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Mains Daily Analysis

General Studies I

1. Why PwDs Are Worried About Digital Personal Data Protection Rules

Why in the News?

The Ministry of Electronics and Information Technology (MeitY) is looking to wrap up public consultations on the draft Rules for the **Digital Personal Data Protection Act, 2023** by March 5.

Introduction:

- 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.
- However, disability rights activists have raised **serious concerns** over a specific provision in **Section 9(1)**, which **clubs adult Persons with Disabilities (PwDs) with children** and mandates that their **legal guardians provide consent** for any digital personal data processing.
- Activists argue that this **undermines the autonomy** of PwDs and reflects a **flawed understanding of guardianship laws**.

Understanding the Controversial Provision – Section 9(1):

- The DPDP Act requires **data fiduciaries (organizations processing data)** to obtain **verifiable consent from a parent or legal guardian** before processing personal data of a **child or a PwD with a lawful guardian**.
- The **definition of PwDs** in this provision **lumps all individuals with disabilities together**, assuming that those with guardians are **incapable of making legally binding decisions**.
- The **draft rules** under **Rule 10(2)** require verification that the guardian was **appointed by a court or designated authority** under Indian guardianship laws.
- While the rule provides **detailed explanations for child consent**, it **lacks clarity on how guardianship-based consent would apply to PwDs**, leading to confusion.

Reasons Behind PwDs and Activists Concerns:

- **Undermining Autonomy of PwDs**
 - The provision assumes that **all PwDs with guardians lack decision-making abilities**, ignoring the **Rights of Persons with Disabilities (RPWD) Act, 2016**, which **promotes supported decision-making instead of absolute guardianship**.
 - Many PwDs function independently with **limited legal support** but may still have a legal guardian for specific purposes.
- **Legal Confusion Between RPWD Act and NT Act**
 - PwDs are governed by two laws:
 - The **RPWD Act, 2016** provides for **limited guardianship**, allowing the PwD to **exercise rights with support**.
 - The **National Trust (NT) Act, 1999** allows **full guardianship** for individuals with **autism, cerebral palsy, or intellectual disabilities**.
 - However, the DPDP Act **does not differentiate between these categories**, applying a **blanket rule** for all PwDs with guardians.
- **Practical Challenges in Implementation**
 - There is **no clear guideline** on how digital platforms should obtain **guardian consent for PwDs**.
 - If a guardian refuses consent, the PwD may **lose access to essential services**, such as **online banking, e-commerce, or healthcare platforms**.



- Activists highlight **gender-based discrimination**, where **women with disabilities may be denied access to digital platforms** without guardian approval.

Risk to Digital Rights of PwDs:

- Disability rights groups argue that the DPDP Act **compromises digital rights** by making **guardian consent mandatory for accessing online services**. This could lead to:
 - **Exclusion from digital platforms** like banking, government schemes, e-commerce, and education portals.
 - **Increased control of guardians over PwDs' choices**, restricting their ability to make personal decisions.
 - **Legal ambiguity for guardians**, who may face **penalties** under the DPDP Act if their consent leads to **data misuse**.
- A survey by PACTA and Saksham Disability found that **27.4% of PwDs had legal guardians**, yet most of them **managed their affairs independently**, contradicting the assumptions made by the DPDP Act.

Government's Response and the Way Forward:

- The government argues that **limiting the definition of PwDs covered under Section 9(1)** helps address concerns.
- However, disability activists argue that this **further complicates the issue** by adding **unclear definitions**.
- Recommended changes by disability rights groups include:
 - **Amending Section 9(1) to align with the RPWD Act, 2016**, ensuring PwDs have **decision-making autonomy**.
 - **Providing clear guidelines** on how data fiduciaries should handle **guardian-based consent for PwDs**.
 - **Ensuring that digital accessibility barriers are addressed**, as many platforms are still not user-friendly for PwDs.

Conclusion:

The DPDP Act, 2023, aims to **regulate digital personal data** while protecting user rights. However, its **rigid guardianship rules** threaten the **digital autonomy of PwDs**, potentially excluding them from **online services and decision-making processes**.

A **balanced approach**, incorporating **input from disability rights groups**, is necessary to ensure **data protection laws** do not inadvertently **violate the rights of PwDs**.

2. Language Policy in India - The Three-Language Formula and Its Challenges

Context:

Tamil Nadu's opposition to the three-language formula has caused friction with the Centre. The state has adhered to a **two-language policy** for decades and remains firm in its stance.

The three-language policy has had a **mixed record in implementation** across India.

The Language Debate in India:

- **Historical perspective:**
 - **Post-Independence**, language policies have remained controversial.
 - Language has been perceived as a **medium of instruction** rather than a cognitive tool.
 - **Colonial influence** shaped the education system's focus on **instruction rather than exploration**.
- **Constituent assembly and language policy:**
 - **The issue of a national language** was debated extensively during Constitution drafting.
 - **Hindi's adoption** as an official language was **fraught with complexities** due to its multiple varieties.
 - **English retained prominence**, despite expectations of its gradual decline.

Evolution of the Three-Language Formula:

- **The three-language formula:**
 - It is a language learning policy introduced in the **1968 National Policy on Education**.



- It mandated that students across India **learn three languages**: their **regional language (mother tongue), Hindi, and English**.
- **Hindi-speaking states** must study a modern Indian language (preferably from the south) instead of Hindi as their third language.
- **NEP 2020 and the three-language formula:**
 - **The National Education Policy (NEP) 2020** has retained the three-language formula albeit with a key difference that it doesn't impose any language on any State.
 - It specifies that the languages to be learnt will be the **choice of States, regions and the students**, so long as at least two of the three languages are native to India.
- **Implementation challenges across India:**
 - **In the Hindi-speaking states**, the third language rarely includes contemporary languages from other Indian states.
 - **Private schools in northern states** do not prioritize **regional languages like Tamil or Punjabi**.
 - **Political concerns over language education** have remained divisive and often counterproductive.
- **Role played by the CABE:**
 - The Central Advisory Board of Education (CABE), a remarkable forum that had served India since the 1920s, has played a crucial role in shaping language policies.
 - CABE helped **navigate federal governance challenges** in education but has been **inactive in recent years**.

The Real Issue - Language Standards in Education:

- **Declining teaching standards:**
 - **Science and mathematics** have been **dominated** by coaching institutions, while language teaching remains neglected.
 - **English is now compulsory** in many government schools, but proficiency remains low.
 - **Teachers' limited command** over English affects learning outcomes, as seen in Andhra Pradesh's transition to English-medium education.
- **Impact on regional languages and reading habits:**
 - Not just English, the standards of teaching in Hindi are no better.
 - Hindi and other regional languages are being treated as **cultural artifacts rather than active learning tools**.
 - **The decline in reading habits** signifies deeper issues in language education.
 - **Schools fail to cultivate habitual readers**, undermining long-term language proficiency.

Conclusion:

The **debate** over language education in India remains **unresolved**. Tamil Nadu's steadfast opposition to the three-language formula reflects **deeper concerns over linguistic identity and federal policies**.

Improving language teaching standards is crucial for meaningful educational reform rather than focusing solely on policy formulas.

3. Significance of Tea Horse Road Connecting India – China

Why in the News?

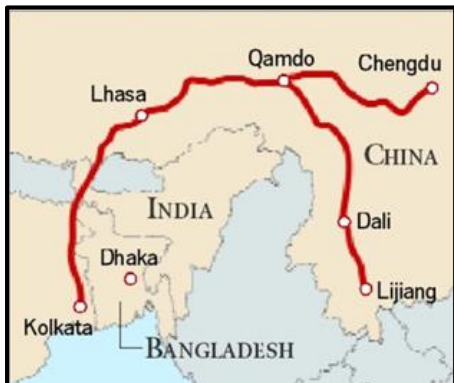
China's Ambassador to India **Xu Feihong** posted on X (Twitter) about the historic Tea Horse Road which spanned more than 2,000 km, and connected China to India via Tibet.

Introduction:

- The **Tea Horse Road**, an ancient trade network connecting **China, Tibet, and India**, played a key role in commerce and cultural exchange for centuries.
- While less famous than the **Silk Road**, this route facilitated the movement of **tea, horses, and other valuable commodities** across some of the world's most challenging terrains.

- Recently, China's **Ambassador to India, Xu Feihong**, highlighted the historical significance of the Tea Horse Road, emphasizing its role in strengthening India-China ties through history.

