefit from the current system.
2. **Job Loss Concerns** – Government jobs are a popular employment choice, and large-scale downsizing could create unemployment worries.
3. **Bureaucratic Resistance** – Political influence and employment dependencies make bureaucratic downsizing difficult.
4. **Fiscal Constraints of Populist Policies** – Some states, like Tamil Nadu and Karnataka, struggle with fiscal discipline due to populist policies.
5. **Implementation Challenges** – Adapting the DOGE model to India's complex governance structure would require strong political will.
6. **Public Perception Issues** – Reforms must be framed as pro-people rather than anti-employee to gain public support.

### Measures to Improve Government Efficiency

1. **Legislative Framework for Efficiency** – Establish an Indian Department of Government Efficiency (IDOG) modeled after the U.S. Office of Management and Budget (OMB) and Singapore's Public Service Division (PSD).
2. **Merging Redundant Ministries** – Overlapping departments like Agriculture and Animal Husbandry should be consolidated, and outdated ministries like the Ministry of Information and Broadcasting should be downsized.



3. **Performance-Based Employment** – Implement Key Performance Indicators (KPIs) and real-time monitoring for civil servants. A Public-Private Efficiency Task Force should oversee structural reforms.
4. **Better Utilization of Government Assets** – Underutilized government properties should be monetized. Accelerating digitization and automation would reduce dependency on human resources in governance.
5. **Phased Implementation** – Downsizing should be gradual, with re-skilling and alternative employment opportunities provided to affected employees.
6. **Adopting Global Best Practices** – Learn from successful governance models in countries like Denmark and South Korea, which have reduced government expenditure while enhancing public services.

India's path to "Minimum Government, Maximum Governance" requires bold reforms to eliminate bureaucratic inefficiencies and optimize resources. By restructuring ministries, commercializing assets, and abolishing outdated roles, India can build a more efficient, responsive, and accountable government. Adopting DOGE could be a crucial step toward achieving this vision.

---

## Places of Worship Act, 1991

Chief Justice of India Sanjiv Khanna has ruled out new petitions challenging the Places of Worship Act, 1991, while allowing intervention petitions introducing new legal arguments. This Act preserves the religious character of places of worship as they stood in 1947, except the Ram Janmabhoomi dispute. Recent controversies, including those involving the Sambhal and Ajmer Sharif shrines, have renewed focus on this law.

### Background and Purpose of the Act

- **Historical Context** – As tensions escalated over the Babri Masjid- Ram Janmabhoomi dispute, Hindu organizations also challenged the status of religious sites like the Gyanvapi mosque in Varanasi and the Shahi Idgah in Mathura. To address such conflicts, the P.V. Narasimha Rao government enacted the Places of Worship Act in 1991, freezing the status of religious sites as they were on August 15, 1947. The Ayodhya dispute was excluded, as litigation was already underway.
- **Objective** – The law aims to prevent the alteration of religious sites and ensure the preservation of their historical religious character.

### Criticism of the Act

1. **Denial of Judicial Review** – Critics argue that the Act is unconstitutional as it restricts the right to seek judicial review (Article 13(2)).
2. **Violation of Legal Principle** – The Act contradicts the legal doctrine of *ubi jus ibi remedium* (where there is a right, there is a remedy), violating the rule of law under Article 14.
3. **Arbitrary Cutoff Date** – The retrospective date of August 15, 1947, is criticized as irrational, barring legal recourse against historical encroachments.



4. **Conflict with Secularism** – The Act is seen as discriminatory, preventing Hindus, Jains, Buddhists, and Sikhs from reclaiming places of worship taken over by invaders.
5. **Violation of Religious Freedom** – The law is argued to infringe upon Articles 25 and 26, which guarantee freedom of religion.

### Significance of the Act

1. **Preserving the Religious Status Quo** Ensures continuity in religious practices and prevents disputes over places of worship.
2. **Fostering Communal Harmony** – Helps maintain peace by prohibiting religious conversions of places of worship.
3. **Upholding Secularism** – Reinforces India's commitment to secularism by preventing religious disputes from escalating.
4. **Preventing Political Exploitation** – Discourages attempts to incite communal unrest for political gain.

### Implications of Challenging the Act

1. **Threat to Secularism** – Undermining the Act could weaken India's commitment to secular principles.
2. **Political Ramifications** – Petitions challenging the Act have been used for political agendas.
3. **Historical Reinterpretation** – Revisiting religious site disputes could lead to rewriting historical narratives, affecting national memory and heritage.
4. **Public Trust and Social Harmony** – Legal battles over religious sites risk damaging public trust and igniting communal tensions, as seen in the Sambhal violence case.

### Way Forward

1. **Judicial Review** – The Supreme Court should conduct a thorough review of the Act to address concerns about constitutional validity.
2. **Ensuring Judicial Oversight** – Courts should retain the power to adjudicate grievances related to places of worship.
3. **Balancing Rights and Preservation** – Legal solutions should protect religious site integrity while ensuring that community rights are respected.
4. **Fairness and Consistency** – Policymakers should engage in public consultations to ensure balanced reforms.

The Places of Worship Act remains a critical legal framework in India's secular governance, balancing historical preservation with contemporary legal challenges.

## 5. A Process Where Free and Fair Elections May Be Compromised

### Context

The Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023, establishes a legal framework for appointing the Chief Election Commissioner (CEC) and Election Commissioners (ECs). The



legislation was introduced following the Supreme Court's directive in March 2023, emphasizing the need for a transparent and independent selection process. However, despite its intent to uphold democratic principles, concerns have been raised over the law's potential to allow government influence in these crucial appointments.

## **Historical Background, Judicial Intervention, and Issues with the New Law**

### **Historical Context and Judicial Involvement**

- Previously, the President appointed the CEC and ECs based on the Prime Minister's recommendation, raising concerns over the Election Commission's impartiality.
- The Supreme Court intervened, ruling that appointments should involve a high-level committee consisting of the Prime Minister, the Leader of the Opposition (LoP) in the Lok Sabha, and the Chief Justice of India (CJI) as an interim measure until a law was enacted.
- The new Act, while complying with the need for a legislative framework, significantly alters the composition of the selection committee by replacing the CJI with a cabinet minister nominated by the Prime Minister.
- This modification has sparked debates over its impact on the independence of the selection process.

### **Challenges to the New Law**

- The key issue is the exclusion of the CJI, which results in a government-dominated selection panel, with both the Prime Minister and a cabinet minister representing the ruling party.
- This raises fears that the appointment process may become a mere formality, with the government effectively controlling selections.
- A search committee, led by the Law Minister, shortlists five candidates, but the secrecy surrounding the selection process further reduces transparency and public trust.
- The recent selection of the senior-most EC as CEC, despite dissent from the LoP, underscores concerns that the process lacks genuine deliberation.

### **Constitutional Issues in the Selection Process**

- Article 324 of the Constitution mandates the Election Commission to ensure free and fair elections.
- The Supreme Court reaffirmed in *Election Commission of India vs. State of Tamil Nadu* (1993) that the ECI must function independently to maintain electoral integrity.
- Given India's vast electorate of nearly 960 million, election commissioners must be appointed without political interference to sustain confidence in the electoral system.
- The major flaw in the new Act is its built-in government majority in the selection process, compromising independent decision-making.
- A cabinet minister, who is inherently aligned with the Prime Minister, is unlikely to challenge government preferences, further reducing the likelihood of unbiased decision-making.

### **Broader Constitutional Implications**



- The Act raises concerns regarding its compatibility with Article 14 of the Constitution, which guarantees equality before the law.
- By structurally favoring government-backed candidates, the law undermines the fundamental fairness required in appointing constitutional authorities.
- The independence of the ECI is crucial for maintaining free and fair elections, which form the foundation of India's democracy.
- If the selection committee is biased in favor of the ruling party, it risks eroding electoral credibility and weakening democratic institutions.

### The Role of the Supreme Court

- The judiciary must protect democratic institutions and may need to review whether the new selection process aligns with constitutional principles.
- A potential solution could be reinstating the CJI as part of the selection panel or forming an independent body comprising retired judges and neutral experts.

### The Way Forward

- Reforming the appointment process is essential to ensure transparency, fairness, and non-partisanship.
- The Supreme Court's intervention will be critical in determining whether the law aligns with constitutional values or requires amendments.

### Conclusion

The appointment of the CEC and ECs is crucial for ensuring the credibility of elections. While the 2023 Act introduces a legislative framework, it compromises the independence of the ECI by granting excessive government influence. The lack of transparency, the exclusion of the judiciary, and the guaranteed government majority in the selection process make the law vulnerable to constitutional scrutiny.

## Delimitation in India: Balancing Democracy and Federalism

The **conflict between the Central Government and Tamil Nadu** over delimitation has reignited the **debate on democratic representation**. The last delimitation was conducted in **1975**, after which **Indira Gandhi froze the process** until **2000**. In **2001**, Parliament extended this freeze until **2026**. The next delimitation, after the first Census post-2026, will have **major implications for democracy, demography, and federalism**.

### Understanding Delimitation and Its Constitutional Basis

- **Delimitation**: The process of **redrawing electoral constituency boundaries** for fair representation based on population shifts.
- **Authority**: Conducted by the **Delimitation Commission** under the **Delimitation Act, 2002**.
- **Constitutional Provisions**: Governed by **Articles 82 and 170** of the Constitution.
- **Objective**: To maintain **electoral balance** and uphold the **"one person, one vote"** principle.



## Significance of Delimitation in India

### 1. Ensuring Political Representation and Electoral Fairness

- Helps in the **equitable distribution** of parliamentary and assembly seats.
- **Example:** 2002 Delimitation Commission improved voter-to-MP ratio.

### 2. Strengthening Democracy

- Prevents **gerrymandering (manipulation of constituency boundaries)**.
- **Example:** *Kuldip Nayar v. Union of India (2006)* upheld the importance of fair delimitation.

### 3. Promoting Socio-Economic Equity

- Ensures **adequate representation for marginalized communities** (STs, SCs).
- **Example:** The Jammu & Kashmir Delimitation Commission allocated extra seats to Jammu.

### 4. Preserving Federalism

- Balances **national unity with regional autonomy**.
- **Example:** The **42nd Constitutional Amendment (1976)** froze seat distribution to protect southern states.

### 5. Enhancing Administrative Efficiency

- Improves **governance and electoral management**.
- **Example:** Mumbai and Bengaluru saw better electoral administration post-2002 delimitation.

### 6. Aligning Representation with Demographic Shifts

- Ensures constituencies reflect **population changes**, similar to **UK Boundary Commission practices**.

## Challenges Associated with Delimitation

### 1. Conflict Between Population and Development

- Southern states fear being **penalized for successful family planning programs**.
- **Example:** Tamil Nadu (fertility rate: 1.6) vs. Bihar (3.0) may lose seats unfairly.

### 2. Threats to Federalism

- **Reduced political influence** for states with lower population growth.
- **Example:** The **Sarkaria Commission (1983)** warned against the **centralization of power**.

### 3. Potential for Political Manipulation

- **Parties may redraw boundaries for electoral gains.**



- **Example:** Allegations of bias in **Jammu & Kashmir delimitation (2022)** .
- 4. **Political Resistance and Delays**
  - **Parties reluctant to lose seats** may block delimitation.
  - **Example:** 2002 Delimitation Commission faced opposition.
- 5. **Economic Disparities in Representation**
  - **Southern states argue** that **GDP, tax contribution, and development** should be considered alongside population.

## The Way Forward

- **Balanced Representation:** Consider **development indicators + population** in seat allocation.
- **Independent Oversight:** Strengthen the **Delimitation Commission** to prevent **political interference**.
- **Constitutional Safeguards:** Ensure **federalism is protected**, avoiding **penalization of progressive states**.

## Conclusion

Delimitation is **essential for electoral fairness and federal balance**. However, it must be conducted **fairly**, ensuring that states are **not punished for effective governance and population control**. A **transparent, balanced approach** considering **both population and development factors** is **crucial for India's democratic integrity and unity**.

## The RTI Act: From Transparency to Denial of Information

### Context

- The **Right to Information (RTI) Act** was enacted to **enhance transparency, empower citizens, and reduce corruption**.
- It aimed to promote **democracy and government accountability**.
- However, its effectiveness has declined due to **bureaucratic resistance, judicial interpretations, and systemic weaknesses**.

### The Promise of RTI

- RTI recognized **citizens as the real rulers** by ensuring access to government information.
- It was meant to **curb corruption and arbitrary decision-making**.
- The Act was initially regarded as **one of the world's best transparency laws**.
- However, bureaucratic resistance weakened its impact.

### Challenges to RTI Implementation

#### 1. Bureaucratic Resistance & Weak Enforcement

- **Government officials resisted sharing information** , seeing it as a loss of control.



- Attempts to **dilute the Act** were met with public opposition, but bureaucratic hurdles continued.
- **Information Commissions**, meant to oversee RTI implementation, were filled with **retired bureaucrats**, many of whom did not enforce penalties for non-compliance.
- **Delays in appointing commissioners** led to **huge backlogs**, making the RTI ineffective.

## 2. Judicial Interpretations Limiting RTI

### ✓ CBSE vs. Aditya Bandopadhyay (2011)

- The **Supreme Court restricted the use of RTI**, arguing that excessive transparency could **hinder governance and development**.
- This judgment **cast suspicion on RTI applicants** and made it easier to deny information.

### ✓ Girish Ramchandra Deshpande vs. CIC (2012)

- **Public servants' financial and disciplinary records** were classified as **personal information** under **Section 8(1)(j)**.
- This **set a precedent** for withholding critical data, limiting transparency.

## Consequences of a Weakening RTI Act

- **Reduced government accountability & oversight** – Officials can evade scrutiny.
- **Increase in corruption** – Lack of transparency enables **misuse of public funds**.
- **Hindrance to investigative journalism** – Journalists lose access to critical information.

## The Way Forward

- Strengthen **Information Commissions** by appointing **independent officials**.
- Ensure **timely responses** to RTI requests.
- Courts must **interpret exemptions in favor of public interest** rather than bureaucratic convenience.

## Conclusion

- The RTI Act, once a beacon of transparency, is **gradually being undermined**.
- The **citizens and media** must **actively defend** the fundamental right to information.

---

## Supreme Court's View on Gag Orders

### Why in the News?

- The **Supreme Court granted interim protection** to podcaster **Ranveer Allahbadia** but imposed a **social media gag order**.



## Background

- Allahbadia faced multiple FIRs over **allegedly explicit content** on *India Got Latent*.
- The SC **banned him from posting on social media** and asked him to **surrender his passport**.
- This **contradicts past SC rulings** that warned against excessive speech restrictions.

## Legal Basis for Gag Orders in India

- **Section 144 CrPC** – Restricts speech during law & order crises.
- **Contempt of Court Act, 1971** – Limits discussion on pending cases.
- **Article 19(2) of the Constitution** allows restrictions on free speech for security and morality.

## Key Supreme Court Rulings on Gag Orders

### ✓ Parateek Bansal vs. State of Rajasthan (2022)

- Multiple FIRs for the same offense were ruled **harassment**.

### ✓ Satender Kumar Antil vs. CBI (2022)

- **Bail conditions must be reasonable**; excessive restrictions are unconstitutional.

### ✓ Frank Vitus vs. NCB (2024)

- Bail conditions **violating privacy** were struck down under **Article 21**.

### ✓ Rehana Fathima Case (2021)

- A gag order was **issued**, as it created a **chilling effect on free speech**.

### ✓ Mohammed Zubair vs. Uttar Pradesh (2021)

- The SC refused to **restrict Zubair from tweeting**, reinforcing **free speech protections**.

## Implications of the Allahbadia Case

- The SC's **gag order contradicts previous rulings**.
- **Restrictions on social media expression impact professions** reliant on free speech.
- The case highlights **the need for consistent legal interpretation**.

## 9. The Growing Divide in the West – Trump's Policy Shift and Its Global Consequences

### Context:



- Donald Trump's return to the presidency has led to a major shift in U.S. foreign policy, particularly in its stance on European security, global trade, and domestic political ideologies.
- His initiative to negotiate peace with Russia over Ukraine and Vice President JD Vance's criticism of European democracies at the Munich Security Conference have unsettled America's European allies.
- The long-standing unity of the "Collective West" now appears fragile, raising concerns about global power dynamics.

### **U.S.-Europe Rift Under Trump:**

- **Changes in U.S. policy on European security:**

- Trump's direct engagement with Russia, sidelining Ukraine and the EU, signals a reduced U.S. commitment to Kyiv.
- A potential Trump-Putin summit indicates efforts to reintegrate Russia into Western institutions like the G7.
- European nations fear that Trump's approach may weaken NATO's security framework.

- **Trade and economic disputes:**

- Trump favors bilateral trade agreements, arguing that the current multilateral system disadvantages American workers.
- His challenge to existing international trade norms risks straining U.S.-Europe economic relations.

- **Political and ideological differences:**

- Trump's administration opposes policies promoting open borders, climate action, and gender rights.
- JD Vance's remarks at the Munich Security Conference criticized European efforts to marginalize right-wing political groups.
- Elon Musk's support for European right-wing movements highlights a growing transnational conservative alliance.

### **The West's Historical Evolution and Present Crisis:**

- **Origins of the Modern West:**

- The West has traditionally been united by liberal ideals such as capitalism, democracy, and individual rights.
- Post-World War II unity was largely driven by fears of communism and Soviet expansion.
- Institutions like NATO, the UN, IMF, and World Bank shaped the U.S.-led global order.

- **The Rise of the 'Conservative International' (Con-intern):**

- The West's divisions extend beyond U.S.-Europe tensions, reflecting a broader conservative resistance to liberal dominance.



- The emergence of a global conservative movement mirrors historical ideological blocs like the Communist International (Comintern).
- This conservative shift could redefine policies on security, trade, and social issues.

### **Geopolitical Consequences and India's Response:**

#### **● Strategic leverage for Russia and China:**

- Moscow and Beijing exploit Western divisions to advance their interests.
- Both nations aim to secure separate agreements with the U.S. despite their anti-West rhetoric.

#### **● India's pragmatic stance:**

- Unlike in the past, India is not swayed by anti-Western narratives from Russia or China.
- Recognizing the internal contradictions within the West, India seeks to engage strategically to safeguard its national interests.
- India's approach balances relations with Western powers while adapting to evolving geopolitical realities.

### **Conclusion:**

- While President John F. Kennedy once asserted that America must bear any burden to lead the world, Trump and his allies reject such commitments, questioning their costs and consequences.
- The perceived disintegration of the "Collective West" is reshaping global power structures, with Trump's policies widening the gap between the U.S. and Europe while empowering Russia and China.
- The long-term trajectory of U.S.-Europe relations remains uncertain, but India sees an opportunity to navigate this changing landscape strategically.
- Whether this shift leads to a complete geopolitical realignment or a temporary adjustment in alliances remains to be seen.

---

## **10. The Panchayati Raj System in Crisis**

### **Context:**

- The 73rd Amendment of 1992 was a landmark reform in India's governance, introducing a decentralized framework through Panchayati Raj institutions (PRIs).
- This amendment aimed to bring democracy to the grassroots level, ensuring representation and empowering marginalized communities.
- Despite its early successes, the Panchayati Raj system is now facing significant challenges due to systemic and policy-related issues.

### **Overview of the Panchayati Raj System:**



- Introduced through the 73rd Constitutional Amendment, PRIs institutionalized local self-governance in rural India.
- Rooted in the concept of democratic decentralization, the system grants local bodies authority over governance at the village, block, and district levels.
- Though its origins date back to ancient India, the formal three-tier structure—Gram Panchayat, Panchayat Samiti, and Zila Parishad—was recommended by the Balwant Rai Mehta Committee in 1957.
- PRIs have constitutional backing under Article 243, with elections mandated every five years.
- Their responsibilities include rural development, sanitation, education, water supply, and poverty alleviation.
- State governments have discretion in structuring PRIs, leading to regional variations.
- While PRI have strengthened grassroots democracy, it continues to grapple with financial constraints, political interference, and administrative limitations.

### **Achievements of Panchayati Raj Institutions:**

- PRIs have enhanced democratic participation at the local level, with elections becoming increasingly competitive.
- Women's representation has significantly improved, with nearly 14 lakh elected women representatives currently serving in Panchayatss.
- PRIs have played a pivotal role in implementing social and rural development programs.
- The establishment of State Finance Commissions has ensured financial allocations to Panchayats, enabling them to function effectively.
- Despite these successes, the system faces a decline due to structural and policy-related challenges.

### **Challenges Undermining Panchayati Raj:**

#### **● Lack of Administrative Decentralization:**

- While initial reforms transferred administrative power to PRIs, progress has since stalled.
- State governments have been reluctant to delegate authority and personnel to local bodies.
- A 2022 Ministry of Panchayati Raj report found that fewer than 20% of states have fully transferred all 29 subjects listed in the Eleventh Schedule to PRIs.
- Without adequate administrative control, PRIs struggle to operate effectively.

#### **● Declining Financial Autonomy:**

- Panchayats remain financially dependent on centrally sponsored schemes.
- Though direct financial transfers to PRIs have increased, the proportion of untied grants—allowing local decision-making—has sharply declined.
- Untied grants fell from 85% under the Thirteenth Finance Commission (2010–15) to just 60% under the Fifteenth Finance Commission (2021–26).
- This restriction limits the PRI's ability to address local issues independently.



### ● **Shift in Welfare Delivery Mechanisms:**

- India's welfare system has transitioned to digital cash transfers through platforms like Jan Dhan-Aadhaar-Mobile (JAM).
- While this enhances efficiency, it reduces the PRI's role in beneficiary selection and grievance redressal.
- Programs like PM-KISAN directly transfer funds to farmers, bypassing panchayats and weakening their influence in welfare distribution.

### ● **Impact of Urbanization:**

- India's urban population has grown significantly, reducing rural demographics.
- In 1990, about 75% of India's population lived in villages; today, it is around 60% and declining.
- Policy priorities have increasingly shifted toward urban governance, sidelining PRIs in development planning.

## **Revitalizing the Panchayati Raj System:**

### ● **Strengthening Administrative and Financial Decentralization:**

- State governments must fully devolve administrative powers and financial resources to PRIs.
- Increasing untied grants would allow panchayats greater flexibility in addressing local concerns.

### ● **Leveraging Technology for Citizen Participation:**

- Digital platforms can enhance transparency and efficiency in local governance.
- Improved digital connectivity can integrate PRI's with urban development efforts.

### ● **Reimagining Panchayats' Role in Rural Development:**

- PRIs can contribute to emerging challenges like water conservation, renewable energy, and disaster management.
- They can also support internal migrants by providing social security measures.

### ● **Encouraging Public Participation:**

- Awareness campaigns and transparency initiatives can restore public trust in PRIs.
- Strengthening community involvement in decision-making will enhance accountability.

## **Conclusion:**

- The Panchayati Raj system was designed to decentralize democracy and empower local communities.



- However, financial dependency, administrative constraints, and shifting policy priorities have weakened its effectiveness.
- To ensure that PRIs remain relevant, India must revitalize them through greater administrative and financial autonomy, technological integration, and renewed citizen engagement.

## **The Freebies Debate in India: Welfare or Political Strategy?**

### **Introduction:**

- The discussion surrounding freebies and welfare schemes in India has gained momentum, particularly after Prime Minister Narendra Modi's remarks in July 2022, where he cautioned against the "revadi" culture, referring to excessive political giveaways as a threat to national progress.
- The Supreme Court has since taken up the issue, analyzing whether the practice of offering and distributing freebies before elections unfairly influences voters.
- The key question in this debate is how to distinguish between essential welfare policies and election-driven handouts.
- While welfare programs have contributed significantly to India's development, concerns persist that excessive political giveaways could strain state resources and hamper economic stability.

### **Understanding the Freebies vs. Welfare Debate:**

#### **The Role of the Welfare State**

- Since independence, welfarism has been an integral part of India's evolution.
- The Five-Year Plans under Jawaharlal Nehru prioritized industrial growth and economic expansion.
- Gradually, social welfare programs like the mid-day meal scheme, the Public Distribution System (PDS), and employment guarantee schemes were introduced to support vulnerable communities.
- The Directive Principles of State Policy in the Indian Constitution mandate the state to provide fundamental needs like education, healthcare, employment, and food security.

#### **Welfare Measures vs. Freebies**

- The debate is fueled by the absence of a clear definition of freebies.
- Critics argue that providing free electricity, water, or direct cash transfers burdens the economy, while supporters believe such measures empower marginalized sections.
- Essential services like subsidized food, healthcare, and education are widely accepted as necessary for human development.
- In contrast, items like free laptops, TVs, gold coins, and direct cash transfers are often seen as politically motivated rather than economically essential.
- Some provisions, like bicycles for girls to facilitate education, lie in a grey area between necessary welfare and political inducements.

### **Judicial and Regulatory Interventions:**



## Supreme Court's Stand on Freebies

- The Supreme Court has faced difficulties in differentiating welfare policies from political handouts.
- In ***Subramaniam Balaji v. State of Tamil Nadu (2013)***, the Court acknowledged that freebies influence voters but ruled that they do not constitute bribery or corruption.
- In 2022, the Supreme Court referred a petition challenging the constitutional validity of freebies to a three-judge bench, highlighting concerns about their potential impact on free and fair elections.

## Election Commission's Guidelines

- Initially, the Election Commission of India (ECI) did not take a stand on the issue.
- However, in October 2022, it introduced a requirement for political parties to disclose the financial feasibility of their electoral promises.
- Opposition parties criticized this move, perceiving it as an intrusion into democratic processes.

## The Political Landscape: Freebies in Elections

- The Delhi Assembly elections demonstrated how major political parties rely on freebie-driven strategies:
  - The Aam Aadmi Party (AAP) pledged ₹2,100 per month for women and subsidized LPG cylinders.
  - The BJP countered with ₹2,500 monthly aid for women and a free solar electricity plan.
  - Congress also introduced welfare promises, highlighting the bipartisan nature of this approach.

## Why Freebies are Popular in Elections

- **Instant Voter Appeal:** Freebies offer immediate and tangible benefits, unlike long-term policies. Welfare schemes are often targeted at key voter groups.
- **Clientelism in Politics:** In the absence of strong employment and skill-building initiatives, cash transfers and subsidies serve as temporary relief measures.
- **Lack of Structural Development:**

## Economic Concerns: The Fiscal Impact of Freebies

### Rising State Debts and Fiscal Risks

- The RBI's 2022 report on state finances highlighted concerns over increasing subsidy expenditures.
- Many states are running high fiscal deficits, jeopardizing their capacity to fund essential infrastructure projects.

### Revenue Deficit and Fiscal Burden



- Delhi's revenue surplus declined from ₹14,457 crore in 2022-23 to a projected ₹3,231 crore in 2024-25 due to rising expenditure on freebies.
- In states where election campaigns revolve around freebies, annual revenue expenditure is expected to increase by ₹10,000-12,000 crore.
- Potential outcomes include increased taxation and reduced investment in productive sectors.
- Economists caution that unchecked subsidies could slow economic growth and divert resources from crucial public services.

## **The Way Forward: Balancing Welfare and Fiscal Responsibility**

### **Institutional Reforms and Regulatory Measures**

- Parliament should take the lead in defining and regulating freebies and essential welfare.
- Stronger financial oversight is necessary at both central and state levels.
- The Fiscal Responsibility and Budget Management (FRBM) Act, 2003, which limits deficit spending, should be enforced more rigorously.

### **More Targeted Welfare Programs**

- Welfare policies should be designed based on economic necessity rather than political considerations.
- Instead of blanket giveaways, benefits should be directed toward the most disadvantaged sections of society.
- Digital tools like Direct Benefit Transfers (DBT) can reduce leakages and ensure that aid reaches the intended recipients.

### **Shifting from Short-Term Freebies to Sustainable Growth**

- Employment generation and skill development initiatives should replace direct cash handouts.
- Investments in infrastructure, healthcare, and education can create long-term economic upliftment.

---

## **Future of USAID - Implications and Global Impact**

### **Context:**

The future of the United States Agency for International Development (USAID) is uncertain due to plans by the Trump administration to merge it with the US Department of State. This potential restructuring involves significant budget cuts and workforce downsizing, raising concerns over the future of US humanitarian aid.

### **What is USAID and Its Role?**

#### **Overview**



- Established in the 1960s under the Foreign Assistance Act of 1961, USAID is legally mandated by Congress.
- It has around 10,000 personnel and operates in over 60 countries.

### Key Focus Areas

- **Food Security:** Provides famine relief and operates a food shortage prediction system.
- **Healthcare:** Funds vaccination programs, pandemic prevention, and global disease control.
- **Infrastructure & Development:** Supports clean water initiatives, disaster relief, and economic programs.
- **Humanitarian Aid:** Plays a key role in crisis zones like Ukraine and sub-Saharan Africa.

### USAID's Budget and Global Spending

- In 2023, the US allocated \$68 billion for international aid, with USAID receiving over \$40 billion.
- The majority of these funds are directed towards Asia, Africa, and Europe, particularly Ukraine.
- The US remains the world's largest donor, surpassing countries like the UK.

### Why is the Trump Administration Targeting USAID?

#### Criticism of Foreign Aid

- Former President Donald Trump has consistently argued that foreign aid does not benefit US taxpayers.
- He issued an executive order temporarily halting international spending, affecting multiple aid programs.
- Public opinion has historically favored reducing foreign aid.
- Elon Musk, a key Trump advisor, has advocated for deep spending cuts, increasing tensions between USAID and the administration.

#### Impact of the Funding Freeze

- Essential programs, including medical aid and clean water projects, were disrupted.
- Reports suggested security threats, including the risk of prison guards in Syria abandoning their posts due to funding shortages.
- Aid workers have called the move a major setback for global humanitarian efforts.

### Can Trump Unilaterally Shut Down USAID?

- Any attempt to abolish USAID would require congressional approval and could face legal challenges.
- A more viable strategy would be restructuring USAID as a branch of the State Department, similar to the UK's 2020 merger of its international aid department with the Foreign Office.



## Global Impact of USAID's Potential Closure

- **Humanitarian Crisis:** Funding cuts could jeopardize crucial initiatives like mine clearance, pandemic response, and prosthetic aid for war victims.
- **Foreign Policy Consequences:** Reducing aid could weaken US global influence and strain diplomatic ties.
- **Security Risks:** Unstable regions reliant on USAID support may face further turmoil.
- **Geopolitical Shifts:** A reduced US aid presence may enable China to expand its influence through alternative development projects.

## Conclusion

- The proposed restructuring of USAID signals a major shift in US foreign policy in line with Trump's "America First" vision.
- While supporters argue that reducing foreign aid saves taxpayer money, critics warn of serious humanitarian and geopolitical repercussions.
- The global development community is closely monitoring potential changes in US aid policy.

## General Studies III

### 1. Time Use Survey 2024

#### Why in the News?

The Ministry of Statistics and Programme Implementation (MoSPI) has published the second edition of the Time Use Survey (TUS).

#### What's Covered in Today's Article?

- Overview of the Time Use Survey (Objectives, Key Findings, Implications, Future Outlook, etc.)

#### Introduction

The **Time Use Survey (TUS) 2024**, recently released by MoSPI, provides insights into how Indians allocate their time across various activities, such as work, caregiving, and leisure.

- The first nationwide Time Use Survey was conducted by the National Statistics Office (NSO) from **January to December 2019**.
- The **2024 edition** marks the second such survey.

A major highlight of the report is the rise in women's participation in employment-related activities, indicating a gradual shift from unpaid domestic work to paid employment. This change reflects evolving labor market trends and broader socio-economic transformations in India.

#### Key Findings of the Time Use Survey 2024

##### 1. Increase in Workforce Participation



- Women's participation in employment-related activities rose from **21.8% in 2019 to 25% in 2024**.
- The participation rate for men increased from **70.9% to 75%**.
- While this reflects growing economic opportunities for women, the gender gap in workforce participation remains significant.