Origins of the Tea Horse Road:



- The Tea Horse Road traces its origins to the **Tang Dynasty (618-907 CE)**, when trade between **Southwest China, Tibet, and India** first flourished.
- Buddhist monk Yijing (635-713 CE)** documented early trade exchanges, mentioning the movement of goods such as **sugar, textiles, and rice noodles from China**, while **horses, Tibetan gold, saffron, and medicinal herbs** were exported.
- By the **10th century**, during the **Song Dynasty (960-1279 CE)**, official markets were established along the route to regulate the trade of **tea and horses**, which became the dominant commodities exchanged between China and Tibet.

A Network of Roads Across Difficult Terrain:

- The Tea Horse Road was not a single pathway, but a network of trails originating in Southwest China and reaching deep into the **Indian subcontinent, Nepal, and Bangladesh**.
- Key Features of the Route:**
 - Length:** Over **2,000 km**
 - Key Cities:** Passed through **Dali, Lijiang (Yunnan Province), and Lhasa (Tibet)**
 - Elevation:** Reached up to **10,000 feet** in the Himalayas
 - Challenges:** Harsh terrain, extreme weather, and high altitudes made the journey perilous for traders
- Despite these difficulties, traders travelled extensively, carrying tea from Sichuan to Tibet and India, while returning with horses and other essential goods.

Tea and Horses – The Core of the Trade:

- Tea was a **necessity for Tibetan nomads**, who lived in **cold and harsh climates**. According to National Geographic, yak butter tea became a staple for Tibetans, providing essential warmth and energy.
- Meanwhile, horses were **crucial for China's military**. Since the **central plains of China lacked horses**, they had to be imported from Tibet and Yunnan.
- Tibetan steeds became highly valued**, particularly in China's conflicts against Mongolian tribes.
- To regulate this exchange, China's **Song Dynasty government established official markets**, ensuring a controlled trade of tea and horses, which contributed to regional economic stability.

The Road's Role in Modern History:

- Expansion of Trade in the Early 20th Century**
 - With the **fall of the Qing Dynasty in 1912**, the Tea Horse Road became even more vital. **Yunnan's tea industry expanded** as China integrated into the global market.
 - New trade techniques and goods were introduced to the mountainous regions, increasing economic opportunities.



- **World War II and the Road's Strategic Importance**

- During **World War II**, when **Japan controlled much of China's coastline**, the Tea Horse Road served as an alternative supply route for transporting goods and military supplies to China's resistance forces.

- **Decline After the Founding of the People's Republic of China (1949)**

- Following the establishment of the **People's Republic of China**, the importance of the Tea Horse Road declined.
- **Mao Zedong's land reforms** significantly changed trade patterns, and with the advancement of modern transportation, the historic trade route lost its relevance.
- However, some remnants remain, particularly in regions like **Lijiang**, which became a **UNESCO World Heritage Site in 1997** due to its historical significance in trade.

Revival of the Tea Horse Road as a Cultural Landmark:

- In recent years, China has promoted tourism along the ancient trade route, highlighting its historical importance.
- The city of **Lijiang, once a crucial trade hub**, has been transformed into a cultural and heritage site, drawing visitors from across the world.
- According to UNESCO, Lijiang was an important distribution center for trade between **Sichuan, Yunnan, and Tibet**, where it intersected with southern Silk Road routes. Today, the city serves as a testament to the Tea Horse Road's enduring legacy.

Conclusion:

The Tea Horse Road was more than just a trade route; it was a **lifeline connecting China, Tibet, and India** for centuries. While its significance has diminished in modern times, it remains a **historical and cultural symbol of international exchange**.

Today, efforts to preserve its legacy through tourism and research highlight its role in shaping the economic and cultural landscapes of the regions it once traversed. The **renewed focus on this historic route serves as a reminder of the deep historical ties between India and China**.

4. Weaponization of the Special Marriage Act

Context:

- The article highlights how a legal provision meant to facilitate interfaith and inter-caste marriages - **the Special Marriage Act, 1954 (SMA)** - is often **misused** to harass and intimidate couples, **particularly in cases involving religious differences**.
- It discusses **a case from Bhopal** where an interfaith couple faced violence for attempting to register their marriage.

Case of Bhopal - When Law Becomes a Tool of Harassment:

- A Hindu-Muslim couple in Bhopal **sought to marry under the SMA**, which **requires a 30-day public notice before solemnizing the marriage**.
- Their information was leaked, leading to **a violent mob attacking them at the court**.
- The provision designed to ensure transparency instead **exposed them to social and communal backlash**.

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

- **Purpose vs. reality:**
 - The SMA was enacted to **provide a secular legal framework for marriage**.
 - The law **allows interfaith and inter-caste marriages** outside religious personal laws, intending to **protect individual autonomy and choice**.
 - However, **the 30-day public notice requirement often leads to societal interference**, jeopardizing the safety of couples.
- **Violation of privacy:**



- The Supreme Court's judgment in **Justice K.S. Puttaswamy vs Union of India (2017)** reaffirmed the **Right to Privacy as a fundamental right under Article 21** (Right to life and personal liberty).
- The public notice provision **violates individual autonomy**, making personal decisions about marriage vulnerable to public scrutiny and opposition.
- **Social and religious backlash:** The leakage of private information from marriage registrars' offices allows vigilante groups, **moral policing**, and religious extremists to harass couples.
- **Misuse of the no-objection clause:**
 - The law allows **anyone** to object to the marriage on arbitrary grounds.
 - Objections often stem from **personal vendettas**, communal motives, or familial coercion rather than legitimate legal concerns.

Need for Reform:

- The public notice requirement should be **re-examined or removed** to prevent privacy violations.
- The SMA should be **aligned with constitutional values** of individual liberty and freedom of choice.
- **Ensure privacy protections in marriage registration**, in line with the Right to Privacy judgment.
- The law should **ensure protection** rather than expose couples to threats.
- **Strict action** against harassment is needed to protect couples from societal backlash.

Conclusion:

- The **Special Marriage Act, intended as a progressive law, has become an instrument of persecution for interfaith and inter-caste couples.**
- Urgent legal reforms (for example, **Section 7 of the SMA**, which invites objections to marriages) are needed to prevent misuse and uphold the constitutional values of **secularism, equality, and personal liberty.**

5. Quakes May Well Sharpen India's Seismic Readiness

Context

- **Natural disasters have long been a part of human history**, reshaping landscapes, and societies.
- Among them, **earthquakes stand out as one of the most unpredictable** and devastating forces of nature.
- The **recent seismic activities in Türkiye, Syria, China, and India highlight an urgent need for preparedness** and strategic planning.
- Therefore, **it is important to examine the impact of earthquakes, the underlying geological causes, the response from the media and government**, and the necessary steps for disaster mitigation and preparedness.

The Devastation of Recent Earthquakes

- **On February 6, 2023**, a massive earthquake measuring **7.8 on the Richter scale struck Türkiye and Syria, leaving at least 17,000 dead** and many more injured.
- The **destruction was compounded by a second tremor nine hours later**, causing further devastation.
- This **catastrophe served as a grim reminder of the unpredictable nature of earthquakes** and the vulnerability of human settlements built along fault lines.
- More recently, **on January 7, 2025, an earthquake measuring 7.1 struck the Tibet Autonomous Region, affecting Nepal and northern India.**
- These events highlight the fact that earthquakes are not confined to specific regions but can have widespread consequences.

The Underlying Geological Reasons

- **The Collision of the Indian and Eurasian Plates**



- One of the most seismically active regions in the world is the **boundary where the Indian Plate meets the Eurasian Plate**.
- The **Indian Plate is gradually moving northward at a rate of approximately 5 cm per year**, pushing against the massive Eurasian Plate.
- This **slow yet relentless collision has been ongoing for millions of years**, giving rise to the Himalayan mountain range, **the world's youngest and most tectonically unstable mountain system**. However, this process is far from over.
- The **immense pressure generated by this collision continues to accumulate**, increasing the likelihood of future earthquakes.
- Seismologists have long warned that **the tectonic stress along this boundary has reached critical levels**.
- This **means that at any moment, a significant rupture could occur, triggering a devastating earthquake**.
- The region has already witnessed several major seismic events in the past, including:
 - The **1934 Bihar-Nepal Earthquake** (Mw 8.0), which caused widespread destruction and killed over 10,000 people.
 - The **2005 Kashmir Earthquake** (Mw 7.6), which struck northern Pakistan and India, killing over 87,000 people.
 - The **2015 Nepal Earthquake** (Mw 7.8), which resulted in the deaths of nearly 9,000 people and the destruction of thousands of historical structures.
- **The Role of Fault Lines in Seismic Activity**
 - The **Himalayan region is riddled with fault lines**, fractures in the Earth's crust where tectonic stress accumulates.
 - These **faults remain inactive for decades or even centuries**, lulling people into a false sense of security.
 - However, **when the stress exceeds the strength of the rock formations** holding the fault together, **a sudden slip occurs, causing an earthquake**.
 - **Some of the major fault lines in the region include:**
 - **Main Frontal Thrust (MFT)** – A major fault that runs along the foothills of the Himalayas, responsible for many of the region's most destructive earthquakes.
 - **Main Boundary Thrust (MBT)** – Located further north, this fault also plays a significant role in shaping seismic activity.
 - **Main Central Thrust (MCT)** – A deep-seated fault that accommodates the continued movement of the Indian Plate under the Himalayas.