## 2. Reduction in Unpaid Domestic Work

- Women spent **305 minutes per day** on unpaid domestic tasks in 2024, down from **315 minutes in 2019**.
- Men, however, continued to contribute far less, averaging **88 minutes per day** on such activities.

## 3. Women's Role in Caregiving

- **41% of women** (aged 15-59) were involved in caregiving activities, compared to only **21.4% of men**.
- Women spent **137 minutes daily** on caregiving, nearly twice as much as men (**75 minutes**).
- This highlights the ongoing burden of unpaid caregiving on women despite their increasing workforce participation.

## Implications of Changing Work Patterns

### 1. Economic Impact

- The shift from unpaid domestic work to paid employment benefits the economy by:
  - Increasing **household income**.
  - Boosting **productivity** and overall economic growth.
  - Enhancing **labor formalization**, leading to better social security for workers.

### 2. Social and Policy Implications

Despite progress, gender disparities persist, necessitating:

- **Skill Development Programs** to equip women for higher-paying jobs.
- **Flexible Work Policies** (remote work, part-time options) to balance professional and domestic responsibilities.
- **Government Support** (maternity benefits, affordable childcare, financial incentives) to encourage female workforce participation.

### 3. Leisure and Cultural Activities

- Individuals aged **6 and above** spent an average of **171 minutes per day** on leisure and media consumption.
- Men spent slightly more time ( **177 minutes**) on these activities compared to women (**164 minutes**).

### 4. Education and Self-Care



- **89.3% of children (ages 6-14)** are engaged in learning activities, dedicating approximately **413 minutes per day** to studies.
- Across all age groups, **self-care and personal maintenance** accounted for an average of **708 minutes daily**.

### Future Outlook and Recommendations

- **Expanding Skill Training:** Strengthening vocational education in sectors like IT, healthcare, and entrepreneurship.
- **Creating More Job Opportunities :** Encouraging industries to hire more women through affirmative action.
- **Enhancing Social Security Benefits:** Strengthening maternity leave, pension schemes, and workplace protections.
- **Promoting Workplace Inclusivity :** Ensuring gender-sensitive employment policies in both urban and rural areas.

### Conclusion

The **Time Use Survey 2024** highlights a positive trend in women's workforce participation. However, gender disparities continue to exist, emphasizing the need for **policy reforms, skill development initiatives, and a more inclusive work environment** to facilitate women's transition from unpaid domestic duties to meaningful employment. Enhancing gender equality in the labor market will be crucial for India's economic and social progress.

---

## 2. AI's Environmental Challenge

### Context

Artificial Intelligence (AI) has transformed industries, economies, and daily life, significantly increasing its global impact.

- With advancements in computing power and data availability, AI adoption has surged.
- The global AI market, currently valued at **\$200 billion**, is projected to contribute **\$15.7 trillion** to the global economy by **2030**.
- However, AI's rapid expansion raises **critical environmental concerns**, particularly its **carbon footprint**.

### AI's Environmental Impact Across Stages

#### 1. Hardware Production and Infrastructure

##### ◆ Raw Material Extraction and Manufacturing

- AI hardware relies on **rare earth metals** (lithium, cobalt, nickel), which are extracted under environmentally harmful conditions.
- Mining operations lead to **deforestation, habitat destruction, and high carbon emissions**.
- Ethical concerns also arise due to **poor labor conditions** in mining regions.



#### ◆ Energy-Intensive Production

- The semiconductor industry, essential for AI hardware, consumes large amounts of **energy and chemicals**, contributing to global **industrial emissions**.

#### ◆ E-Waste Crisis

- AI's increasing computing demands shorten the lifespan of GPUs and TPUs, leading to **growing electronic waste**.
- Discarded AI hardware contains hazardous materials ( **lead, mercury, and cadmium**) that cause environmental pollution.

### 2. Data Center Operations: The Backbone of AI

#### ◆ Energy Consumption

- Data centers account for **1% of global greenhouse gas emissions**, a figure expected to **double by 2026**.
- AI models (e.g., ChatGPT, DeepSeek) require far more computing power than traditional algorithms, escalating energy demands.

#### ◆ Water Usage for Cooling

- AI data centers generate excessive heat, requiring **millions of liters of water annually** for cooling.
- This worsens **water scarcity** in regions where such facilities are located.

#### ◆ Location-Based Carbon Footprint

- Data centers in coal-powered regions have **higher emissions** compared to those using **renewable energy sources**.

### 3. AI Model Life Cycle Emissions

#### ◆ Training AI Models

- Training advanced AI models consumes enormous amounts of energy.
- GPT-3's training process emitted **552 tonnes of CO<sub>2</sub>**, equivalent to emissions from **125 gasoline-powered cars** annually.

#### ◆ Inferencing and Continuous Operation

- Once deployed, AI models require **constant energy** for real-time processing, often consuming **10–100 times more power** than traditional software.

#### ◆ Data Storage and Retrieval

- Massive datasets require **continuous storage and processing**, adding to energy consumption.

#### ◆ Model Retirement and Re-Training



- Unlike traditional software, AI models need frequent **retraining**, further increasing their **carbon footprint**.

### Global Response to AI's Environmental Impact

- At **COP29**, the **International Telecommunication Union** emphasized the need for **greener AI solutions**.
- Over **190 countries** have adopted ethical AI recommendations addressing environmental concerns.
- However, concrete policies remain **limited**, with many national AI strategies prioritizing economic growth over sustainability.

### Strategies for Sustainable AI Development

#### ◆ Balancing Innovation with Sustainability

- Companies should invest in **renewable energy** and **carbon offset initiatives**.
- AI can **optimize energy grids**—e.g., Google's DeepMind has improved **wind energy forecasting**.

#### ◆ Hardware Efficiency

- Developing **energy-efficient computing components** and **optimizing AI models** can significantly **reduce emissions**.
- Using **pre-trained models** rather than training from scratch conserves resources.

#### ◆ Transparency and Accountability

- Organizations should **measure and disclose** AI's environmental impact.
- Establishing standardized **emission-tracking frameworks** can promote greener practices.

### Conclusion

Sustainability must be a **core principle** in AI development. While AI offers groundbreaking opportunities, addressing its **environmental costs** is crucial. **Green AI solutions, energy-efficient models, and responsible policies** can ensure that AI's expansion does not come at the cost of the planet.

### 3. Indian Industries Prioritize Cheap Labor Over Innovation

#### Current Working Conditions of Indian Workers

1. **Extended Work Hours** – Factory workers, particularly in Ludhiana, often labor for 11-12 hours daily without breaks during peak seasons.
2. **Job Insecurity** – Only 21.7% of workers have regular salaried employment, with nearly half lacking contracts, paid leave, or social security.
3. **High Weekly Workload** – According to ILO (2024), Indian workers log an average of 46.7 hours per week, significantly higher than the U.S. (38 hours) and Japan (36.6 hours).



4. **Rise of Contract Labor** – Since 2011-12, 56% of newly hired factory workers are contract employees, earning lower wages and lacking job security.

### How Do Industries Benefit from These Conditions?

1. Companies minimize labor costs instead of investing in technology and innovation.
2. Large firms outsource work to small, unregistered units to bypass labor regulations—over 70% of manufacturing workers operate in such establishments.
3. The increase in contract labor since 2011-12 has resulted in lower wages and a lack of worker protections.
4. Factory sector profits grew from 31.6% in 2019-20 to 46.4% in 2021-22, while wages remained stagnant.
5. A reluctance to modernize has restricted growth, which is evident in India's stagnant 3.1% global garment export share.
6. Though cost-cutting improves short-term profitability, it weakens long-term competitiveness.

### Challenges Faced by Small Firms

1. **Delayed Payments** – Large corporations often take months to pay small businesses after receiving supplies, leading to financial difficulties.
2. **Low Compensation for Components** – Small businesses struggle as major firms refuse to raise payments for parts despite increasing production costs.
3. **Limited State Support** – Small enterprises face difficulties in securing bank credit and competing with cheaper imports.
4. **Dependence on Cheap Labor** – Around 70% of India's 68 million manufacturing workers (2021-22) are employed in small, unregistered enterprises with fewer than 10 workers.
5. **Exploitative Ties with Larger Firms** – Unlike Japan, where small and large firms collaborate, Indian small businesses often face exploitative conditions that weaken them.

### Long-Term Consequences

1. Overreliance on cheap labor stifles innovation and economic progress, even in emerging sectors like IT.
2. Low wages reduce workers' purchasing power, limiting domestic market demand.
3. Industries focused solely on short-term profits may struggle to sustain long-term growth.
4. To remain competitive, Indian industries must modernize and invest in technology.

---

## 4. Issues Plaguing India's Textile Industry

### Why Is This in the News?

India's textile industry is among the largest in the world, covering the entire value chain from cotton farming to apparel production. However, it lags behind China, Vietnam, and



Bangladesh in exports due to inefficiencies, high costs, and complex regulations. The industry's slow growth is further challenged by increasing sustainability and compliance requirements, which are expected to raise costs, especially for small businesses.

## India's Textile Journey: From Fiber to Fabric

### 1. Cotton Production & Employment

- India is the world's second-largest cotton producer, accounting for 24% of global output.
- About 60 lakh farmers, mainly in Gujarat, Maharashtra, and Telangana, depend on cotton cultivation.
- The textile industry, from fiber processing to garment production, employs over 4.5 crore people.

### 2. Man-Made Fiber (MMF) Industry

- India is also the second-largest MMF producer, with Reliance Industries leading in polyester and Grasim Industries dominating viscose production.
- MMF consumption in India is just 3.1 kg per capita, much lower than China (12 kg) and North America (22.5 kg).
- Overall fiber consumption, including natural and synthetic fibers, stands at 5.5 kg per capita, well below the global average of 11.2 kg.

### 3. MSME Textile Clusters and Specializations

- Nearly 80% of India's textile value chain operates within small and medium enterprises (MSMEs), each specializing in different products:
  - **Bhiwandi (Maharashtra)** – Fabric production
  - **Tiruppur (Tamil Nadu)** – T-shirts and undergarments
  - **Surat (Gujarat)** – Polyester and nylon fabrics
  - **Ludhiana (Punjab)** – Woolen garments

## India's Textile and Apparel Industry: Growth & Export Trends

- The textile sector plays a significant role in India's economy, contributing 13% to industrial production, 12% to exports, and 2% to GDP.
- However, manufacturing growth has slowed in recent years.

### 1. Growth Trends

- Between FY15 and FY19, the textile sector grew at just 0.4% CAGR, while apparel grew at 7.7%.
- From FY20 to FY24, the sector shrank, with textiles declining by 1.8% annually and apparel contracting by 8.2%, partly due to post-pandemic challenges.

### 2. Export Performance & Key Markets

- Despite maintaining a trade surplus, the sector's export growth has been sluggish.



- In FY24, textile and apparel exports reached \$34.1 billion, a marginal increase from \$33.4 billion in FY20.
- Nearly 50% of India's textile exports go to the U.S. and the EU, catering to brands like JCPenney, Gap, and Decathlon.

### 3. Sector-Wise Export Trends

- **Garment & Apparel Exports** Declined from \$15.5 billion in FY20 to \$14.5 billion in FY24.
- **Cotton & Home Textiles** – Increased from \$10.2 billion in FY20 to \$12.3 billion in FY24, led by companies like Welspun Living and Trident Ltd.

### 4. Challenges for MSMEs

- The economic slowdown has significantly impacted small and medium textile businesses, particularly in Tamil Nadu, affecting both production and exports.

## India's Textile Export Challenges

### 1. Falling Behind Global Competitors

- India lags behind China, Vietnam, and Bangladesh in textile exports due to higher production costs and a fragmented supply chain.
- Vietnam, for instance, exported \$40 billion worth of apparel in 2023, benefiting from vertically integrated supply chains that enhance efficiency.

### 2. Fragmented Cotton Supply Chain

- India's cotton supply network is spread across multiple states, leading to high logistical costs and inefficiencies.
- Unlike China and Vietnam, which have streamlined fiber-to-fashion operations, India's dispersed production setup raises costs and reduces competitiveness.

### 3. Regulatory & Trade Barriers

- Competing nations benefit from free trade agreements (FTAs) and simpler customs regulations, making exports more cost-effective.
- India's complex export procedures require exhaustive documentation, increasing compliance burdens on exporters.

### 4. High Raw Material Costs in MMF Sector

- India's MMF industry struggles with expensive raw materials.
- Import restrictions on polyester and viscose fibers force domestic yarn producers to rely on costly local alternatives.

## Sustainability Challenges in India's Textile Industry

### 1. Growing Global Demand for Sustainability

- To remain competitive, Indian manufacturers must increase renewable energy adoption, improve recycling, and enhance traceability in sourcing.



## 2. Rising Costs Due to Sustainable Practices

- Sustainability regulations are making production costlier.
- The EU, which accounts for 20% of India's textile exports, introduced 16 new regulations between 2021 and 2024, making compliance difficult for small firms.

## 3. Fast Fashion Waste Crisis

- The Indian textile recycling market is projected to grow to \$400 million, while the global market could reach \$7.5 billion.
- With fashion waste estimated to hit 148 million tonnes by 2030, PM Modi has emphasized increasing textile recycling efforts, as currently, less than 25% of textile waste is reused.

## Conclusion

While India's textile industry has significant potential, structural inefficiencies, labor exploitation, and outdated supply chains hinder its competitiveness. Without modernization and sustainable reforms, the industry risks stagnation in the global market.

## Talent Shortage: A Global Challenge and India's Opportunity

### Context

The global labor market is undergoing a major transformation, with the skills required in 2030 expected to be significantly different from today's demands. This shift presents both a challenge and an opportunity for India. While the world faces a growing shortage of skilled workers, India has the potential to leverage its large workforce. However, to fully capitalize on this, the country must overcome regulatory barriers, skill mismatches, and immigration restrictions.

### Global Talent Shortage and India's Role

According to a **FICCI-KPMG** report, *Global Mobility of Indian Workforce*, the world could face a talent deficit of **85.2 million people by 2030**, potentially leading to an **\$8.45 trillion loss in annual revenue**. This underscores the urgent need for workforce development worldwide.

India, with its vast young and skilled population, is well-positioned to fill this gap and significantly contribute to the global economy. However, realizing this potential requires **policy reforms, international collaborations, and focused workforce training programs**.

### Key Regions and Sectoral Demands

- **Gulf Cooperation Council (GCC) & Australia:** High demand for workers in **manufacturing and construction**, requiring large-scale labor migration.
- **Europe:** An aging population is driving demand for **service-sector workers**, particularly in **healthcare**.



- **Emerging Sectors** : Globally, there is increasing demand for expertise in automation, AI, big data, predictive analytics, IoT, blockchain, and sustainability.

## Challenges to Workforce Mobility and Possible Solutions

### Barriers to Workforce Mobility

- **Regulatory and Immigration Hurdles** : Complex visa and work permit processes limit skilled migration.
- **Unethical Recruitment & Human Trafficking** : Exploitative hiring practices pose risks to migrant workers.
- **Skill Recognition Issues**: Indian degrees, particularly in medicine, often lack global recognition, leading to underemployment.
- **Cultural and Language Barriers**: Adapting to new environments impacts productivity.

### Strategies to Improve Workforce Mobility

- **Bilateral & Free Trade Agreements (FTAs)**: Strengthening worker protections in GCC and other key markets.
- **Skill Development Initiatives**: Aligning workforce training with global demand.
- **Digital Platforms**: Preventing worker exploitation through online recruitment systems.
- **Sector-Specific Training**: Customizing training to meet regional job market needs.
- **Recruitment Oversight**: Regulating agencies to prevent exploitation.
- **International Qualification Recognition**: Ensuring Indian degrees are accepted globally.
- **Public-Private Partnerships**: Encouraging private sector participation in skill development.
- **Circular Migration Models**: Temporary work visas and rotational employment to balance labor supply.

## India's Resilience, Economic Future, and 'Viksit Bharat'

### Political Climate & Immigration Policies

- Immigration policies are evolving, with **Europe becoming stricter** while **Australia remains open** to skilled workers.
- The **Indian diaspora in Australia** is one of the fastest-growing migrant groups.
- Strict immigration laws primarily target illegal migration, emphasizing the need for India to ensure its workers move through legal channels.