The Growing Risk, Future Predictions and The Overlooked Danger

- **The Growing Risk and Future Predictions**
 - What makes the current situation particularly alarming is that **the Indian and Eurasian Plates have been in a state of relative quiet for a long time**, meaning the stored energy within the faults has been increasing.
 - **Seismologists believe that a major rupture could be imminent**, releasing this pent-up energy in the form of a powerful earthquake.
 - The **recent Mw 7.1 earthquake in the Tibet Autonomous Region** on January 7, 2025, **further underscores the region's seismic vulnerability**.
 - Since **earthquakes are not confined by national borders**, tremors were also felt in Nepal and northern India.
 - This **event is a reminder that tectonic forces are constantly at work**, and another major earthquake in the Himalayan region is not a matter of 'if' but 'when.'
- **The Overlooked Danger: Human Activity and Earthquake Risks**
 - While tectonic movements are a natural phenomenon, **human activities have exacerbated seismic risks**.
 - **Large-scale infrastructure projects in the Himalayas**, such as dams, tunnels, and extensive road networks, can weaken already fragile rock formations.
 - Additionally, **deforestation and unregulated urban expansion put more lives at risk by reducing natural shock absorption** and increasing the likelihood of landslides following an earthquake.



- Given these realities, **it is imperative for governments and communities to recognise the Himalayan region not just as a place of beauty but also as a seismic hotspot** that demands proactive planning and strict safety measures.

Media and Government Response

- The **media has played a crucial role in bringing attention to the risks** associated with earthquakes.
- While predicting earthquakes remains beyond current scientific capabilities, governments can mitigate damage by adhering to **strict building codes**.
- However, **the seismic tremors felt in Delhi and Bihar on February 17 indicate that merely following existing codes** may not be sufficient.
- **Prime Minister Narendra Modi's response** to the February 17 tremors, urging citizens to stay calm and take precautions, **was a reassuring gesture**.
- However, **the real responsibility for earthquake preparedness lies with the government**, which must implement long-term structural and policy measures.

Necessary Steps for Disaster Mitigation and Preparedness

- **Halting Construction That Weakens Earth's Crust:** Infrastructure projects, especially in seismically active zones (II, III, and IV), should be reassessed to minimise disruptions to geological stability.
- **Updating Seismic Risk Maps:** These maps should guide the protection of vulnerable buildings and the retrofitting of structures such as dams and nuclear reactors.
- **Implementing a Seismic Insurance Scheme:** Encouraging insurance for earthquake-prone structures can help reduce financial strain during disasters.
- **Planning for Rescue and Rehabilitation:** Governments should allocate resources for emergency response, temporary shelters, and rehabilitation efforts.
- **International Collaboration on Earthquake Prediction and Infrastructure Resilience:** Partnering with countries experienced in earthquake preparedness can help India develop better forecasting models and architectural solutions.

Conclusion

- While earthquakes cannot be prevented or precisely predicted, **their impact can certainly be mitigated through comprehensive planning and preparedness**.
- **The recent seismic activities should serve as a wake-up call for India to strengthen its infrastructure**, enforce stricter building regulations, and invest in scientific research on earthquake forecasting.
- With the right measures in place, **the country can ensure that when the inevitable earthquake strikes, the damage is minimised, and lives are saved**.

6. Tackling Heatwaves- Strengthening Resilience in India

Context:

- Disasters are often perceived as distant threats, but **climate change has increased the frequency of extreme weather events**.
- Among them, **heatwaves have become a silent killer in India**, impacting public health, infrastructure, and economic stability. However, **public awareness** regarding heatwave risks remains **alarmingly low**.

Rising Heatwave Threat in India:

- India is experiencing **more frequent, prolonged, and severe**
- **January 2025** marked the 18th month in the last 19 where global temperatures crossed the 1.5°C threshold.



- **The Paris Summit goal** of limiting global temperature rise to 2°C is now **nearly unattainable**.

Impacts of Heatwaves:

- **Public health crisis: 90% of Indians are vulnerable to heat-related illnesses.** Rural healthcare systems are overburdened due to heat-induced ailments.
- **Economic consequences:** Heat stress **could cause 34 million job losses** in India by 2030 (World Bank). Outdoor workers suffer **productivity losses**.
- **Water scarcity and food security:**
 - The supply of water is not keeping up with the rising demand. **Only 4% of the world's freshwater is found in India**, while having 18% of the world's population.
 - **54% of India's land faces high-to-extreme-high water stress (WRI).**
 - **Declining groundwater levels** and rising irrigation demands threaten agriculture.
 - Heatwaves can lead to **crop failures and reduced yields**.
- **Energy sector challenges:**
 - **Increased power demand for cooling** strains the energy supply.
 - **70% of India's power is generated by thermal plants** that rely on water for cooling, making them vulnerable to inefficiencies.

Government Response and Policy Interventions:

- **Role of the National Disaster Management Authority (NDMA):**
 - Recognized heatwaves as a serious hazard.
 - Conducts national workshops to enhance preparedness.
 - Develops and implements Heat Action Plans (**HAPs**) - a structured approach to mitigating heatwave impacts.
 - Issues guidelines for state and local governments.
- **National Framework for Heatwave Mitigation and Management (2024):**
 - Shifts focus from short-term response to long-term mitigation.
 - **Includes local vulnerability assessments**, community participation, and inter-sectoral coordination.
 - **Encourages states to classify heatwaves** as disasters for better resource allocation.
 - Extends the focus from **preparedness to mitigation**, advocating for locally-owned and context-specific HAPs.
 - **Mandates periodic updates to HAPs** based on data-driven impact assessments.

Implementation Challenges and Strategies:

- **Strengthening local interventions:**
 - Encouragement of cool roofs and **green infrastructure**.
 - Early warning systems strengthened through Indian Meteorological Department (IMD)-NDMA **coordination**.
 - Common Alerting Protocol (**CAP**) used for efficient dissemination.
- **Protecting vulnerable populations:**
 - **Revising working hours** and providing **cooling vests for outdoor workers**.
 - Establishing cool rooms with drinking water in high-risk urban areas.
 - **Enhancing hospital readiness** with heat management protocols.
- **Water conservation measures:**
 - Promoting rooftop rainwater harvesting.
 - Setting up **water kiosks** in vulnerable communities.

Conclusion:

- With over 250 Heat Action Plans in place, the next challenge is **ensuring effective implementation and public awareness**.
- India must focus on transforming cities and communities into **heat-resilient ecosystems** to withstand rising temperatures in the future.



7. Addressing the Growing Threat of Forest Fires

Context

- **Forest fires are a growing global crisis**, exacerbated by human activities and climate change.
- Recent **wildfires in Los Angeles have highlighted the devastating consequences of these disasters**, bringing attention to the urgent need for preventive measures.
- However, **such concerns often emerge only after significant loss of life, property, and biodiversity**.
- **In India, the issue is equally alarming**, with a significant portion of the country's forests prone to fires.

The Rising Threat of Forest Fires in India

- **India's forests**, vital for biodiversity conservation and community livelihoods, **are increasingly vulnerable to fires**. Reports suggest that **over 36% of the country's forest cover is at risk**.
- Alarmingly, **incidents of forest fires have surged tenfold in the past two decades**, even as **overall forest cover has increased by a mere 1.12%**.
- States such as **Uttarakhand, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, and Karnataka are among the worst affected**, facing frequent and intense fires.
- Human activities are a primary cause of these fires, with **nearly 90% attributed to practices such as land clearing, slash-and-burn agriculture, and unattended campfires**.
- **Climate change further worsens the situation**, with rising temperatures and prolonged dry spells creating ideal conditions for wildfires to spread uncontrollably.

The Devastating Consequences of Forest Fires

- **Environmental Damage**
 - The **loss of trees and biodiversity disrupts ecosystems and threatens endangered species**.
 - Fires **contribute significantly to carbon emissions**, worsening global warming.
 - Indian forest fires **alone release an estimated 69 million tonnes of CO₂ annually**.
 - **Degradation of soil fertility and disruption of the water cycle affect long-term environmental stability**.
- **Economic Losses**
 - The **destruction of timber and non-timber forest products affects communities** reliant on forests for their livelihoods.
 - According to a 2018 report by **India's Ministry of Environment, Forest, and Climate Change**, forest **degradation**, including fires, results in an annual **economic loss of approximately ₹1.74 lakh crore**.
- **Social Disruptions**
 - Fires **force wildlife into human settlements**, increasing human-animal conflicts.
 - Health hazards from smoke and air pollution **exacerbate respiratory illnesses, particularly among vulnerable populations**.

Existing Policies and Their Limitations

- **Budget Constraints**
 - The **funding for Forest Fire Prevention and Management Scheme (FFPMS) has fluctuated significantly**, affecting its ability to sustain long-term prevention programs.
 - For instance, **allocations ranged from ₹46.40 crore in 2019-2020 to as low as ₹28.25 crore in 2022-2023**, indicating inconsistent financial support.
- **Technological Shortcomings**
 - The **Forest Fire Alert System struggles to differentiate between forest fires and other types of fires**, leading to delays in response.
 - The **lack of advanced predictive modelling and real-time data integration hampers early warning systems**.

A Multi-Faceted Approach to Forest Fire Management

- **Strengthening Financial and Policy Support**
 - A **steady and increased budget allocation** for fire prevention schemes is essential.
 - Policies must **prioritise long-term solutions**, including afforestation and sustainable land management practices.
- **Leveraging Technology for Early Detection and Response**
 - **Implementing predictive modelling** using climatic and geographic data can help identify high-risk areas.
 - **Drones equipped with thermal imaging cameras can assist in fire detection**, damage assessment, and targeted firefighting efforts.
 - **Data from agencies** such as the Forest Survey of India, India Meteorological Department, and Indian Space Research Organisation **should be integrated for better decision-making**.
- **Enhancing Community Involvement**
 - **Early warning systems can be strengthened** by equipping local communities with mobile applications, toll-free helplines, and SMS-based reporting tools.
 - **Self-help groups in states like Uttarakhand and Himachal Pradesh already collect pine needles to reduce fire hazards**; such initiatives can be expanded.
 - India can learn from international models such as **Nepal's Community Forest User Groups** and **Indonesia's Fire-Free Village Program**, where local communities actively participate in fire prevention efforts.
- **Educating and Training Local Populations**
 - **Awareness campaigns can help change behaviours** that contribute to fire risks.
 - Training local youth as **forest fire scouts can create a dedicated workforce** for early detection and prevention.

Conclusion

- **Forest fires are not merely environmental disasters**; they have profound social and economic consequences that demand urgent action.
- **Addressing this issue requires collaboration between policymakers, scientists, civil society organisations, and local communities.**
- From policy intervention and increased funding to technological advancements and community engagement, **a multi-pronged strategy is necessary to mitigate the risk of wildfires.**
- **Only through proactive and sustained efforts can we hope to turn the tide and protect our forests, wildlife, and communities from the devastating impact of forest fires.**

8. The Problem of Regulating Live-in Relationships

Context

- The **implementation of the Uniform Civil Code (UCC) in Uttarakhand marks a significant shift in the governance of civil life**, particularly concerning live-in relationships.
- The **code mandates the compulsory registration of opposite-sex live-in relationships** and criminalises non-compliance.
- While some aspects of this regulation aim to safeguard the rights of individuals involved in such relationships, **others raise concerns regarding personal autonomy, privacy, and state interference.**

The Primary Motivation Behind Regulating Live-in Relationships: Protection of Vulnerable Parties

- One of the primary motivations behind regulating live-in relationships is **the protection of vulnerable individuals, particularly women and children.**
- The **UCC grants legitimacy to children born from live-in relationships, extending them legal recognition** that was previously available only to those born from void or voidable marriages.



- Furthermore, **the law provides a legal remedy of maintenance in cases** where a partner is deserted.
- **These provisions reflect a well-intentioned attempt to ensure financial security** for individuals who may otherwise find themselves in precarious situations.

Drawbacks of Uttarakhand UCC

- However, **the law falls short in offering support in cases where a live-in relationship is terminated rather than abandoned.**
- **Since termination merely requires a statement to the registrar,** a partner may be left without recourse for financial support.
- **This gap in the legal framework exposes a fundamental contradiction:** while the law seeks to protect individuals in live-in relationships, it simultaneously upholds their informal nature, failing to provide necessary safeguards post-separation.
- Additionally, **the exclusion of same-sex relationships from these provisions further highlights the law's limitations.**
- **By recognising only opposite-sex live-in relationships, the UCC leaves LGBTQ+ individuals without legal protection,** reinforcing social and legal discrimination against non-heteronormative relationships.

Some Other Problematic Aspects of Uttarakhand UCC Law

- **The Problematic Definition of Live-in Relationships**
 - The UCC's definition of a live-in relationship is **vague and overbroad**, borrowing from the Protection of Women from **Domestic Violence Act, 2005**, which describes them as being “in the nature of marriage.”
 - However, **many live-in relationships do not resemble marriages.** Some may be transient, while others may not involve economic interdependence or domestic responsibilities.
 - The **requirement to register a live-in relationship within one month fails to acknowledge the fluid nature of such arrangements.**
 - Unlike marriages, **live-in relationships often evolve gradually without a clear starting point.**
 - **By imposing strict registration requirements, the law may compel individuals to formalise relationships** that do not fit within traditional legal definitions, leading to unnecessary bureaucratic complications.
- **Violation of Sexual Autonomy and Privacy**
 - A major concern with the UCC's provisions is **its infringement on an individual's right to sexual autonomy and privacy.**
 - The Supreme Court of India, in **Shakti Vahini v. Union of India (2018)**, affirmed an adult's right to make **autonomous decisions regarding sexual relationships.**
 - **The UCC, however, introduces measures that could enable family and societal interference** in personal choices.
 - For instance, **if one or both partners in a live-in relationship are below the age of 21, the law mandates that their parents or guardians be informed.**
 - This **provision not only violates an individual's right to privacy but also places them at risk, especially in cases of inter-caste or inter-religious relationships,** where parental disapproval can lead to honour-based violence.
 - The **provision fails to recognise the reality that young adults, though legally permitted to engage in consensual sexual relationships,** may face coercion and violence from their families due to social and cultural prejudices.
- **Treating Live-in Relationship as Law-and-Order Issue**
 - Furthermore, **the requirement that information about live-in relationships be shared with the local police is another troubling aspect.**
 - Such a move **suggests that live-in relationships are a law-and-order issue** rather than a matter of personal choice.
 - **Criminalising non-registration further strengthens state control over private lives,** reinforcing the notion that the government can dictate the legitimacy of personal relationships.

- **A Misguided Approach to Relationship Regulation**

- **Globally, jurisdictions that regulate non-marital cohabitation typically do so to extend legal protections and benefits** similar to those of marriage, such as inheritance rights, joint property ownership, and healthcare access.
- However, **the Uttarakhand UCC seems to approach live-in relationships not as a legitimate form of partnership** but as a problem requiring state control.
- By **enforcing mandatory registration and criminalizing non-compliance, the UCC moves away from a rights-based approach** and instead imposes unnecessary restrictions on personal freedom.
- **Instead of empowering individuals** in live-in relationships, it **subjects them to greater legal scrutiny and potential societal backlash.**

Conclusion

- **While Uttarakhand's UCC aims to provide legal safeguards for individuals in live-in relationships, its provisions raise significant concerns** regarding autonomy, privacy, and state interference.
- The **mandatory registration requirement, parental notification clauses, and criminalisation of non-compliance undermine the principles of sexual autonomy and personal freedom.**
- Instead of ensuring protection, **the law risks exposing individuals to greater vulnerability by legitimising societal control over private relationships.**
- Moving forward, a **more nuanced legal framework is needed, one that balances protection with personal liberties, recognising the diverse nature of modern relationships** without excessive state intrusion.