### Economic Impact & The Road to 'Viksit Bharat'

- Economist **Arvind Panagariya** estimates **India's GDP could reach \$6.5 - \$9 trillion by 2030**.
- India's success in tapping into the **\$8.45 trillion global labor market opportunity** will determine whether it reaches the higher end of this projection.



- Overcoming workforce mobility challenges and strategically positioning skilled workers abroad can significantly contribute to **India's vision of becoming a developed nation**.

## Conclusion

As the global labor market shifts, **India has a unique opportunity to fill the projected talent shortage**. However, achieving this requires a coordinated effort involving **government policies, skill development programs, and international partnerships**. By addressing regulatory challenges and streamlining workforce mobility, India can secure a **major share in the global job market**, driving both **economic growth and global influence**.

---

## Rising Servicification of Manufacturing and Its Impact on Wage Growth

### Why in the News?

The **Economic Survey 2024-25** highlighted that while **corporate profits** have surged in recent years, **wage growth has stagnated**. However, the **Confederation of Indian Industry (CII) President** argued that businesses are regularly increasing salaries. He suggested that direct wage comparisons may be misleading due to the **increasing servicification of manufacturing**, which is altering employment structures and wage patterns.

### What is Servicification of Manufacturing?

Servicification refers to the **growing integration of services with traditional manufacturing**. Manufacturers now offer value-added services such as **maintenance, consulting, customization, and digital solutions** alongside physical products.

### Key Drivers of Servicification

- Changing consumer preferences
- Technological advancements
- Competitive pressures

### Levels of Servicification

1. **Production Stage**: Incorporating **automation, AI, and data analytics** for efficiency.
2. **Product Enhancement**: Bundling services like **installation, maintenance, and software updates** with physical products.
3. **Business Model Transformation**: Shifting from **product sales to service-based solutions** (e.g., subscription models, leasing).

### Benefits of Servicification

- **Higher Revenue**: Creates new income streams beyond product sales.
- **Customer Retention**: Improves engagement and loyalty.



- **Competitive Advantage**: Differentiates companies in commodity-driven markets.
- **Sustainability**: Promotes **circular economy** practices like remanufacturing.

### Challenges of Servicification

- **High Initial Investment** : Requires new technologies and skills.
- **Operational Complexity** : Managing both manufacturing and services is challenging.
- **Workforce Transformation** : Employees need expertise in data analytics and customer service.
- **Market Adaptation** : Consumers may resist paying for additional services initially.

### Economic Survey on Wage Growth Concerns

- Despite a **22.3% rise in corporate profits in 2023-24**, employment increased by just **1.5%**.
- Wage growth for employees and contract workers has **not kept up with inflation**, raising concerns about weakening demand.

### Industry Perspective on Wage Trends

- The **CII President** countered that **businesses regularly revise wages** based on industry benchmarks.
- However, **wage comparisons may be misleading** due to servicification, as firms now outsource non-core functions instead of hiring full-time employees.

### Impact of Servicification on Employment

- **Manufacturing firms increasingly rely on external agencies** for non-core functions like **logistics and facility management**.
- This **shifts employment patterns**, as many workers are now employed by service providers rather than directly by manufacturers.

### Call for Balanced Growth

- There is an urgent need to **balance corporate profitability with wage growth**.
- The **Economic Survey stressed** that sustained economic expansion requires **higher employment incomes**, which fuel consumer spending and investment.

---

## Final Thoughts

The **servicification of manufacturing** is reshaping **employment structures, wage patterns, and business models**. While it enhances efficiency and competitiveness, it also **complicates wage growth assessments**. To maintain long-term economic stability, **India must ensure that wage growth keeps pace with rising corporate profits**, safeguarding consumer demand and economic expansion.

## The Silent Crisis of Rat-Hole Mining



## Context

- Illegal mining remains a critical and dangerous issue in Assam and Meghalaya, causing severe harm to human lives and the environment.
- A recent incident in Umrangso, Assam, where nine workers were trapped in a flooded mine, highlights the ongoing crisis.
- Despite frequent accidents and legal actions, illegal mining continues due to weak enforcement, political and economic interests, and inadequate policy reforms.

## Persistence of Illegal Mining

### Historical Background

- Illegal coal mining in Assam and Meghalaya dates back to the 1980s when industrial demand from West Bengal and Bangladesh spurred small-scale mining activities. The
- region's rugged terrain made mechanized extraction difficult, leading to the adoption of rat-hole mining—a hazardous practice involving narrow tunnels that endanger miners. Two primary forms of rat-hole mining exist:
- - **Side-cutting:** Excavation along hill slopes.
  - **Box-cutting:** Deep pits (up to 400 feet) with horizontal coal extraction.

### Role of Coal Mafias

- Despite the National Green Tribunal's (NGT) ban in 2014, upheld by the Supreme Court in 2019, illegal mining persists under the influence of powerful coal mafias and bureaucratic complicity.
- Exploitative labour agents, known as 'Sardars,' lure migrant workers—often trapped in debt and bonded labour—into hazardous jobs.
- Reports suggest that even children are trafficked into these mines due to their small stature, allowing them to navigate the narrow tunnels.

### Legal and Administrative Failures

- Weak enforcement by state authorities allows illegal mining to continue.
- Meghalaya sought an exemption from national mining laws under Schedule 6 of the Constitution but was unsuccessful.
- The Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act) mandates states to curb illegal mining, but implementation is lax.
- Political and economic interests further sustain illegal mining, as coal mining generates significant revenue, and local politicians often have stakes in these operations.
- Activists and whistleblowers exposing these violations face threats, further undermining accountability.

### Environmental and Human Costs

- The consequences of illegal mining are severe:
  - Over 30 miners have died in Meghalaya in the past five years due to similar accidents.



- Harsh working conditions expose labourers to life-threatening risks, with many deaths going unreported.
- Environmental degradation is extensive, leading to deforestation, water pollution, and soil erosion.
- Around 26,000 abandoned mine openings remain hazardous for both miners and wildlife.

## The Way Forward: A Multi-Pronged Strategy

### 1. Strengthening Legal Enforcement

- Amend the MMDR Act to explicitly criminalize rat-hole mining with harsher penalties under Section 21.
- Implement localized enforcement mechanisms under Section 23C for better oversight.

### 2. Promoting Alternative Livelihoods

- Economic dependence on illegal mining can be reduced by investing in ecotourism, sustainable forestry, and other employment opportunities.

### 3. Leveraging Technology

- Implement satellite-based surveillance and expand the Ministry of Mines' **Mining Surveillance System**, which has proven effective in Karnataka.

### 4. Strengthening Community Participation

- Enforce the **Forest Rights Act, 2006**, ensuring community consent before granting mining permits.
- Empower local and indigenous communities in decision-making to promote sustainable resource management.

## Conclusion

- The Gauhati High Court's suo motu action on the Assam mining tragedy presents an opportunity for meaningful reform.
- However, judicial intervention alone is insufficient. Proactive enforcement, alternative livelihood development, and technological interventions are essential.
- The persistent failure of Assam and Meghalaya to curb illegal mining not only reflects administrative negligence but also violates **Article 21 of the Constitution**, which guarantees the right to life.

---

## Gross Domestic Knowledge Product (GDKP)

### Why in the news?



- The government is reviving its 2021 plan to introduce the **Gross Domestic Knowledge Product (GDKP)** as a supplementary metric to the **Gross Domestic Product (GDP)**.
- The **Ministry of Statistics and Programme Implementation (MoSPI)** recently held discussions on the conceptual framework.
- GDKP aims to measure the contributions of knowledge, innovation, and intellectual assets to economic and social development.

## Understanding GDKP

- **GDKP is a proposed metric** that quantifies the impact of knowledge-driven sectors, research, and innovation on the economy.
- Unlike GDP, which primarily tracks tangible production and consumption, GDKP would assess the role of **intellectual capital, digital transformation, and education** in economic progress.

## Why is GDKP Needed?

### 1. Capturing the Knowledge Economy

- India has seen significant growth in sectors like **research, patents, AI, software development, and intellectual property**.
- These sectors contribute significantly to economic progress but are not fully accounted for in GDP calculations.

### 2. Going Beyond Traditional Economic Indicators

- GDP focuses on physical goods and services but does not reflect knowledge creation, innovation, and education.
- A holistic metric like GDKP can provide a more accurate assessment of economic well-being.

### 3. Aligning with Global Trends

- Advanced economies are developing indicators to measure intangible assets, digital innovation, and intellectual capital.
- India aims to align its economic framework with these evolving international standards.

### 4. Enhancing Policy and Investment Decisions

- A well-defined GDKP can inform better policymaking in **education, research, technology, and entrepreneurship**.
- It could guide investments in **R&D, digital infrastructure, and skill development**.

## Measuring Knowledge's Economic Impact

### 1. Intellectual Property and Investments

- Intellectual Property Products (IPP) are currently included under **Gross Fixed Capital Formation (GFCF)** in GDP calculations.



- GFCF represents investments in production assets, including **intellectual property, software, and R&D**.

## 2. Satellite Account for Knowledge Economy

- Discussions are ongoing about creating a **satellite account** to track knowledge-based economic contributions.
- MoSPI has experience with satellite accounts for tourism, culture, and the ocean economy but lacks a framework for knowledge-based contributions.
- A technical committee will be established to evaluate and refine the GDKP framework.

## 3. NITI Aayog's GDKP Proposal

- NITI Aayog first proposed GDKP in 2021, but the **National Statistical Commission (NSC)** found issues with data collection and computation methodologies.
- The NSC emphasized the need for **clear knowledge parameters and accurate measurement techniques**.
- Due to these complexities, the proposal was shelved in 2021 but is now being reconsidered.

## Challenges in Implementing GDKP

### 1. Data Collection Difficulties

- Unlike GDP, which relies on well-established indicators, GDKP requires new methodologies to measure **knowledge output, digital innovation, and research contributions**.
- Data on **patents, research, AI development, and digital transformation** is fragmented and hard to quantify.

### 2. Integration with GDP

- Some knowledge-related aspects, like Intellectual Property under **Gross Fixed Capital Formation (GFCF)**, are already part of GDP.
- Avoiding **double counting** while integrating GDKP with GDP remains a challenge.

### 3. Subjectivity in Measurement

- The NSC has pointed out the **subjective nature of knowledge metrics**, requiring extensive methodological refinement.
- MoSPI acknowledges the need for a **robust methodology** to ensure GDKP's accuracy and credibility.

## Conclusion

- India's renewed push for GDKP signals a shift from a **production-based economy to a knowledge-driven one**.
- While challenges remain in defining and measuring knowledge contributions, a well-structured GDKP can provide valuable insights for:



- ☐ Policymaking
- ☐ Investment strategies
- ☐ Long-term economic planning
- As India continues its digital and innovation-led growth, **GDKP could become a crucial tool for shaping economic policies and assessing the true impact of knowledge on national development.**

## Shift in India's Science Policy: From State Control to Private Innovation

### Background

- India has long emphasized science and technology, initially dominated by state-led institutions.
- Private organizations like TIFR and BARC were absorbed into government frameworks, leading to achievements such as the 1974 nuclear test.
- Over time, the focus has expanded to include private firms and universities in the innovation ecosystem.

### Need for Private Sector Intellectual Capacity

- Innovation relies on intellectual resources within private firms, not just government bodies.
- National power and economic growth depend on private sector involvement in R&D.
- Countries like the US and France demonstrate successful private-public research integration.

### Global Examples

- **United States:** NASA outsources 80% of its budget to private firms and universities; JPL was initially developed at Caltech before NASA took over.
- **China:** Private AI research teams like DeepSeek emerged from algorithmic trading backgrounds, showcasing R&D spillover effects.
- **France:** Defense research is largely carried out by private firms with government funding.

### India's Shift Towards Private-Led Innovation

- **Policy Initiatives:**
  - ☐ A December 2024 paper advocated for taxpayer-funded R&D in private institutions.
  - ☐ Emphasized risk mitigation through diversified research contracting.
- **Government Programs:**
  - ☐ **Anusandhan National Research Foundation (ANRF):** ₹2,800 crore annually for private R&D.
  - ☐ **Budget 2024-25:** ₹20,000 crore for private-sector research and innovation.
  - ☐ **ISRO's new strategy:** Contracting private firms for launch vehicles to enhance competitiveness.
- **Ministry of Electronics and IT (MEITY) Initiative:**
  - ☐ 18,693 GPUs allocated for AI research.



- Private IT firms to manage GPUs, available for researchers at \$1/hour.
- Shift from government-owned research equipment to a "buy, not make" approach.

## Implementation Challenges

- Unlike physical goods procurement, R&D funding requires flexible auditing mechanisms.
- Legal reforms, strategic financial planning, and institutional restructuring are necessary.
- Balancing risk and accountability in private-sector research partnerships.

## Conclusion

- **The year 2025 marks a pivotal moment in India's science policy**, emphasizing investment in private firms and universities for cutting-edge research.
  - **Taxpayer funds will yield greater returns** as private firms have a vested interest in quality research.
  - However, the challenge remains in developing effective governance frameworks to optimize innovation and societal benefits.
- 

## Jobs Needed for the 'Viksit Bharat' Vision

### Background

- The **Union Budget** plays a key role in economic growth and job creation.
- While short-term measures like tax relief boost consumer demand, structural reforms are needed for **long-term employment and wage growth**.
- The **2024 Budget introduced Employment Linked Incentives (ELI)** under the PM's five-scheme initiative, aiming to create **over four crore jobs in five years**.
- Achieving **Viksit Bharat** requires a strategic focus on the **right types of jobs**.

### Key Job Categories for India's Future

#### 1. Climate-Resilient Jobs

- Climate change is an urgent issue, with India ranking **seventh most-affected** globally in 2019.
- In 2021, India lost **\$159 billion** in income due to climate-related events.
- The **RBI estimates adaptation costs to hit \$1 trillion by 2030**.
- Climate change affects **agriculture, labor productivity, and livelihoods**, demanding **major investments in adaptation**.

#### 2. AI-Resilient Jobs

- AI advancements pose a **significant threat to employment**, particularly in IT and business services.



- **McKinsey Global Institute** predicts that **50% of automation adoption in India** could happen in the next decade.
- Technologies like **metaGPT, AI-driven coding, and chatbot automation** are already replacing human jobs.
- Strategies are needed to **reskill workers and create AI-proof job roles**.

### 3. **Aspiration-Centric Jobs**

- India's youth, especially in rural areas, **aspire to high-growth careers** due to exposure to digital media and startup culture.
- However, **weak foundational education in English and technical skills** limits their job opportunities.
- Many still rely on **government jobs and coaching institutes**, indicating **socio-economic insecurity** in employment choices.

### **Conclusion**

- India's **employment strategy must align with economic and technological shifts**.
- Investing in **climate resilience, AI-proof jobs, and skill-based employment** is critical for a sustainable **Viksit Bharat**.
- **Long-term reforms and industry-academic collaborations** will ensure job security and economic growth.

## **Prelims Booster & PIB Compilation (The Hindu & Indian Express) – 3 & 4 February**

**3rd February**

### **1. Small Modular Reactors (SMRs)**

SMRs are compact, cost-effective nuclear reactors designed for easier construction and operation than traditional reactors, with a power output of less than 300 MW. Their modular nature allows prefabricated components to be assembled on-site, reducing construction complexity. The Indian government has launched a ₹20,000 crore "Nuclear Energy Mission" to develop SMRs, aiming to operationalize five indigenous units by 2033. However, SMRs remain in an experimental phase, requiring significant investment with uncertain profitability. The first-generation models use low-grade uranium, necessitating frequent refueling, which is not ideal. Advanced SMRs rely on High-Assay Low-Enriched Uranium (HALEU), enriched to 5-20%, for fuel.

### **2. New Relatives of Green Cardamom**

Scientists have identified six new species related to green cardamom (*Elettaria cardamomum*), two of which—*Elettaria jafrensis* and *Elettaria tulipifera*—were recently discovered in Kerala's Western Ghats. The genus *Elettaria* now includes seven species, with four previously classified under *Alpinia*. The name "Elettaria" originates from the Malayalam word "ellettari," as documented in the 17th-century botanical text *Hortus Malabaricus* by Hendrik van Rheedee.