9. Technology and the Challenge of Equitable Education

Context

- The **evolution of digital technology in India over the past three decades has brought with it new opportunities and challenges**, especially in the field of education.
- The **COVID-19 pandemic accelerated the digital transformation in rural India**, providing an unexpected push toward digital education.
- The **Annual Status of Education Report (ASER) data reflect this transformation, highlighting the growing accessibility of smartphones**, the integration of digital learning tools, and the potential of technology to bridge educational gaps.
- However, **despite these advancements, significant challenges remain, particularly in ensuring that technology benefits the underprivileged** and enhances learning outcomes effectively.

An Overview of the Rise of Digital Technology in Rural Education

- Before the pandemic, **digital education remained largely inaccessible to rural communities due to the lack of devices, connectivity, and digital literacy.**
- However, **as ASER data indicate, smartphone ownership in rural households has increased dramatically, from 36% in 2018 to 84% in 2024.**
- The **increasing accessibility of smartphones among children, particularly teenagers, suggests a growing familiarity with digital technology.**
- **This shift has the potential to transform learning experiences**, allowing students access to educational content, online courses, and virtual training sessions.
- During the pandemic, **digital tools primarily served as a substitute for traditional textbooks**, with schools relying on digital worksheets, video lessons, and online assignments.
- While some of these practices diminished after the pandemic, **the skills developed during this period laid the foundation for continued digital engagement.**



- Today, with advancements in artificial intelligence (AI), **digital learning is entering a new phase, promising greater personalisation, accessibility, and interactive learning experiences.**

Challenges in Utilising Technology for Education

- **Limited Access to Devices and Internet Connectivity**

- Although smartphone ownership has increased significantly in rural India, **access to personal devices for education remains uneven.**
- **Many households share a single smartphone** among multiple family members, limiting children's ability to use it for uninterrupted learning.
- Furthermore, **while urban areas benefit from reliable internet connectivity, many rural regions still struggle with poor network coverage, slow data speeds, and expensive internet plans.**

- **Digital Literacy and Lack of Technological Awareness**

- Digital literacy, **the ability to navigate digital platforms, search for relevant content, and use educational applications, is still low** among many rural students, parents, and even teachers.
- ASER data suggest that **a large percentage of mothers in rural India have received little to no formal education.**
- **If parents are not digitally literate, they may struggle to guide their children in using digital learning tools effectively.**
- **Many teachers in rural schools have limited exposure to digital teaching methods,** making it difficult for them to integrate technology into their classrooms.
- While **digital learning resources are becoming more available, many students and teachers do not receive adequate training** on how to use them efficiently.

- **Fragmented School Attendance and Learning Outcomes**

- Although school access has improved in rural India, **learning remains highly fragmented due to inconsistent attendance and varied schooling systems.**
- Some children attend government schools, others go to private institutions, and some rely on informal tuition centres.
- **Many children, especially in rural areas, skip school due to economic pressures, seasonal migration, or lack of parental enforcement.**
- This **makes it difficult to integrate digital learning** as a regular practice.
- **While digital learning tools exist, they often operate in isolation** rather than complementing the existing school curriculum.
- Without structured implementation, technology-based education may not effectively address learning gaps.

- **Language and Content Limitations**

- Historically, **language barriers** have restricted access to quality digital education in India. Most high-quality educational content is available in English, making it difficult for students from non-English-speaking backgrounds to engage with digital learning effectively.
- **Although AI-powered translation tools are improving,** high-quality interactive content in regional languages is still lacking.
- **Many educational resources are designed from a Western perspective,** making them less relatable for rural Indian students.
- Many digital learning platforms rely on text-heavy content, **which may not be suitable for students with weak literacy skills.**

The Role of AI and Future Prospects

- As digital learning evolves, **AI presents new possibilities for education.**
- **AI-driven tools can help customize learning paths,** provide real-time feedback, and make educational content available in multiple languages.
- **Language barriers, which previously hindered access to digital learning resources, are gradually diminishing due to AI-powered translation and voice recognition tools.**



- However, while technological advancements are promising, **they must be implemented strategically to ensure they serve the needs of the underprivileged.**

The Way Forward: Balancing Profit and Public Good in Digital Education

- **Technology companies often operate within a for-profit model, which raises concerns about whether digital education can be truly universalised** without significant philanthropic and governmental investments.
- While some initiatives aim to provide free educational resources, **large-scale implementation of digital education solutions requires substantial funding, infrastructure, and policy support.**
- **India needs a well-defined roadmap to ensure that technology serves as an equalising force** rather than exacerbating existing disparities.
- One possible solution is **the establishment of digital learning hubs within rural communities**, where intelligent devices provide structured educational support.
- **Such hubs could serve as knowledge centres, answering students' questions**, guiding learning processes, and supplementing formal schooling.
- Additionally, **community-driven digital education programs, similar to the pandemic-era broadcast learning initiatives in Maharashtra**, could be expanded to enhance accessibility and engagement.

Conclusion

- **The rapid expansion of smartphone access has created unprecedented opportunities** for learning, but meaningful progress requires addressing key challenges.
- AI and other emerging technologies hold great promise, **but their benefits must be made accessible to all, particularly the underprivileged.**
- **A strategic approach, balancing innovation, affordability, and inclusivity, will be essential** in realising the true potential of digital education in India.





General Studies II

1. Why India-EU Partnership Matters

Why in the News?

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

Introduction:

- A high-level delegation of **22 out of 27 European Commissioners**, led by **European Commission (EC) President Ursula von der Leyen**, visited **New Delhi** for a two-day visit.
- This visit, the first of its kind, underscores the deepening engagement between **India and the European Union (EU)** across multiple sectors, including 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, all aimed at fostering greater cooperation and investments.

A Longstanding Partnership:

- India established diplomatic ties with the **European Economic Community (EEC)**—the forerunner to the EU—in **1962**.
- Over the decades, relations have expanded significantly, with key milestones including:
 - **1993**: Signing of the Joint Political Statement.
 - **1994**: Establishment of the Cooperation Agreement.
 - **2000**: The first India-EU Summit in Lisbon.
 - **2004**: Upgrading relations to a Strategic Partnership.
 - **2020**: Adoption of the India-EU Strategic Partnership Roadmap to 2025.
- Prime Minister **Narendra Modi** and **EC President Ursula von der Leyen** have met multiple times, strengthening diplomatic engagements.
- Their discussions have spanned topics like **climate action, global trade, and regional security**.

Key Areas of India-EU Cooperation:

- **Trade and Investments**
 - India and the EU have been negotiating a **Free Trade Agreement (FTA)** for over **15 years**, with discussions resuming in **2021**.
 - The EU remains **India's largest trading partner in goods**, with trade increasing by **90% over the past decade**.
 - **Key trade statistics (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 **reduce tariffs, boost investments, and strengthen trade ties** between the two economic powerhouses.
- **Technology and Digital Cooperation**
 - India and the EU are collaborating on **emerging technologies**, especially in response to **China's rapid advancements** in digital infrastructure.
 - The **India-EU TTC**, launched in **2022**, focuses on:
 - **Digital and Strategic Technologies**
 - **Clean and Green Technologies**

- **Trade, Investments, and Resilient Supply Chains**
 - **Semiconductor Collaboration:** A MoU on semiconductor R&D was signed in November 2023.
 - **Supercomputing Initiative:** India and the EU signed an Intent of Cooperation in High-Performance Computing (HPC) in 2022.
 - **AI and Cybersecurity:** The EU participated in **the Global Partnership on AI Summit in New Delhi (2023)**.
- **Green Energy Cooperation**
 - **Sustainability is a key pillar of India-EU collaboration**, particularly in green hydrogen and renewable energy.
 - **India-EU Green Hydrogen Cooperation Initiative:** India was the exclusive partner at the European Hydrogen Week 2024 in Brussels.
 - The European Investment Bank (EIB) has committed €1 billion to fund Indian hydrogen projects.
 - Joint efforts are underway to establish a green hydrogen ecosystem in India by 2030.
 - These initiatives support India's **Net-Zero by 2070** goal and the EU's carbon neutrality targets.
- **Defence and Space Collaboration**
 - India and the EU have strengthened defence and maritime security cooperation, particularly in the Indo-Pacific region under the Enhanced Security in and with Asia (ESIWA+) program.
 - **First India-EU Joint Naval Exercise:** Held in October 2023 in the Gulf of Guinea.
 - **Security & Counterterrorism:** Both sides collaborate on piracy control, natural disasters, and cyber threats.
 - **Space Cooperation:**
 - ISRO launched EU's **PROBA-3 mission in December 2024**.
 - India-EU collaboration on **Chandrayaan-3, Aditya-L1, and Gaganyaan missions**.
- **People-to-People Ties**
 - The Indian diaspora in the EU includes a significant number of **students, professionals, and researchers**.
 - **Erasmus Scholarships:** Over **6,000 Indian students** have received **Erasmus scholarships** in the past two decades.
 - **Research Collaboration:** **2,700+ Indian researchers** have been funded by **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 historic milestone in India-EU relations. By **deepening trade, technology, green energy, and defence cooperation, both sides aim to create a robust strategic partnership**. The FTA negotiations, semiconductor R&D, and hydrogen projects will further strengthen bilateral ties, ensuring mutual economic growth and global leadership.