### 3. Uttarakhand UCC on Live-in Relationships

Under Uttarakhand's Uniform Civil Code (UCC), live-in relationships are defined as cohabitation between heterosexual couples resembling marriage. Only Uttarakhand residents, including those living outside the state, can register such relationships. Couples must submit a 16-page form and officially declare their relationship within 30 days. A certificate from a religious leader confirming their marriage eligibility is mandatory. Registered live-in relationships provide legal rights, including maintenance for women in case of abandonment. Failure to register within the stipulated timeframe can result in fines of up to ₹25,000 or imprisonment for up to six months.

---

4th February

### 1. Iran's New Missiles

Iran has introduced two new missiles:

- **Etemad** – A ballistic missile developed by the Iranian Defence Ministry, with a maximum range of 1,700 km, a 16-meter length, and a 1.25-meter diameter. It is equipped with a precision-guided warhead.
- **Ghadr-380** – An anti-warship cruise missile with a range exceeding 1,000 km, featuring anti-jamming capabilities.

### 2. Deepor Beel

Deepor Beel is a freshwater lake near Guwahati in Assam's Kamrup district, located in a former Brahmaputra river channel. It serves as Guwahati's primary stormwater storage basin. Recognized as a **Ramsar Site in 2002** and an **Important Bird and Biodiversity Area (IBA) in 2004**, it is Assam's only Ramsar site. The nearby Rani and Garbhanga hills, home to Asiatic elephants, form an integral part of its ecosystem.

### 3. SwaRail App

SwaRail is an integrated railway services app designed to consolidate multiple services into one platform, enhancing user experience with a clean and simple interface. Developed by the Centre for Railway Information Systems (CRIS), it facilitates:

- Booking of reserved and unreserved tickets
- Parcel and freight inquiries
- Train and PNR status tracking
- Food ordering on trains
- Complaint management via Rail Madad

### 4. World Wetlands Day



Observed annually on **February 2**, this day marks the adoption of the **Ramsar Convention (1971)** and raises awareness about wetland conservation. The **2024 theme was "Protecting Wetlands for Our Common Future."** India, a Ramsar Convention member since 1982, has designated **89 Ramsar sites**.

## 5. RBI's Digital Payments Index (DPI)

Launched in **January 2021**, the DPI measures the progress of digital payments across India, using **March 2018 as the base year (DPI score = 100)**. The index consists of five key parameters:

- **Payment enablers (25%)**
- **Payment infrastructure – Demand-side (10%)**
- **Payment infrastructure – supply side (15%)**
- **Payment performance (45%)**
- **Consumer centricity (5%)**

Each of these includes various sub-indicators to assess the expansion of digital transactions.

## 6. Cardamom Overview

Cardamom, one of the world's most valuable spices, alongside saffron and vanilla, belongs to the **Zingiberaceae family**, which includes ginger and turmeric. Cultivated for over **4,000 years**, the **Western Ghats of South India** are considered its center of origin. **Guatemala is the largest producer**, while **India ranks second**. The top Indian producers are:

- **Kerala – 56.71%**
- **Karnataka – 35.91%**
- **Tamil Nadu – 7.31%**

## 7. Samudrayan Mission

India's first **manned deep-sea exploration mission**, launched in **2021**, is a key initiative under the **Deep Ocean Mission (MoES)**. Developed by the **National Institute of Ocean Technology (NIOT)**, it involves a **submersible named "Matsya 6000,"** capable of reaching depths of **6,000 meters**. The submersible can operate for **12 hours**, extendable to **96 hours** in emergencies.

## 8. Democratic Republic of Congo (DRC)

The DRC is **Africa's second-largest country** (after Algeria) and among the most ethnically diverse, with over **200 ethnic groups**. It shares borders with **nine nations** (Angola, Burundi, Central African Republic, Republic of the Congo, Rwanda, Sudan, Tanzania, Uganda, and Zambia), stretching from **Eastern Africa to the Atlantic Ocean**. Its capital, **Kinshasa**, is the largest city, located along the **Congo River**.

## 9. Point Nemo – The Oceanic Pole of Inaccessibility



Point Nemo, in the **South Pacific Ocean**, is one of the most isolated locations on Earth, approximately **2,688 km from the nearest landmass**. Due to its remoteness, the **closest humans are often astronauts aboard the International Space Station (ISS)**. It is also used as a **spacecraft cemetery**, where decommissioned satellites and space stations are directed for controlled re-entry.

## 10. Navika Sagar Parikrama II

The **second all-women circumnavigation of the globe**, covering **21,600 nautical miles (~40,000 km)**, will be completed in **five legs** with stops for replenishment and maintenance at:

1. **Goa to Fremantle, Australia**
2. **Fremantle to Lyttelton, New Zealand**
3. **Lyttelton to Port Stanley, Falkland Islands**
4. **Port Stanley to Cape Town, South Africa**
5. **Cape Town to Goa**

This mission continues India's efforts to promote women in maritime exploration.

## (5 February)

### 1. North Sea

The North Sea is a shallow, enclosed body of water in Northwestern Europe, classified as a marginal sea of the Atlantic Ocean. It connects to the Atlantic through the Norwegian Sea in the north and the English Channel in the south, while linking to the Baltic Sea in the east via the Kattegat and Skagerrak straits. The sea is bordered by the United Kingdom, Norway, Denmark, Germany, the Netherlands, Belgium, and France. It hosts two of the world's largest ports, Hamburg and Rotterdam, and is one of the most significant global fishing zones.

### 2. Gyan Bharatam Mission

The **Union Budget 2025-26** introduced the Gyan Bharatam Mission, which aims to preserve and document one core manuscript. This initiative focuses on surveying, recording, and conserving India's manuscript heritage across academic institutions, museums, libraries, and private collections. A key feature of the mission is the **National Digital Repository of the Indian Knowledge System**, which will serve as a central platform for digitizing and sharing traditional knowledge, making it accessible to researchers, students, and institutions worldwide.

### 3. Manuscript Definition

A manuscript is any handwritten work on materials such as paper, bark, cloth, metal, or palm leaves that is at least **75 years old** and holds **scientific, historical, or aesthetic significance**. Printed books and lithographs are not considered manuscripts. Unlike historical records such as inscriptions, farmans, or revenue documents, manuscripts primarily contain knowledge rather than direct historical accounts.



#### 4. Kolleru Lake

Kolleru Lake is a large, shallow freshwater lake in **northeastern Andhra Pradesh**, situated between the Krishna and Godavari river deltas near Eluru. Acting as a **natural**

**flood-balancing reservoir**, it is the largest shallow freshwater lake in Asia and drains into the Bay of Bengal through the **Upputeru River**. The lake lies on the **Central Asian Flyway (CAF)**, an important migratory route for birds.

#### 5. Bandhavgarh Tiger Reserve

Located in Madhya Pradesh's **Umaria district**, this tiger reserve is set within the **Satpura and Vindhya mountain ranges**. Its name comes from the historic **Bandhavgarh Fort**, which, according to legend, was given by Lord Rama to his brother Lakshmana. Bandhavgarh is known for having one of the world's highest tiger densities.

#### 6. Dhimsa Dance

Dhimsa is a traditional tribal dance of **Andhra Pradesh** performed by communities such as the **Bagata, Valmiki, Poraja, Khond, Gadaba, Kondadora, Mukadora, and Kotia** tribes. It symbolizes unity and cultural heritage, with themes centered on mythology, folklore, daily activities, kinship, and marriage. Music is a key element, featuring instruments like the

**dappu, tudumu, mori, kidgi, gilka, and jodukommulu** (now rarely used). The dance is performed at festivals, weddings, and religious events, especially during **Chaitrapurab (Eetela Panduga)** in the ASR District.

#### 7. Guru-Shishya Parampara Scheme

Implemented by the **Ministry of Culture**, this scheme provides financial aid under the **Financial Assistance for Promotion of Guru-Shishya Parampara (Repertory Grant)** program. It supports cultural organizations involved in **music, dance, theatre, and folk arts** by funding the training of students (shishyas) under experienced Gurus.

- **Eligibility:** Open to cultural organizations practicing the Guru-Shishya tradition.
- **Target Group:** Trainees aged **3 years and above** in dance, music, theatre, and traditional art forms.
- **Financial Assistance:** ₹15,000 per month for each Guru/Director, supporting **up to 18 shishyas in theatre and 10 in music/dance per Guru**.
- **Objective:** Ensure regular and structured training in traditional arts under the Guru-Shishya tradition.

#### 8. Caribbean Sea A part of the **Atlantic Ocean**, the Caribbean Sea lies **southeast of the**

##### **Gulf of Mexico and**

**north of South America**. It is bordered by the **Greater Antilles (Cuba, Jamaica, Hispaniola, Puerto Rico)** to the north, the **Lesser Antilles** to the east, and **Central and South America** to the south and west. It serves as a key maritime route connecting **North and South America, Europe, and Asia**. The sea is home to one of the world's largest coral reef systems, including the **Mesoamerican Barrier Reef**, the second largest after the **Great Barrier Reef**.



## 9. Makhana (Black Diamond)

- **Common Name:** Fox Nut
- **Botanical Characteristics:** Features **violet and white flowers**, with large, round, prickly leaves over **one meter in diameter**.
- **Nutritional & Economic Value:** A **superfood**, rich in **carbohydrates, protein, and minerals**, widely used in **medicine, healthcare, and nutrition**.
- **GI Tag:** Mithila Makhana received **Geographical Indication (GI) status in 2022**.
- **Cultivation:** Grown across **South and East Asia**, with **Bihar** contributing nearly **90%** of global production.

## 6 February

### 1. Indrayani River

The Indrayani River, spanning 103.5 km in Maharashtra, originates from the Western Ghats near Lonavala. A rain-fed river, it traverses the Pune district before joining the Bhima River, a Krishna River tributary. Flowing through Pimpri-Chinchwad, it supports irrigation and agriculture. The Valvan Dam, a gravity dam, is built on this river near Lonavala.

### 2. *Gambusia affinis* (Mosquitofish) & *Poecilia reticulata* (Guppy)

The National Green Tribunal has sought the central government's response on the use of ***Gambusia affinis*** and ***Poecilia reticulata*** as biological mosquito control agents. ***Gambusia affinis***, or mosquitofish, is commonly introduced to control mosquito larvae but is also listed among the world's 100 worst invasive species by the IUCN. ***Poecilia reticulata*** (Guppy), a small benthopelagic fish, originates from Brazil, Guyana, Venezuela, and the Caribbean.

### 3. International Big Cat Alliance

Launched by the Indian government through the National Tiger Conservation Authority (NTCA) under the MoEFCC on 9 April 2023, the International Big Cat Alliance aims to conserve seven big cat species: Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma. Membership is open to 97 range countries and other interested entities. Current members include Nicaragua, Eswatini, India, Somalia, and Liberia.

### 4. Sacred Groves

These are community-protected forest areas with cultural and ecological significance, preserved through traditional customs and religious beliefs. Acting as biodiversity hotspots and water recharge zones, sacred groves are found across India, especially in:

- **Western Ghats & Central Plateau** (Kerala, Karnataka, Maharashtra, Chhattisgarh)
- **Northeast India** (Meghalaya, Assam, Arunachal Pradesh)
- **Tribal Belts** (Odisha, Jharkhand, Madhya Pradesh)

### 5. Trickle-Down vs. Trickle-Up Economics



- **Trickle-Down Economics:** Wealth accumulation at the top is expected to eventually benefit lower-income groups. It promotes corporate tax cuts, big business subsidies, and deregulation. Example: India's corporate tax cuts (2019) reduced revenue for social programs.
- **Trickle-Up Economics:** Focuses on direct investment in lower- and middle-income groups to boost demand and economic growth, prioritizing welfare, education, healthcare, and employment.

#### 6. Fort William

Located in Kolkata, West Bengal, on the eastern banks of the Hooghly River, Fort William was originally built between 1696 and 1706. Following the Battle of Plassey, it was reconstructed between 1758 and 1781.

#### 7. Stryker

An eight-wheeled armored infantry combat vehicle (ICV) designed for rapid deployment and enhanced battlefield mobility was developed by General Dynamics Land Systems (GDLS) in Canada and the U.S.

---

## 7 February

#### 1. Pong Dam Lake Wildlife Sanctuary

Also called Maharana Pratap Sagar, this man-made reservoir in the Shivalik Hills of Kangra district, Himachal Pradesh, was created by the Pong Dam on the Beas River. Covering nearly 307 sq km, it was designated a Ramsar site in 2002.

#### 2. Jevons Paradox

This concept suggests that technological advancements that improve efficiency or lower the costs of a resource often lead to increased consumption rather than conservation. Proposed by economist William Stanley Jevons in his 1865 book *The Coal Question*, it explains how efficiency gains can unintentionally raise demand.

#### 3. Dibru-Saikhowa National Park

Located in Assam on the southern bank of the Brahmaputra, it is both a National Park and a Biosphere Reserve. Bordered by the Brahmaputra and Lohit Rivers in the north and the Dibru River in the south, it features moist, mixed semi-evergreen and deciduous forests. The park contains India's largest Salix swamp forest and has a tropical monsoon climate.

#### 4. *Rhododendron wattii*

A recent study highlights the endangered *Rhododendron wattii*, a small tree reaching up to 25 feet, endemic to India. It is naturally found in Manipur and Nagaland, particularly in the Dzukou Valley. First collected by Sir George Watt from Nagaland's Japfu Hill range during his 1882–85 survey.

#### 5. Kalbeliya Community



- **Background:** A nomadic Rajasthani tribe known for snake charming, folk songs, and dances. They are divided into two groups—Daliwal and Mewara—and are also called **Sapera, Jogira, Gattiwala, and Poogiwara**. Unlike most Hindus, they bury their dead, marking graves with Shiva's Nandi bull idol. Their prominence declined post-Prithviraj Chauhan's defeat, and the Wildlife Protection Act (1972) forced them to seek alternative livelihoods. **Kalbelia**
- **Dance:** Also called **Sapera dance**, it is central to Kalbeliya culture. Women in black flowing skirts twirl to imitate snake movements, while men accompany them on instruments like **khanjari** (percussion) and **poongi** (woodwind). The dance, featuring intricate jewelry, tattoos, and embroidered outfits, was inscribed on UNESCO's Intangible Cultural Heritage list in 2010.

## 10th February

### 1. Cayman Islands

The Cayman Islands, a British Overseas Territory in the Caribbean Sea, lie south of Cuba and northwest of Jamaica. This region comprises three islands—Grand Cayman, Cayman Brac, and Little Cayman—formed by the Cayman Ridge, an extensive underwater mountain range. These islands, essentially the peaks of this ridge, are renowned for their coral reefs, clear waters, and white sandy beaches. Grand Cayman is the largest and most densely populated of the three.

### 2. Klub-S Missile System

The Klub-S, also called Kalibr, is a cruise missile developed by the Russian defense firm NPO Novator and introduced into Moscow's defense forces in 1994. With a 400 kg warhead, it can strike surface ships, submarines, and land targets up to 300 km away. The missile's standout feature is its ability to accelerate to supersonic speeds in its final phase, making interception challenging. It also flies at a low altitude (10-15 meters), minimizing the enemy's reaction time.

### 3. Dash Avatar Theatre

A traditional folk theater of Maharashtra and northern Goa, Dashavatar revolves around the ten incarnations of Vishnu—Matsya, Koorma, Varaha, Narsimha, Vamana, Parashurama, Ram, Krishna, Buddha, and Kalki. The performances are primarily musical, though some dialogues are included. Instruments like the paddle harmonium, tabla, and zanj are commonly used.

### 4. Vishwamitri River

Originating in Gujarat's Pavagadh Hills, the Vishwamitri River merges with the Dhadhar and Jambuva tributaries before emptying into the Gulf of Khambhat. The river, spanning 25 km through Vadodara, is rain-fed and has a highly sinuous course with distinctive ravines throughout its path. Notably, the Vadodara stretch is home to a large population of mugger crocodiles (**Crocodylus palustris**).