As geopolitical shifts unfold, India and the EU remain committed to building a resilient, sustainable, and secure future together.

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

Why in News?

The Supreme Court recently stayed a Lokpal order that had taken cognizance of a corruption complaint against an unnamed High Court (HC) judge. **The Lokpal bench**, led by former SC judge A M Khanwilkar, **asserted its authority** to hear such cases under **the Lokpal and Lokayuktas Act, 2013**.

However, the SC found this development **highly concerning and halted the proceedings**. The next hearing is scheduled for March 18.

Supreme Court's Rationale Behind Staying Lokpal Order:

- **Judicial independence:** The SC has always balanced criticism of judges with the need to safeguard judicial independence.



- **Concerns over executive overreach:** Since the Lokpal is a **statutory body** under the executive, allowing it to hear complaints against judges could set a precedent that **threatens judicial autonomy**.
- **Precedence of established procedures:** The SC noted that accepting the Lokpal's ruling could **bypass** established procedures for investigating complaints against judges.

Legal Provisions on Complaints Against Judges:

- **Indian Penal Code (IPC) and Bharatiya Nyaya Sanhita (BNS):** **Section 77 of the IPC (1860) and Section 15 of the BNS (2023)** provide that a **judge cannot be charged** with an offense for acts performed in the course of official duties.
- **K Veeraswami v Union of India (1991):**
 - This landmark case ruled that **judges are public servants** and **can be investigated for corruption** under the Prevention of Corruption Act, 1947 (replaced by the new PCA enacted in 1988).
 - However, criminal proceedings against a judge **require Presidential sanction**, based on the **advice of the Chief Justice of India (CJI)**.
 - This safeguard aims to **prevent frivolous or politically motivated**
- **Distinction from judicial impeachment:** The procedure for filing a case against a sitting judge is different from the procedure for impeaching a judge, where **approval is required from Parliament**.

The Lokpal Case Against the HC Judge:

- **Allegations against the judge:**
 - **Two complaints** were filed against an HC judge for allegedly influencing judicial proceedings in suits involving a private company.
 - The complainant alleged that the company was the **judge's former client** when he was an advocate.
 - The Lokpal order did not address the merits of the case but focused on **whether it had jurisdiction over an HC judge**.
- **Interpretation of the Lokpal and Lokayuktas Act, 2013:**
 - The Act applies to **public servants** within and outside India.
 - **Section 14** defines public servants, but **does not explicitly include judges**.
 - However, sub-section (f) includes **officials from autonomous bodies** established by an Act of Parliament or controlled by the Central Government.
- **Differentiation between SC and HC judges:**
 - In a separate case, the Lokpal ruled that it **cannot hear cases against SC judges**, as the SC was established under **Article 124** of the Constitution and not an Act of Parliament.
 - However, the Lokpal argued that HC judges fall under its jurisdiction since several High Courts were established under **the High Courts Act, 1861**, and **the Government of India Act, 1935**.
 - These, according to the General Clauses Act 1897, are considered Acts of Parliament.
- **Referral to the CJI:**
 - Despite asserting its jurisdiction, the Lokpal recognized the need for caution, given the **K Veeraswami precedent**.
 - Before proceeding with an investigation, the Lokpal decided to refer the complaint to the CJI for guidance.

Conclusion:

The Supreme Court's intervention underscores concern over **potential executive overreach** and the **protection of judicial independence**.

The case also highlights ongoing **legal ambiguities** regarding the jurisdiction of the Lokpal over the judiciary.

The SC's final ruling will have significant implications for the accountability mechanisms of higher judiciary officials in India.

3. India's need of DOGE

Prime Minister Narendra Modi's recent visit to Washington and his meeting with Elon Musk have sparked discussions on how India can adopt innovative governance models like **USA's DOGE (Department of Government Efficiency)**. DOGE focuses on **cutting government wasteful, streamlining bureaucracy, and improving efficiency**. For India, adopting a similar institutional framework can help realize the **mantra of Minimum Government, Maximum Governance**.

Why does the concept of DOGE appeal in India?

- 1. Large Government Size-** India's government remains a **lethargic, wasteful behemoth**, with 48.47 lakh employees and 67.95 lakh pensioners draining taxpayer money. Salaries and pensions consume a significant portion of state budgets, leaving little for development.
- 2. Redundant and overlapping ministries-** Many ministries and departments overlap in functions, such as, **Ministry of Agriculture and Farmers Welfare vs. Department of Animal Husbandry and Dairying**. Further there is the presence of redundant ministries like the Ministry of Information and Broadcasting— an outdated institution meant for controlling media rather than facilitating it.
- 3. Inefficiencies in government setup-** The Indian office setups reflect India's socialist-era inefficiencies where 10 employees often do the work of one.
- 4. Presence of outdated posts-** The continuation of outdated posts like **collectors, a colonial legacy that continues to control district development without modern governance tools**.
- 5. Economic Losses-** McKinsey Global Institute (2021) has estimated that inefficiencies in public service delivery cost India 3% of GDP annually.
- 6. Delayed Reforms and Public Discontent-** Critical policies, such as **labour reforms and land acquisition**, often face bureaucratic bottlenecks. Further, delays in accessing basic government services contribute to a trust deficit between citizens and the state.

What advantages does the implementation of DOGE present?

- 1. Rationalization of Expenditure-** For India, which spends heavily on salaries and pensions for 48.47 lakh employees and 67.95 lakh retirees, **DOGE could be a game-changer in realizing Modi's vision of MIGA (Make India Great Again)**.
- 2. Fiscal Prudence-** Implementation of DOGE could free up funds currently wasted on redundant ministries and overstuffed offices, redirecting them to critical areas like **healthcare, education, and infrastructure**.
- 3. Efficient Governance-** Streamlining bureaucracy would **improve service delivery, reduce corruption**, and make the government more responsive to citizens' needs.
- 4. Boost to Private Sector Growth-** DOGE would help in **reducing bureaucratic red tape**, which can attract foreign investment and stimulate job creation.
- 5. Enhanced Global Competitiveness-** A more efficient governance structure will enhance **India's Ease of Doing Business rankings**.

What are the Challenges in implementation of DOGE?

- 1. Political Resistance-** Closing ministries and reducing government jobs would face strong opposition from bureaucrats and politicians who benefit from the status quo.
- 2. Unemployment Concerns-** With government jobs being a preferred career choice, large-scale cuts could generate unemployment concerns.
- 3. Bureaucratic Resistance-** The bureaucracy remains resistant to large-scale downsizing due to political influence and employment dependencies.
- 4. Populist Constraints-** Certain state governments (**Tamil Nadu, Karnataka**) **struggle with fiscal discipline due to populist policies**.
- 5. Implementation Challenges-** Adapting the DOGE model to India's complex bureaucracy would require strong political will and effective execution.



6. Public Perception- The government must ensure that reforms are seen as **pro-people rather than antiemployee**.

What measures can be adopted for enhancing government efficiency?

1. Legislation for Efficiency- India should establish **Indian Department of Government Efficiency (IDOGGE) to audit and restructure bureaucratic operations**, Inspired by the U.S. Office of Management and Budget (OMB) and Singapore's Public Service Division (PSD).

2. Merge Redundant Ministries- Overlapping departments like **Agriculture and Animal Husbandry should be combined into a single ministry**. Further, the redundant ministries like Ministry of Information and Broadcasting can be downsized and reoriented in approach.