### 5. Mugger Crocodiles

One of the 24 existing crocodilian species, mugger crocodiles inhabit freshwater ecosystems like marshes, lakes, rivers, and artificial ponds. In India, they are found across 15 states, with significant populations in the middle Ganges (Bihar,



Jharkhand) and Chambal (Madhya Pradesh, Gujarat, Rajasthan) basins. Additionally, they are distributed across Pakistan, Sri Lanka, Nepal, Bangladesh, and southeastern Iran.

- **Conservation Status:**
  - **IUCN:** Vulnerable
  - **CITES:** Appendix I

## 6. Potash

Potash refers to various water-soluble inorganic compounds containing potassium. The primary ore, sylvinite, is a blend of sylvite (KCl) and halite (NaCl). Over 90% of potash is utilized in fertilizers, making it a crucial agricultural nutrient alongside nitrogen and phosphorus (N-P-K).

- **Potash Reserves in India:** Rajasthan (89% of total resources), Punjab, Madhya Pradesh, and Uttar Pradesh.
- **Global Reserves:** Canada (31%), Belarus (21%), Russia (11%), China (10%), USA (6%), Germany (4%), Chile (3%).

## 7. Supreme Court Ruling

The Supreme Court ruled that failing to inform an accused person of the reasons for their arrest violates their fundamental rights under Article 22 of the Indian Constitution. The grounds for arrest must be communicated in a language the accused understands. Referring to Article 21, the court reaffirmed that no individual can be deprived of liberty except through due legal procedure.

## 8. National Commission for Safai Karamcharis (NCSK)

Established on 12th August 1994 under the **National Commission for Safai Karamcharis Act, 1993**, NCSK initially functioned as a statutory body for three years. The Act was extended until 2004, after which the Commission became a **non-statutory body** under the **Ministry of Social Justice and Empowerment**. It actively takes suo-motu cognizance of issues concerning safai karamcharis based on media reports and observations.

## 9. White-Box vs. Black-Box Algorithms

- **White-Box Algorithms:** These are Transparent, explainable, and replicable models that investors, including retail traders, can understand and utilize.
- **Black-Box Algorithms:** Opaque and complex models where the decision-making process is unclear, often used in high-frequency and institutional trading.

**(12 February)**

## 1. Quipu

Quipu is a recently discovered massive cosmic structure where galaxies form clusters, which then group into even larger superclusters. It is the longest known structure in the universe, stretching over 13,000 times the length of the Milky Way and weighing hundreds of thousands of times more than a single galaxy. Despite its immense size, Quipu is not



permanent—scientists predict it will eventually break down into smaller, collapsing components, describing it as a temporary formation that will evolve.

## **2. R-37M Missile**

Russia has reportedly offered the R-37M missile, considered one of the world's most advanced air-to-air missiles, to India. Also known as the AA-13 Axehead (NATO designation), this long-range missile is designed to target enemy fighter aircraft and drones beyond visual range (BVR). It is equipped with a detachable rocket booster that extends its reach to 300–400 km, making it one of the longest-range air-to-air missiles in existence. Additionally, it can travel at hypersonic speeds, reaching Mach 6, which is crucial for intercepting high-speed targets.

## **3. Exercise Cyclone 2025**

Exercise Cyclone is a joint military exercise conducted between the Indian and Egyptian armies. The 2025 edition marks the third iteration of the drill. The first edition took place in India in 2023, followed by the second in Egypt in 2024.

## **4. Burmese Pythons**

Among the world's largest snake species, Burmese pythons can grow up to 20 feet long and weigh over 250 pounds, with females generally larger than males. These non-venomous, nocturnal snakes are primarily solitary and inhabit forested areas. They are also excellent swimmers, capable of remaining submerged for up to 30 minutes. In Florida, they are classified as an invasive species due to their release into the wild through the pet trade.

### **Conservation Status:**

● **IUCN:** Vulnerable

## **5. La Niña**

The term "La Niña" means "Little Girl" in Spanish and is sometimes referred to as El Viejo, anti-El Niño, or simply a "cold event." It occurs when trade winds intensify, pushing warm waters toward Indonesia while causing the eastern Pacific Ocean to become cooler than usual.

## **6. Lymphatic Filariasis**

Also known as elephantiasis (*Haatipaon*), lymphatic filariasis is a debilitating disease caused by filarial worms and transmitted through the bite of Culex mosquitoes, which breed in polluted water. Although infection typically occurs in childhood, symptoms such as lymphoedema, elephantiasis, and scrotal swelling (hydrocele) manifest later in life, often leading to permanent disability. The disease has been designated as a priority for elimination by 2027.

## **7. Bombay Blood Group**



Discovered in 1952 by Dr. Y.M. Bhende in Mumbai (then Bombay), the Bombay blood group (**hh phenotype**) is among the rarest in the world. Individuals with this blood type lack the H antigen, which is necessary for the ABO blood system, meaning they cannot receive blood from any ABO group, including O. This rare blood group is more prevalent in India, Sri Lanka, Bangladesh, and some Middle Eastern regions due to genetic inheritance patterns.

**Blood Transfusion:**

- Individuals with the Bombay blood group can donate blood to any ABO group.
- However, they can only receive blood from another Bombay blood group donor.

## 8. PM-AJAY Scheme

**Definition:** The PM-AJAY scheme is a centrally sponsored initiative launched in 2021 to support the socioeconomic development of Scheduled Caste (SC) communities in India.

**Objectives:**

- Alleviate poverty through skill development and income-generation programs.
- Improve literacy rates and promote SC enrollment in educational institutions, particularly in aspirational districts.

## (13 February)

### 1. Vancomycin

Vancomycin is a glycopeptide antibiotic used to treat severe bacterial infections like MRSA (methicillin-resistant ***Staphylococcus aureus***). It is commonly prescribed for bloodstream infections, skin and soft tissue infections, endocarditis (heart valve infections), bone and joint infections, and intestinal infections such as ***Clostridium difficile***-associated diarrhea. However, it may cause serious side effects, including kidney and hearing damage, especially in older patients. It is ineffective against viral infections like colds and flu.

### 2. SAFTA (South Asian Free Trade Agreement)

SAFTA is a free trade agreement under SAARC that replaced the 1993 SAARC Preferential Trading Arrangement. It came into effect in 2006 and includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The agreement acknowledges the need for special treatment of Least Developed Countries (LDCs).

### 3. Market Intervention Scheme (MIS)

MIS is implemented at the request of State or Union Territory governments to procure perishable agricultural and horticultural produce such as tomatoes, onions, and potatoes, which do not have a Minimum Support Price (MSP). The scheme is activated when market prices drop by at least 10% compared to the previous normal year. Recent revisions have made MIS a part of PM-AASHA, and the procurement limit has been increased from 20% to 25% of total production.



#### 4. **Brahmagiri Wildlife Sanctuary**

Located in the Western Ghats in Karnataka's Kodagu district, the sanctuary is named after Brahmagiri Peak, which stands at 1,607 meters. The Lakshmana Tirtha River, a tributary of the Cauvery, originates here. The terrain is mostly undulating, with steep valleys and hillocks.

#### 5. **Bailey Bridge**

A Bailey bridge is a portable, prefabricated truss bridge designed by Sir Donald Bailey in 1941. First used during World War II, it is known for its standardization, ease of assembly, and ability to be strengthened by adding extra truss girders. These bridges can also be used in locations inaccessible to heavy construction equipment.

#### 6. **Sant Guru Ravidas**

Guru Ravidas, a 15th–16th-century saint of the Bhakti movement, emphasized unity, devotion, and social equality. A disciple of Sant Kabir, he is considered the founder of the Ravidassia religion. He opposed caste discrimination and worked for the upliftment of marginalized communities. His famous saying, "**Mann Changa to Kathauti Mein Ganga**", highlights the importance of inner purity over external rituals.

#### 7. **Foot and Mouth Disease (FMD)**

FMD is a highly contagious viral disease affecting cloven-hoofed animals such as cattle, swine, sheep, and goats. It is caused by an **Aphthovirus** and spreads through direct contact, contaminated objects, and infected feed or milk. Symptoms include fever, blisters, excessive saliva, appetite loss, lameness, and abortion. There is no specific cure, but symptoms subside within 7–10 days.

#### **National Animal Disease Control Programme (NADCP)**

Launched in 2019, NADCP provides 100% central assistance for FMD vaccination under the Livestock Health and Disease Control Programme (LHDCP) since 2021.

#### 8. **BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation)**

Established in 1997 with the Bangkok Declaration, BIMSTEC initially included Bangladesh, India, Sri Lanka, and Thailand (BIST-EC). Myanmar joined later in 1997, and Bhutan and Nepal became members in 2004. Originally focused on trade, technology, energy, transport, tourism, and fisheries, it expanded in 2008 to cover areas such as agriculture, health, counter-terrorism, climate change, and people-to-people ties.

#### 9. **Gross Domestic Knowledge Product (GDKP)**

GDKP, proposed by Prof. Umberto Sulpasso and Prof. Jeff Cole from the University of Southern California, is a metric designed to measure the knowledge generated and used within an economy. It is intended to complement GDP as an economic indicator.

#### 10. **World's First Hybrid Quantum Supercomputer – Reimei**

Japanese engineers have launched **Reimei**, the first hybrid quantum supercomputer, integrating a 20-qubit quantum system with **Fugaku**, the world's sixth-fastest



supercomputer. Unlike most quantum computers that use superconducting qubits, **Reimei** employs trapped-ion qubits, which use charged atoms controlled by lasers for precise quantum state manipulation. This innovation enhances the ability to tackle complex problems in physics and chemistry.

#### 11. IIT Madras Develops SHAKTI-Based Semiconductor Chip

IIT Madras, in collaboration with ISRO, has developed **IRIS** (Indigenous RISC-V Controller for Space Applications), a semiconductor chip based on the SHAKTI microprocessor. SHAKTI uses the open-source RISC-V processor technology and is supported under the **Digital India RISC-V** (DIRV) initiative. Designed for high reliability and fault tolerance, **IRIS** marks a step toward self-reliance in space and semiconductor technology.

### 14 February

#### 1. Dokra Artwork

Dokra, also known as bell metal craft, is a traditional form of folk art with a history spanning over 4,000 years. Practiced by the Dhokra Damar tribes, who are skilled metalsmiths, this art form is prevalent in eastern India, particularly in West Bengal, Odisha, Jharkhand, and Chhattisgarh. Each sculpture is unique, handcrafted with intricate detailing, and inspired by mythology, nature, and daily life.

#### 2. Srjanam Rig

Developed by CSIR-NIIST, Srjanam Rig is an automated biomedical waste treatment system. It disinfects hazardous biomedical waste, including blood, urine, sputum, and laboratory disposables, without relying on expensive incinerators. The rig also neutralizes foul odors and has an initial capacity to process 10 kg of degradable medical waste per day, with a total daily handling capacity of 400 kg.

#### 3. Fulani Community

A recent study suggests that the Fulani people, one of Africa's largest pastoralist groups, trace their ancestry back to the 'Green Sahara' period (12,000–5,000 years ago). They are primarily found in Nigeria, Mali, Guinea, Senegal, and Niger, with smaller populations spread across other African nations.

#### 4. MITRA Platform

The **Mutual Fund Investment Tracing and Retrieval Assistant (MITRA)** is a platform designed to help investors track and recover unclaimed or inactive mutual fund folios. Developed by Registrar and Transfer Agents (RTAs), MITRA provides an industry-level database, empowering investors to retrieve their investments efficiently.

#### 5. Einstein Ring

An Einstein Ring is a rare luminous ring caused by gravitational lensing, where light from a distant galaxy or celestial body is bent by the gravitational field of a massive foreground object. This phenomenon, first predicted by Einstein's theory of general relativity, is observable only through advanced space telescopes like Euclid.



## 6. Hindon River

A tributary of the Yamuna, the Hindon River originates in the Siwalik Hills of Saharanpur, Uttar Pradesh, at an elevation of about 800 meters. It flows through the industrial regions of western Uttar Pradesh for 400 km before merging with the Yamuna in Noida. The Kali (West) and Krishni Rivers are its key tributaries. Archaeologists have discovered Harappan civilization remnants along its banks, dating back to 2500 BC. However, due to extreme pollution levels, the Central Pollution Control Board (CPCB) declared it a "dead river" in 2015, deeming it unfit for bathing.

## 7. Forest Rights Act (FRA), 2006

Before the enactment of the FRA in 2006, Scheduled Tribes (STs) and Other Traditional Forest Dwellers (OTFDs) lacked legal recognition of their ancestral lands. Colonial forest laws and post-independence conservation policies often classified them as encroachers. The FRA was introduced to correct these historical injustices and grant them rightful access to forest land and resources.

## 8. Public Accounts Committee (PAC)

Established in 1921 following the Montagu-Chelmsford Reforms, the **Public Accounts Committee (PAC)** is one of the oldest parliamentary committees in India. It consists of up to 22 members (15 from Lok Sabha and 7 from Rajya Sabha), but no minister can be a part of it. The PAC is responsible for auditing government revenue and expenditure, reviewing accounts of autonomous bodies, and examining reports by the Comptroller and Auditor General (CAG).

## 9. Avian Influenza (Bird Flu)

Influenza A viruses are classified based on their origin, such as avian influenza (bird flu, subtypes H5N1 and H9N2) and swine influenza (swine flu, subtypes H1N1 and H3N2). Bird flu is a viral infection primarily affecting birds but can also be transmitted to humans. The H5N1 strain has been linked to several human infections and fatalities.

## 10. National Mission on Edible Oils – Oil Palm (NMEO-OP)

Launched in 2021, NMEO-OP aims to boost domestic oil palm cultivation and reduce reliance on imports. The mission aims to expand oil palm plantations to 10 lakh hectares by 2025-26 and provides financial incentives and subsidies to farmers.

## 11. Einstein Ring (Repeated Entry)

An Einstein Ring forms when a massive celestial body bends and magnifies the light of a distant object, creating a circular light structure. This effect, a confirmation of Einstein's general relativity, occurs when the alignment between the observer, the foreground object (gravitational lens), and the background source is nearly perfect. In a recent observation, the galaxy **NGC 6505** served as the gravitational lens.

## 12. BrahMos NG

BrahMos NG is an advanced supersonic cruise missile developed under an **India-Russia** joint venture. It maintains the same **290 km range and Mach 3.5 speed** as its predecessor but is significantly lighter (1.6 tonnes vs. 3 tonnes) and



smaller (6m vs. 9m). This reduced size enhances its adaptability for deployment on various platforms, including **Sukhoi-30MKI and Tejas** fighter jets. It will feature an **indigenous AESA radar**, with the first test flight expected between **2025 and 26**.

## **18th February**

### **1. Typhoid**

Typhoid is a bacterial infection caused by ***Salmonella Typhi***, primarily transmitted through contaminated food, water, or direct contact with infected individuals. Without proper treatment, it can be life-threatening. Antibiotics like chloramphenicol, ampicillin, and ciprofloxacin are commonly used to treat it.

- **Prevalence in India:** The country records approximately 4.5 million cases annually, particularly in urban regions, making it a significant public health concern.
- **Available Vaccines:** India offers several typhoid vaccines, including **Typhbar-TCV, Ty21a, Typhim Vi, and Typherix**. Typhoid conjugate vaccines (TCVs) are suitable for children above six months, while Vi vaccines are administered to those over two years. TCVs are currently available only in private healthcare facilities.
- **Recent Advancements:** The ICMR-NIRBI has developed an enteric fever vaccine using outer membrane vesicles derived from two strains of typhoidal ***Salmonella***.

### **2. Abortion Laws in India**

The Medical Termination of Pregnancy (MTP) Act allows abortion under specific conditions. Before its enactment in 1971, abortion was regulated under the Indian Penal Code (IPC), primarily criminalizing the practice except in cases where the procedure was necessary to save a woman's life. The law did not differentiate between wanted and unwanted pregnancies, creating significant barriers to safe abortion access.

### **3. Messenger RNA (mRNA)**

mRNA is a single-stranded RNA molecule that plays a key role in protein synthesis. It is synthesized from a DNA template during transcription and carries genetic instructions from DNA (in the nucleus) to ribosomes in the cytoplasm. There, it guides the formation of proteins by translating its sequence into amino acids, forming protein chains.