3. Performance-Based Employment- Introduce **Key Performance indicators (KPIs) and real-time monitoring** for civil servants. Public-Private Efficiency Task Force must be formed to recommend and oversee structural reforms.

4. Optimization of Government Assets- Unused government assets should be utilized for revenue generation. Further, there should be acceleration of digitization & automation to reduce human resource dependency in governance.

5. Gradual Implementation- A **phased approach to downsizing, ensuring re-skilling and alternative employment opportunities** should be implemented for affected government employees.

6. Global Best Practices- Learn from countries like **Denmark and South Korea**, which have successfully reduced government expenditure while improving public services.

India's journey towards Minimum Government, Maximum Governance requires bold reforms to eliminate bureaucratic inefficiencies and wasteful expenditure. By streamlining ministries, commercializing government assets, and abolishing outdated posts, India can free up resources for development and create a more efficient, responsive, and accountable government. In Make India Great Again, adopting DOGE could be the first step towards realizing this vision.

4. Places of Worship Act 1991

Chief Justice of India Sanjiv Khanna has barred new petitions challenging the Places of Worship Act, 1991. While rejecting fresh filings, the Supreme Court has allowed intervention petitions introducing new legal grounds. **The Act prohibits altering the religious character of places of worship as they stood in 1947, except for the Ram Janmabhoomi dispute.** The recent Sambhal and Ajmer Sharif shrine disputes, has also brought the Places of Worship Act 1991, back into national focus. The Act was enacted to freeze the status of religious places of worship as they existed on 15th August, 1947. It **prohibits conversion of any place of worship and provides for the maintenance of the religious character of any place of worship.**

What is the background and aim of the Places of Worship Act 1991?

Background of the Act- As the Babri-Masjid Ram Janmabhoomi dispute escalated, the **Vishwa Hindu Parishad and other Hindu organizations also contested the Gyanvapi mosque in Varanasi and the Shahi Idgah in Mathura.** In September 1991, the P.V. Narasimha Rao government passed a special law freezing the status of places of worship as they were on August 15, 1947. This law excluded the Ayodhya structure since its litigation was still in progress.

Aim of the Act- The Act aims to **prevent the conversion of any place of worship** and ensure the preservation of its religious character. It states that the religious character of a place of worship must remain as it was on August 15, 1947.

What are the arguments raised against the Places of Worship Act 1991?

1. Unconstitutional as it bars judicial review- Critics of the act hold it unconstitutional as it bars the right to seek judicial review of a grievance (Art 13(2)).

2. Violation of principle of law 'ubi jus ibi remedium'- Critics hold that the Places of Worship Act goes against the principle of law 'ubi jus ibi remedium' (where there is a right, there is a remedy). It thus **violates the concept of Rule of Law, which is the core of Article 14.**



- 3. Arbitrary and irrational retrospective cutoff date-** The opponents of the Act criticize it on the account of it creating arbitrary irrational retrospective cutoff dates. The status quo determined by a colonial power is considered final by barring the remedies against illegal encroachment on the places of worship and pilgrimages.
- 4. Violation of principle of Secularism-** The critics of the Places of Worship Act criticize the act for violating the principle of secularism. The prohibition of Hindus, Jains, Buddhists, and Sikhs from reclaiming their places of worship which were invaded and encroached upon by fundamentalist barbaric invaders, is cited as a major reason for the opposition of Places of Worship Act.
- 5. Violation of Freedom of Religion-** The Places of Worship Act, 1991 is held by its critics against the **liberty of belief, faith, and worship to all citizens**. Freedom of religion is guaranteed to all citizens under Articles 25 and 26 of the Constitution.

What is the significance of Places of Worship Act 1991?

- 1. Preservation of Religious Status Quo-** The Act ensures the continuity of religious practices and prevents retrospective claims on places of worship by mandating that the religious character of all places of worship, as it stood on August 15, 1947, cannot be altered.
- 2. Promotion of Communal Harmony-** The Act aims to prevent communal tensions and conflicts by prohibiting the conversion of any place of worship.
- 3. Promotion of Secularism-** The law reinforces India's commitment to secularism by ensuring that disputes over religious sites do not undermine the principle of equality among all religions.
- 4. Deterrence Against Misuse-** The Act discourages individuals or groups from attempting to stir communal unrest for political or social gains by criminalizing the alteration of religious sites.

What implications are created by challenges against the Places of Worship Act 1991?

- 1. Threat to Secularism-** The challenges to the Places of Worship Act potentially undermine India's commitment to secularism, as the Act was designed to protect the religious character of places of worship.
- 2. Political Implications-** The petitions and debates are becoming a tool in political agendas and are influencing political narratives
- 3. Historical Reinterpretation-** The petitions, by questioning historical facts and attempting to change the religious status of sites, could lead to a reinterpretation of history, impacting the collective memory and cultural heritage of the nation.
- 4. Public Trust and Harmony-** Challenges to the Act and the filing of numerous petitions against mosques risk breaching of public trust and could lead to communal disharmony. The **recent case of Sambhal Violence is the case in Point**.

Way Forward

- 1. Comprehensive evaluation by SC-** The SC must conduct a comprehensive evaluation of the Places of Worship Act to address its criticisms and limitations.
- 2. Safeguarding judicial review-** The judiciary's ability to review cases must be safeguarded to ensure that the constitutional rights are upheld.
- 3. Maintenance of Balance-** A balance must be maintained between protecting the religious character of sites and respecting the rights of diverse communities.
- 4. Promotion of fairness and consistency-** Fairness and consistency must be promoted through public consultation, transparency, and reconsideration of exclusions for specific sites.

5. A Process Where Free and Fair Elections Will Be A Casualty

Context



- The **Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023** is a landmark legislation that establishes a legal framework for the appointment of the Chief Election Commissioner (CEC) and Election Commissioners (ECs).
- This **law was introduced in response to the Supreme Court of India's March 2023 directive**, which emphasised the need for an independent and transparent selection process.
- However, **despite its intent to uphold democratic principles, the law has been met with considerable criticism** due to concerns about government influence in the appointment process.

Historical Context, Judicial Intervention and Challenges to the New Law

• Historical Context and Judicial Intervention

- **Historically, the CEC and ECs were appointed solely by the President of India** based on the recommendation of the Prime Minister.
- This **system raised concerns about the impartiality of the Election Commission of India (ECI)**, which is responsible for ensuring free and fair elections.
- Recognising these concerns, the **Supreme Court ruled that the appointment process should involve a high-powered committee** consisting of the Prime Minister, the Leader of the Opposition (LoP) in the Lok Sabha, and the Chief Justice of India (CJI).
- This **arrangement was intended as an interim measure until Parliament enacted a law** on the subject.
- While the **new Act adheres to the requirement of parliamentary legislation, it significantly alters the composition** of the selection committee.
- **Instead of including the CJI, the new Act introduces a cabinet minister** nominated by the Prime Minister.
- This **change has raised serious constitutional and democratic concerns** regarding the independence of the selection process.

• Challenges to the New Law

- The primary objection to the new law is that **it deviates from the Supreme Court's recommendation** by replacing the CJI with a cabinet minister.
- This **alteration effectively ensures a government majority in the selection committee**, as both the Prime Minister and the cabinet minister are members of the ruling party.
- As a result, **the appointment process risks becoming a mere formality**, with the government having the final say in selecting the CEC and ECs.
- Furthermore, **the process involves a search committee led by the Law Minister**, which shortlists five candidates for consideration.
- The **secrecy surrounding the shortlisted names adds another layer of opacity** to the process, potentially undermining public trust.
- The **recent selection of the senior-most EC as the CEC by the two government-appointed members of the committee**, despite the LoP's dissent, highlights the **predetermined nature of the selection process**.

Constitutional Concerns and Infirmities in the Selection Process

- The Constitution of India, **under Article 324, entrusts the Election Commission with the responsibility of conducting free and fair elections**.
- The Supreme Court, in **Election Commission of India vs. State of Tamil Nadu (1993)**, reaffirmed that the ECI must **function independently** to preserve the integrity of the electoral process.
- Given that India has nearly 960 million voters, the appointment of election commissioners must be devoid of political influence to maintain public confidence in the electoral system.
- The **major flaw in the new Act lies in the composition of the selection committee**.
- By ensuring a built-in majority for the government, **the law undermines the fundamental principle of independent decision-making**.
- The inclusion of a cabinet minister, who is bound to align with the Prime Minister—prevents any genuine deliberation over the candidates' merits.