### **4. Green Bonds**

Green bonds are financial instruments issued by governments, corporations, or multilateral banks to fund environmentally sustainable projects that reduce carbon emissions or enhance climate resilience.

- **Greenium:** This refers to the difference in yield (or "green premium") between green bonds and conventional bonds. A higher **greenium** helps issuers raise funds at lower costs, encouraging investment in sustainable projects.

### **5. Biobank at Darjeeling Zoo**



India's first **biobank** is being set up at Padmaja Naidu Himalayan Zoological Park in West Bengal as part of a national initiative.

- **Collaboration:** The project is being developed in partnership with the Centre for Cellular and Molecular Biology (CCMB) under the Ministry of Science and Technology.
- **Purpose:** The biobank will collect and store cell and tissue samples from endangered animals, including reproductive cells from deceased species. These preserved samples may aid in research and conservation efforts, including the potential revival of critically endangered species.

## 6. Gravehawk System

The Gravehawk system is a short-range surface-to-air missile defense system developed by the United Kingdom.

- **Key Features:**
  - Designed to counter fast-moving airborne threats.
  - Mounted on an all-terrain vehicle, enabling rapid deployment and mobility.

## 7. Yamuna River

The Yamuna is the longest tributary of the Ganges, originating from the Yamunotri Glacier near the Banderpooch peaks at an altitude of 6,387 meters. It flows for 1,376 kilometers before merging with the Ganges at **Sangam** in Prayagraj, Uttar Pradesh.

- **Major Tributaries:**
  - **Himalayan Region:** Rishi Ganga, Hanuman Ganga, Tons, and Giri.
  - **Plains:** Hindon, Chambal, Sind, Betwa, and Ken.
- The Tons River contributes nearly 60% of the Yamuna's water flow, while the Chambal River is its largest right-bank tributary.

## 8. Measles

Measles is a highly contagious viral disease caused by a **paramyxovirus**. It spreads through direct contact and airborne transmission, primarily affecting the respiratory tract before spreading throughout the body.

- **High-Risk Groups:** Unvaccinated children and pregnant women face the greatest risk of severe complications.
- **Treatment:** There is no specific antiviral treatment for measles, making vaccination the best preventive measure.

## 9. International Classification of Diseases (ICD)

The ICD is a globally recognized system developed by the World Health Organization (WHO) to classify diseases and health conditions. It helps in monitoring global health trends, identifying causes of disease and mortality, and guiding healthcare policies.



- **Implementation in India:** The Central Bureau of Health Intelligence (CBHI), under the Ministry of Health and Family Welfare, collaborates with WHO on ICD-related activities.

## 10. Loggerhead Turtle

The **Loggerhead Turtle** belongs to the **Cheloniidae** family and is named for its large head, which houses strong jaw muscles.

- **Distinct Features:**

- It is the world's largest hard-shelled turtle, surpassing the Green Sea Turtle and Galápagos Tortoise in size.
- The second-largest living turtle species after the Leatherback Turtle.
- Uses Earth's geomagnetic field for navigation during long migrations.

- **Conservation Status:** **Vulnerable** (IUCN Red List).

## (19 February)

### 1. Souparnika River

The Souparnika River is a west-flowing river in Karnataka, originating from the Kodachadri Hills in the Western Ghats. It passes through Byndoor taluk and flows near the famous Mookambika Temple in Kollur before emptying into the Arabian Sea. A distinctive feature of the river is its parallel course to the Arabian Sea near Maravanthe Beach, separated by a narrow land strip, creating a unique geographical landscape.

### 2. Javelin Anti-Tank Guided Missile

India and the US have recently decided to collaborate on the procurement and co-production of Javelin anti-tank guided missiles to meet India's defense needs. This man-portable missile system has a "fire-and-forget" capability with an effective range of 2.5 km. It employs infrared guidance, allowing the operator to take cover immediately after launch.

### 3. Parambikulam Tiger Reserve

Located in Kerala's Palakkad and Thrissur districts, Parambikulam Tiger Reserve was designated under Project Tiger in 2009. The Parambikulam, Sholayar, and Thekkady rivers flow through it, fostering a diverse ecosystem. The reserve is home to four tribal communities—Kadar, Malasar, Muduvar, and Mala Malasar—who reside in six settlements within the protected area.

### 4. Project Waterworth

Meta has announced its most extensive subsea cable project, **Project Waterworth**, a 50,000 km-long cable system linking India, the US, Brazil, South Africa, and other strategic locations. The cable, reaching depths of up to 7,000 meters, integrates advanced machine learning to predict and prevent disruptions, thereby enhancing subsea network resilience. It aims to provide top-tier connectivity across five continents and support AI-related developments.



## 5. Exercise Dharma Guardian

Dharma Guardian is an annual joint military exercise between India and Japan, held alternately in both countries. It focuses on enhancing interoperability between the armed forces through joint training in urban warfare and counter-terrorism operations under a UN mandate.

## 6. Aravali Safari Park Project

Initiated in 2022, this project aims to conserve endangered species and promote tourism.

- **Phase 1:** Spanning 2,500 acres, it includes large enclosures for big cats and other wildlife.
- **Conservation Focus:** Special units will work on the breeding and protection of species such as blackbucks, vultures, and soft-shelled turtles.
- **Environmental Concerns:** Conservationists and retired Indian Forest Service officers have opposed the project due to potential ecological damage.

## 7. Bacteria-Made Band-Aid for Plants

A recent study suggests that bacterial cellulose can serve as a natural bandage, aiding plant healing and regeneration.

- **Bacterial Cellulose:** A renewable nanomaterial produced by certain bacteria, it has a unique three-dimensional structure with high water retention and strong mechanical properties.
- **Applications:** Used widely in human medicine, particularly for wound healing, its use in plant care could help accelerate recovery.

## 8. Distributed Denial-of-Service (DDoS) Attacks

DDoS attacks are a form of cyberattack designed to disrupt online services by overwhelming them with excessive traffic from multiple sources.

- **Effects:** These attacks slow down or crash targeted websites, causing downtime and potential financial losses. Though they do not directly steal data, they can be used as diversions for other cyber threats.
- **Mitigation Strategies:** Implementing traffic filtering, bot detection, rate limiting, and strong authentication can help prevent DDoS attacks. Collaboration with cybersecurity agencies is also essential.

## 9. SAKSHAM Campaign

Indian Oil Corporation Limited and Bharat Petroleum Corporation Limited launched the 14-day **SAKSHAM** campaign to promote green energy and fuel conservation.

- **Objective:** Encourage consumers to switch to cleaner fuels and adopt energy-efficient behaviors.
- **Focus:** Sustainable use of petroleum products to ensure environmental protection and long-term energy security.

## 10. Blair House

During his two-day visit to the US, the Prime Minister stayed at Blair House, a historic building that has served as the official guesthouse for foreign dignitaries since 1942. Also known as **The President's Guest House**, it is managed by the US Department of State and the General Services Administration. Notable past guests include Indian leaders Jawaharlal Nehru and Indira Gandhi.



**20 February**

**1. Sariska Tiger Reserve (STR):**

Situated in Rajasthan, the reserve lies within the Aravalli range. Originally a royal hunting ground of the Maharaja of Alwar, it was declared a natural reserve in 1955 and designated a national park in 1979. It became the first reserve globally to successfully relocate tigers. Additionally, it is known for historical sites such as Pandu Pol, Bhangarh Fort, Ajabgarh, Pratapgarh, Siliserh Lake, and Jai Samand Lake.

**2. Caspian Pipeline Consortium (CPC):**

CPC is a \$2.6 billion project featuring a 935-mile crude oil pipeline connecting Kazakhstan's Tengiz oil field to Russia's Novorossiysk port on the Black Sea. This major East-West pipeline facilitates oil transport from the Caspian Sea region to global markets. The consortium includes the governments of Russia and Kazakhstan, alongside Western energy giants Chevron, ExxonMobil, and Shell. It is responsible for two-thirds of Kazakhstan's oil exports and has a total capacity of 1.4 million barrels per day, accounting for 3% of the global seaborne oil trade.

**3. Inland Water Transport Terminal:**

This terminal is expected to significantly improve regional connectivity and strengthen India's trilateral trade relations with Bhutan and Bangladesh. By providing an alternative, cost-effective, and eco-friendly transport route via the Brahmaputra River, it aims to reduce logistics costs. By 2027, it is projected to handle one million tonnes of cargo annually.

**4. Inland Waterways Authority of India (IWAI):**

Established under the IWAI Act of 1985, this statutory body is responsible for the development and maintenance of the inland water transport infrastructure on national waterways. It operates under the Ministry of Ports, Shipping, and Waterways, with its headquarters in Noida, Uttar Pradesh. IWAI has regional offices in Guwahati, Patna, Kochi, Bhubaneswar, and Kolkata.

**5. Peppara Wildlife Sanctuary:**

Located in Kerala's Thiruvananthapuram district, this 53 sq. km sanctuary was established in 1983. It serves as the catchment area for the Peppara Dam, which was built on the Karamana River. With altitudes ranging from 100 to 1,717 meters, the sanctuary includes notable peaks like Chemmunjimottai (1,717m) and Athirumalai (1,594m). The Vazhvanthol Waterfall is situated nearby.

**6. Soil Health Card Scheme:**

Launched in 2015, this initiative helps state governments issue soil health cards to farmers, providing insights into soil nutrient status and recommendations for improving soil fertility. Each card includes data on 12 parameters, including macro-nutrients (N, P, K, S), micro-nutrients (Zn, Fe, Cu, Mn, Bo), and factors like pH, EC, and organic carbon levels. Soil testing is typically conducted twice a year, post-Rabi and Kharif harvests. Farmers receive an updated soil health card every three years. Since 2022-23, the scheme has been integrated into the Rashtriya Krishi



Vikas Yojana (RKVY) under the 'Soil Health & Fertility' component.

**7. Swami Ramakrishna Paramhansa:**

Born as Gadadhar Chattopadhyay on February 18, 1836, in Kamarpukur, Bengal, he was raised in a deeply religious Brahmin family. His spiritual journey led him to explore multiple religious traditions, affirming that all paths lead to the same divine truth. His teachings emphasized a continuous devotion to God, resonating with spiritual seekers across different faiths.

**8. Anti-Cyclonic System:**

○ **Characteristics:**

- High atmospheric pressure at the center.
- Outward movement of air from the center.
- Sinking air prevents cloud formation, leading to dry and clear conditions.

○ **Impact:**

- It can cause prolonged dry spells and heatwaves, significantly affecting local weather patterns.

**9. 'Rarest of Rare' Doctrine:**

- The principle resurfaced in two recent murder convictions, sparking discussions on its judicial interpretation.

○ **Key Judgments:**

- **Jagmohan Singh vs. State of U.P. (1972):** The Supreme Court upheld the constitutionality of the death penalty.
- **Bachan Singh vs. State of Punjab (1980):** The 'rarest of rare' doctrine was introduced, restricting the death penalty to exceptional cases, though it lacked clear guidelines.
- **Machhi Singh vs. State of Punjab (1983):** The Supreme Court refined the doctrine, identifying five categories of crimes warranting capital punishment.

**10. Samudrayaan Project:**

- Part of the Deep Ocean Mission, this initiative aims to develop a manned submersible capable of carrying three crew members to a depth of 6,000 meters for deep-sea exploration.
- **Matsya 6000:** A fourth-generation deep-ocean submersible designed under this project. It features a 2.1-meter diameter spherical hull accommodating three individuals, enhancing India's deep-sea exploration capabilities.
- **Deep Ocean Mission:**
  - Launched in 2021 as a Central Sector Scheme under the Ministry of Earth Sciences.
  - A multi-disciplinary initiative aimed at studying deep-sea resources to support India's Blue Economy ambitions.

**21st February**



## 1. Bacterial Cellulose:

- A natural polymer produced by specific bacteria, bacterial cellulose has proven to be highly effective in treating plant wounds by promoting healing and regeneration.
- **Advantages of Bacterial Cellulose Bandages:**
  - Provides a sustainable alternative to chemical treatments for plant injuries.
  - Enhances plant recovery, leading to better crop yields and increased resilience, contributing to food security and environmental conservation.
- **Key Facts about Cellulose:**
  - Composed of carbon, hydrogen, and oxygen atoms.
  - Forms the primary structural component of plant cell walls, helping plants maintain their rigidity.
  - Though indigestible for humans, it is essential as dietary fiber.

## 2. Vertical Propellant Mixer:

- The world's largest solid propellant mixing equipment was developed by the Satish Dhawan Space Centre in partnership with the Central Manufacturing Technology Institute, Bengaluru.
- **Advanced Technology:**
  - Features hydrostatic-driven multiple agitators, remotely controlled using a PLC-based system with SCADA stations.
- **Function:**
  - Ensures uniform mixing of fuel and oxidizer for solid rocket motors, directly influencing rocket performance and reliability.

## 3. OPEC+:

- A coalition of 22 oil-exporting nations that collaborates to regulate crude oil production and maintain market stability.
- **Origin:**
  - Established in late 2016 to institutionalize cooperation between OPEC and non-OPEC producers.
- **Members:**
  - OPEC (12 countries) and 10 additional non-OPEC producers, including Russia, Mexico, Kazakhstan, and Malaysia.
- **OPEC Overview:**
  - Founded in 1960 by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
  - Now has 12 members; Angola exited in January 2024.
  - Headquarters: Vienna, Austria.

## 4. National Dam Safety Authority (NDSA):

- A statutory body established under the National Dam Safety Act, 2021, tasked with regulating, inspecting, and overseeing dam safety.
- **Functions:**
  - Resolves disputes between state dam safety organizations and dam owners.



- Ensures emergency preparedness for unexpected disasters.
  - **Structure:**
    - Led by a chairman with five specialized wings (policy & research, technical, regulation, disaster resilience, and administration & finance).
    - Headquarters: New Delhi.
5. **Chalukyas:**
- **Early Chalukyas (Badami Chalukyas):**
    - Founded by Pulakesin I (543–566 CE), who fortified Badami and expanded the kingdom.
    - Pulakesin II defeated Harsha of Kanauj, earning the title “Parameshvara.”
    - The dynasty ended in 750 CE when the Rashtrakuta ruler Dantidurga defeated Kirtivarman II.
  - **Later Chalukyas (Kalyani Chalukyas):**
    - Emerged under Taila II around 957 CE.
    - Defeated Rajaraja Chola (992 CE) and several other regional powers like the Latas, Gurjaras, Chedis, and Paramaras.
6. **International Organization of Aids to Marine Navigation (IALA):**
- Founded in 1957 as an NGO, now transitioning into an intergovernmental organization (IGO) to standardize global maritime navigation and enhance safety.
  - **India’s Role:**
    - Hosting the IALA Council meeting in December 2025 and the IALA Conference & General Assembly in September 2027 (Mumbai).
    - Highlights India’s commitment to maritime safety and global cooperation.
7. **Lithium:**
- A highly reactive, silvery-white metal.
  - **Uses:**
    - Essential for lithium-ion batteries and is widely used in electronics and electric vehicles.
  - **Global Production:**
    - Major producers include Australia, Chile, and Argentina.
8. **Digital Brand Identity Manual (DBIM):**
- A government initiative ensuring a uniform digital brand presence across all ministries and platforms.
  - Aligns with the principles of “**Minimum Government, Maximum Governance**” and “**Uniform Governance.**”
9. **Role of Coronal Holes in Space Weather & Climate:**
- Coronal holes contribute to space weather and geomagnetic disturbances on Earth.
  - **Effects:**



- Disrupt satellite functions, GPS, and power grids.
- Influence radio wave propagation and communication systems.
- Recent studies link their radiative impact to variations in Indian monsoon rainfall.

## 24th February

### 1. Jhumoir Binandini Dance

Also called Jhumur, this is a traditional folk dance performed by the Adivasi tea tribes of Assam during the harvest season. The dance is accompanied by traditional instruments such as the Madal, Dhol, Taal, and Flute. It is commonly performed during celebrations like harvest festivals, weddings, and community gatherings. Both men and women participate, forming a circular pattern while holding each other's waists.

### 2. Extinction Filtering

This refers to the process where species that are highly sensitive to human disturbances disappear, leaving only those capable of surviving in degraded environments. The theory suggests that species adapted to high-disturbance habitats are more likely to persist despite habitat destruction and fragmentation.

#### Impact on Biodiversity:

- Leads to a decline in species diversity, resulting in a more uniform ecosystem.
- Weakens the resilience of ecosystems, making them less capable of recovering from environmental changes.
- This phenomenon is observed worldwide, including in protected areas, where human activities continue to affect wildlife.

### 3. Bhavani River

Originating in the upper Nilgiri Hills of the Western Ghats, this river flows through Tamil Nadu's Nilgiris, Coimbatore, and Erode districts. It is the second-largest river in Tamil Nadu and a key tributary of the Cauvery River. The Bhavani Sangameshwarar Temple, located at the confluence of the Bhavani and Cauvery rivers, is a well-known pilgrimage site. Additionally, the Bhavanisagar Dam, built on this river, is among the world's largest earthen dams.

### 4. Palamu Tiger Reserve (PTR)

Situated in Jharkhand's Chhota Nagpur Plateau region, this reserve is part of the Betla National Park. It was the first reserve in the world where a tiger census was conducted using pugmark tracking in 1932 under J.W. Nicholson. Three rivers—North Koyal, Auranga, and Burha—flow through its valleys, with Burha being the only perennial river. The reserve contains valuable mineral resources, including bauxite and coal, and is dominated by Northern Tropical Dry Deciduous and Sal forests.

### 5. Gulf of Tonkin

Known as "Beibu Gulf" in Chinese and "Bac Bo Gulf" in Vietnamese, this crescent-shaped, shallow, semi-enclosed water body lies between South China and



Northern Vietnam in the northwestern South China Sea.

**Bordering Regions:**

- West & Northwest: Vietnam's northern coastline
  - North: China's Guangxi Zhuang Autonomous Region
  - East: Leizhou Peninsula and Hainan Island
  - Connected to the South China Sea via its southern opening and to the Hainan Strait in the northeast
- 

## 25th February

### 1. Ex Gratia Payment

An ex gratia payment is a financial compensation made voluntarily by an organization or government without any legal obligation. The term “ex gratia” translates to “by favor” or “by grace” in Latin. Such payments are rare, as most organizations compensate only under legal enforcement. In India, ex gratia payments are non-taxable unless given as a replacement for salary or wages.

### 2. HKU5-CoV-2

This newly discovered bat coronavirus closely resembles SARS-CoV-2, the virus responsible for COVID-19. It belongs to the Merbecovirus subgenus, which also includes the MERS virus. Though it has the potential for animal-to-human transmission, there are no confirmed human cases yet, and its symptoms remain unknown.

### 3. Palk Strait

The Palk Strait, an inlet of the Bay of Bengal, separates southeastern India from northern Sri Lanka. It is bordered by Pamban Island (India), Adam's Bridge (Ram's Bridge), the Gulf of Mannar, and Mannar Island (Sri Lanka). The southwestern portion is also referred to as Palk Bay. Named after Robert Palk, the former governor of the Madras Presidency (1755-1763), the strait is home to Jaffna, a key commercial hub in northern Sri Lanka.

### 4. International Finance Corporation (IFC)

Established in 1956, the IFC is the private-sector lending arm of the World Bank Group, focusing on economic development investments. It provides loans, direct investments, and advisory services to private enterprises in developing countries, particularly in regions lacking financial infrastructure. The President of the World Bank Group also serves as the President of the IFC.

**Headquarters:** Washington, D.C.

### 5. Zagros Mountains

A geologist recently reported that parts of the hilly terrain surrounding Iraq's Zagros Mountains are sinking into the Earth. The mountain range's highest peak is Mount



Dena, which stands at 14,465 feet.

#### 6. Ali Ai Ligang Festival

Celebrated on the first Wednesday of the Fagun month (February-March), this festival is deeply rooted in the agricultural traditions of the Mising community. Originally practiced in rural Mising villages, the community has since transitioned to settled wet paddy farming alongside Jhum cultivation.

##### Key Rituals:

- The festival begins with the hoisting of the **Laitom Tomchar** (festival flag).
- Offerings are made to **Donyi Polo** (Sun and Moon gods) for a prosperous harvest.
- The **Gumrag Dance**, performed by men and women, symbolizes joy and agricultural abundance.

#### 7. Lepakshi Temple

Located in Lepakshi, Andhra Pradesh, this 16th-century temple is known for its **Dravidian-style architecture, intricate stone carvings, and monolithic structures**. Dedicated to Lord Veerabhadra, a fierce form of Lord Shiva, the temple was included in **UNESCO's provisional list of heritage sites in March 2023**.

#### 8. Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)

Established in 2003, this organization focuses on sustainable coastal fisheries development in the Bay of Bengal region.

##### Objectives:

- Provides technical and management assistance to member countries (Bangladesh, India, Maldives, and Sri Lanka).
- Works within the **Exclusive Economic Zones (EEZs)** of its member states and adjacent international waters.

#### 9. Stagflation

Stagflation is an economic condition characterized by three simultaneous issues: **high inflation, sluggish economic growth, and rising unemployment**. It presents a challenging scenario as standard economic measures like reducing inflation could further slow growth, while efforts to boost the economy could worsen inflation.

#### 10. V.O. Chidambaranar Port

Formerly known as **Tuticorin Port**, this port is located on **India's southeastern coast in the Gulf of Mannar** at latitude 8° 45'N and longitude 78° 13'E.

##### Key Features:

- **Strategic Location:** Situated close to major East-West international sea routes, making it a significant maritime hub.
- **Natural Advantages:** The port is sheltered from storms and cyclonic winds, ensuring minimal disruptions.



- **Operational Efficiency** : A deep-water, all-weather port, functioning **around the clock, 365 days a year.**

**26 February**

1. **Bhitarkanika National Park** – Located in Odisha's Kendrapara district, Bhitarkanika is the state's second Ramsar site after Chilika Lake. It ranks as India's second-largest mangrove ecosystem after the Sunderbans. The park is home to the country's largest population of endangered saltwater crocodiles. Its eastern boundary is marked by Gahirmatha Beach, which hosts the world's largest nesting site for Olive Ridley sea turtles.
2. **Caspian Sea** – Recognized as the world's largest landlocked water body, the Caspian Sea lies between Asia and Europe. It is bordered by Russia and Azerbaijan to the west, Kazakhstan and Turkmenistan to the north and east, and Iran to the south. The sea's salinity increases from north to south. It receives inflow from three major rivers—Volga, Ural, and Terek—and is renowned for being a key source of the world's caviar.
3. **Spices Board of India** – Established in 1987 under the Spices Board Act, 1986, the board resulted from the merger of the Cardamom Board (1968) and the Spices Export Promotion Council (1960). It operates under the Ministry of Commerce & Industry as one of five Commodity Boards. The Spices Board regulates and promotes the export of 52 designated spices and supports the development of both small and large cardamom. It ensures industry standards, quality control, and sustainable growth in spice exports.
4. **Kalakkad-Mundanthurai Tiger Reserve** – Situated in the Southern Western Ghats, this reserve includes the Kalakad, Mundanthurai, and parts of the Kanyakumari Sanctuary. Straddling the Kerala-Tamil Nadu border, its core area, the Agastya Malai Hill Range, is part of one of the world's 18 biodiversity hotspots. Known as the "River Sanctuary," it serves as the origin point for 14 rivers.
5. **Black Plastic** – Used in manufacturing food trays, containers, and utensils, black plastic is likely to contain toxic chemicals such as brominated flame retardants, lead, cadmium, and mercury. These substances pose significant health risks at high exposure levels. Due to difficulties in recycling, black plastic is often discarded in landfills or incinerated, releasing harmful pollutants like dioxins and furans into the air.
6. **Tea Horse Road** – This ancient trade route linked China, Tibet, and India, primarily facilitating the exchange of Chinese tea for Tibetan horses. The route, dating back to the Tang Dynasty (618–907 CE), passed through Yunnan's Dali and Lijiang before reaching Lhasa and extending into India, Nepal, and Bangladesh. Historical records by Buddhist monk Yijing (635–713 CE) mention the trade of goods like sugar, textiles, and rice noodles from China in return for Tibetan horses, leather, gold, saffron, and medicinal herbs.



7. **Pagri Sambhal Jatta Movement** – Meaning "Take care of your turban, O farmer," this movement, launched by Ajit Singh in 1907, protested against three exploitative British agricultural laws:
- **Punjab Land Alienation Act, 1900** – Restricted farmers' ability to sell or mortgage land.
  - **Punjab Land Colonisation Act, 1906** – Allowed British control over land in the Chenab Colony.
  - **Doab Bari Act, 1907** – Reduced farmers to contract laborers.
- Farmers also resisted excessive taxation on land and irrigation.
8. **Advocate-on-Record (AOR)** – An AOR is a lawyer authorized under Supreme Court rules to file, act, and plead cases in the Supreme Court on behalf of clients. Introduced under Article 145(1) of the Constitution, this designation is governed by the Supreme Court Rules, 2013, which outline the eligibility criteria for advocates seeking this status.
9. **National Commission for Indian System of Medicine (NCISM)** – Established under the NCISM Act, 2020, this statutory body operates under the Ministry of Ayush. It oversees the Boards of Ayurveda, Unani, Siddha, and Sowa Rigveda. Its objectives include:
- Ensuring a sufficient number of qualified ISM medical professionals.
  - Promoting the adoption of modern medical research in ISM.
  - Conducting periodic evaluations of ISM institutions.

## 27 February

1. **Palaeognath Birds** – Named for their unique palate structure ("old jaw"), these birds include some of the largest and heaviest avian species. While many are flightless, not all fall into this category. Palaeognaths are classified into two groups:
- **Tinamiformes** – Includes tinamous, which have a keeled sternum and weak flying ability.
  - **Ratitae (Ratites)** – Comprising flightless birds with flat sterna and reduced wings.
2. **Qualified Institutional Placement (QIP)** – A method for publicly listed companies to raise capital by issuing shares or convertible securities exclusively to Qualified Institutional Buyers (QIBs), such as mutual funds and pension funds. QIP offers a quicker, cost-effective alternative to traditional public offerings while limiting management dilution. It allows companies to raise domestic capital without relying on foreign investors.
3. **Dwarf Galaxies** – Small, faint galaxies containing a few billion stars, compared to hundreds of billions in larger galaxies. Despite their abundance, they are difficult to detect due to their low luminosity and mass. These galaxies may have formed in the early universe due to gravitational forces or as remnants of galactic collisions. Some exhibit spiral arms or resemble miniature elliptical galaxies.



4. **SWAYATT Initiative** – Launched on 19th February 2019, SWAYATT aims to boost participation from women entrepreneurs, startups, youth, Micro & Small Enterprises (MSEs), and Self-Help Groups (SHGs) in public procurement. This initiative aligns with the GeM portal's mission to enhance ease of business and promote social inclusion.
5. **Government e-Marketplace (GeM)** – Established in 2016, GeM is India's national e-procurement portal, designed to facilitate government purchases of goods and services. Managed by the Ministry of Commerce & Industry, with technical support from the National e-Governance Division, GeM offers a paperless, cashless, and automated marketplace to streamline procurement.
6. **Key Features of the RTI Act** –
  - **Right to Information** – Citizens can seek information from public authorities, which must respond within 30 days (or 48 hours in urgent cases).
  - **Applicability** – Covers all levels of government, including government-funded NGOs and institutions.
  - **Public Information Officers (PIOs)** – Every department must appoint a PIO to handle RTI requests.
  - **Appeal Process** – If dissatisfied, applicants can appeal to the First Appellate Authority and then to the Central or State Information Commission.
  - **Penalties** – Officials failing to provide timely or correct information can be fined up to ₹25,000.
7. **Japan-India-Africa Forum** – A trilateral platform promoting investment, trade, and development across Africa, fostering cooperation between India, Japan, and African nations in infrastructure, digital transformation, and human resource development.
8. **Data Fiduciary vs. Data Principal** –
  - **Data Fiduciary** – An entity that collects, processes, or stores personal data, requiring user consent and adherence to privacy laws.
  - **Data Principal** – The individual whose data is being processed. The DPDP Act includes legal guardians of persons with disabilities within this definition, raising concerns about autonomy.
9. **Delimitation** – The process of determining the number of seats and defining constituency boundaries for parliamentary and legislative assemblies. It ensures proportional representation based on population while allocating reserved seats for Scheduled Castes (SCs) and Scheduled Tribes (STs).
  - **Who Conducts Delimitation?** – A Delimitation Commission, constituted by an act of Parliament, oversees the process. Its decisions are legally binding and cannot be challenged in court.

**(28 February)**

**1. Mount Fentale**

Mount Fentale is a stratovolcano situated in Ethiopia's Awash National Park, within



the Oromia Region. It rises about 600 meters above the Rift Valley floor, with lava flows covering approximately 100 square kilometers. The upper part of the volcano features an elliptical caldera spanning roughly 6 kilometers in diameter.

**Recent Earthquake Activity:** On 14 February 2025, a 6.0 magnitude earthquake struck beneath Mount Fentale, marking the strongest quake in Ethiopia since 1989.

## 2. Petrification

Recently, geologists and forest officials discovered a rare, well-preserved petrified fossil in the Rajmahal Hills near Barmasia village, Pakur district, Jharkhand. Petrification (derived from **petros**, meaning stone) occurs when organic material is entirely replaced by minerals, turning the fossil into stone. This process involves mineral deposits filling the pores and spaces of tissue, followed by the dissolution of organic matter, effectively preserving the original structure. It can occur in both hard and soft tissues.

## 3. Kundi Water Harvest System

The Kundi system is a traditional rainwater harvesting method, demonstrating how indigenous knowledge and architectural expertise help tackle water scarcity. Primarily used in the arid regions of Rajasthan, India, **kundis** (or **kunds**) efficiently collect and store rainwater.

## 4. Cali Fund

The 'Cali Fund' was introduced during the resumed 16th Conference of Parties (COP16) to the UN Convention on Biological Diversity (CBD) in Rome. This fund will receive financial contributions from private companies that utilize genetic data from nature in their operations. It is the first UN-backed global biodiversity fund to accept direct business contributions, specifically from companies that rely on Digital Sequence Information (DSI). The United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) will manage the fund.

## 5. Svalbard Global Seed Vault

Located in the Norwegian archipelago of Svalbard, between the North Pole and mainland Norway, this vault is the world's largest backup storage facility for crop diversity. Its mission is to preserve unique genetic material while preventing redundancy. It offers free, long-term seed storage for gene banks worldwide. Depositing institutions retain ownership of their seeds, which are stored under "black box" conditions—meaning only the depositor has access. The vault plays a crucial role in global efforts to conserve plant genetic resources, functioning under the guidance of the UN's Food and Agriculture Organization (FAO).

## 6. Public Accounts Committee (PAC)

**Definition:** The PAC is a parliamentary committee responsible for auditing government revenues and expenditures, ensuring legislative oversight of executive financial activities.

**Composition:** The committee consists of up to 22 members—15 from the Lok Sabha and 7 from the Rajya Sabha. Ministers are ineligible for membership.



Members are elected annually through proportional representation via a single transferable vote. The Speaker of the Lok Sabha appoints the chairperson, and the members serve for one year.

#### **7. Deputy Speaker**

As per Articles 93 (Lok Sabha) and 178 (State Legislative Assembly) of the Indian Constitution, electing a Speaker and Deputy Speaker is mandatory. However, while the Speaker is generally elected in the first session, the Constitution does not specify a timeframe for the Deputy Speaker's election. The Deputy Speaker remains in office until the House is dissolved or they cease to be a member.

#### **8. PUNCH Mission**

NASA's PUNCH (Polarimeter to UNify the Corona and Heliosphere) mission will launch alongside SPHEREx to study the solar wind. Comprising four small satellites in low Earth orbit, PUNCH will conduct 3D global observations of the inner heliosphere to examine how the Sun's corona transitions into solar wind. These satellites will map the boundary where the corona extends into space.