- Unlike a truly independent committee where decisions emerge through debate, **the current structure makes the outcome predictable** in favour of the government's preferred candidate.
- **Another significant issue is the Prime Minister's power to nominate one of the members**, the cabinet minister.
- Ideally, **the selection committee should consist of individuals capable of making independent and unbiased decisions.**
- However, **a cabinet minister is inherently loyal to the Prime Minister** and is unlikely to oppose their decision.
- This setup further reduces the scope for an objective evaluation of candidates.

Broader Implications of the Law: Violation of Constitutional Principles

- The **arbitrary composition of the selection committee raises concerns about the new Act's compatibility with Article 14** of the Constitution, which guarantees the right to equality.
- By creating an appointment process that structurally favours government-backed candidates, **the law fails to establish a level playing field.**
- The fundamental principle of fairness in selecting high constitutional officers is compromised.
- Additionally, **the independence of the ECI is crucial for ensuring free and fair elections**, a cornerstone of India's democratic framework.
- The **Supreme Court has repeatedly held that free and fair elections form part of the basic structure of the Constitution.**
- If the selection committee is biased in favour of the ruling party, it risks **eroding the credibility** of the electoral process, thereby **weakening democracy**

The Role of the Supreme Court

- Given these constitutional concerns, **it is imperative for the Supreme Court to critically examine the law.**
- The **judiciary has a duty to safeguard democratic institutions** and ensure that the ECI remains independent.
- The **Court may need to reassess whether the current selection mechanism aligns with the constitutional principles** of fairness, transparency, and non-partisanship.
- One possible solution would be **to reinstate the CJI as a member of the selection committee to balance the decision-making process.**
- Alternatively, **Parliament could consider a more independent body**, possibly including retired judges or neutral experts, to oversee the appointments.

The Way Forward

- To preserve the sanctity of India's electoral system, **it is crucial that the appointment process be reformed to ensure fairness, transparency, and non-partisanship.**
- The **Supreme Court's intervention will be crucial in determining whether this law aligns with constitutional values** or if it requires significant amendments to uphold the integrity of the electoral process.

Conclusion

- **The appointment of the CEC and ECs is a matter of national importance**, as it directly affects the conduct of elections and the legitimacy of the democratic process.
- **While the 2023 Act fulfils the requirement of a parliamentary law, its provisions compromise the independence of the ECI** by granting undue influence to the government in the selection process.
- **The inherent flaws in the Act**, including the lack of transparency, the government's guaranteed majority in the selection committee, and the exclusion of the judiciary, **make it vulnerable to constitutional challenges.**

6. Delimitation Exercise in India: Balancing Democracy and Federalism

The recent spat between the **Centre and Tamil Nadu over delimitation has again opened up one of the most crucial debates of democracy- the question of representation.** The last delimitation happened in 1975, after which Indira



Gandhi put a freeze until 2000. A year later, Parliament again froze the number of members of the Lok Sabha and state assemblies till 2026. The **delimitation of constituencies for the Lok Sabha and State Legislative Assemblies is to be carried out on the basis of the first Census after 2026**. Due to this inordinate delay, several issues related to democracy, demography and federalism await the fifth delimitation exercise.

What is Delimitation? What is the constitutional status behind Delimitation in India?

Delimitation refers to the **process of redrawing the boundaries of electoral constituencies to ensure fair representation based on population changes**.

Delimitation Commission- The Delimitation Commission is a **statutory body** responsible for determining the boundaries of various constituencies in the country for the purpose of elections. It is **governed by the Delimitation Act, 2002 and is conducted by the Delimitation Commission under Articles 82 and 170 of the Indian Constitution**. The objective is to provide equitable representation to all regions while maintaining the principle of one person, one vote.

What is the significance of Delimitation Exercise in India?

- 1. Political Representation and Electoral Fairness-** Ensures **democratic legitimacy through equitable distribution of seats in Lok Sabha and State Assemblies**. E.g. The 2002 Delimitation Commission led to a better voter-per-MP ratio in urban and rural areas and prevented malapportionment, ensuring each MP represents roughly the same number of citizens.
- 2. Upholding Democracy-** It **reduces gerrymandering** (political manipulation of electoral district boundaries to advantage a party, group, or socioeconomic class within the constituency) , **ensuring fair electoral contests**. E.g. Supreme Court in **Kuldip Nayar v. Union of India (2006)** upheld the importance of delimitation for fair democracy.
- 3. Socio-Economic Equity-** The Delimitation Exercise enhances **representation for marginalized communities and Scheduled Tribes**. E.g. The J&K Delimitation Commission allocated more seats to Jammu to address past disparities.
- 4. Strengthening of Federalism-** The Delimitation process **ensures equitable representation among states, balancing national unity with regional autonomy**. E.g. The 42nd Amendment's population freeze prevented southern states with lower population growth from losing representation, thereby upholding the spirit of cooperative federalism, crucial for India's unity.
- 5. Administrative Efficiency-** The Delimitation exercise ensures a **manageable voter-to-representative ratio, aiding governance**. E.g. Mumbai and Bengaluru saw improved electoral administration post the 2002 exercise.
- 6. Electoral Integrity and Governance-** The Delimitation process aligns representation with new demographic realities, as seen in global examples like the **UK Boundary Commission**.

What are the concerns associated with Delimitation Exercise?

- 1. Population vs. Development-** Southern states argue that delimitation based solely on **population would penalize them for successful family planning and economic development**. E.g. Tamil Nadu's fertility rate is 1.6, while Bihar's is 3.0.
- 2. Federalism at Risk-** States with low **population growth may feel politically marginalized, leading to North South divide concerns**. There are concerns that the Delimitation Exercise can **create federal imbalance as states with better governance may feel punished for controlling population**. E.g. Sarkaria Commission (1983) warned against excessive centralization of power.
- 3. Manipulation-** There are concerns that political parties may influence constituency boundaries for electoral gains. E.g. **Allegations of bias in the J&K delimitation process (2022)**.
- 4. Delays and Political Resistance-** There are instances of increased political resistance as seen in the case of Justice **Kuldip Singh-led Commission (2002)** facing pushback from political parties unwilling to lose seats.
- 5. Economic Disparities-** Southern states argue that higher revenue generation (GST collections, per capita income) should be factored into representation.

What Should be the Way Forward?



1. Implement Expert Recommendations- The following commissions have suggested the following reforms for ensuring federal balance and delimitation needs.

- **Sarkaria Commission (1983):** Suggested a balanced approach between federalism and national unity.
- **Punchhi Commission (2010):** Proposed equal weightage to population and governance needs.

2. Ensure Transparency and Independent Oversight- The Election Commission's autonomy should be strengthened to ensure fair delimitation process. In **Kuldip Nayar v. Union of India (2006)**, SC emphasized the need for fair representation while balancing federal concerns. In **TN Seshan v. Union of India (1995)**, SC highlighted the importance of an independent delimitation body.

3. Constitutional and Legislative Reforms- Amend Articles 81 and 82 to ensure balanced regional representation and introduce proportional representation models used in Germany and Canada.

4. Policy Suggestions Weighted Representation Model: Combining population size, economic performance, and governance.

Independent Delimitation Commission: Free from political interference.

Phased Implementation: A gradual transition to prevent political instability.

Delimitation is a delicate balance between democracy and federalism. While it ensures equal representation, challenges related to regional disparities, population dynamics, and governance issues must be addressed. The Supreme Court and Election Commission must play a proactive role in ensuring transparency and fairness. A balanced approach grounded in constitutional values, expert recommendations, and global best practices—is essential to uphold India's democratic and federal ethos.

7. The RTI is Now the 'Right to Deny Information'

Context

- The **Right to Information (RTI) Act** was introduced with the objective of enhancing transparency and empowering citizens by granting them access to government-held information.
- It was perceived as a means to uphold democratic principles by ensuring accountability and reducing corruption.
- However, despite its initial promise, the Act has encountered numerous challenges, resulting in a diminished impact.
- Therefore, it is important to examine the trajectory of the RTI Act, the systemic issues that have weakened its implementation, and the legal interpretations that have further restricted citizens' access to information.

The Initial Promise of the RTI Act

- The RTI Act was seen as a landmark piece of legislation that recognized citizens as the true rulers of the nation.
- By codifying the fundamental right to information, the Act provided an effective tool for public oversight, allowing people to monitor the functioning of the government.
- This empowerment was expected to curb corruption and arbitrariness, leading to a more transparent and accountable administration.
- The law was hailed as one of the best transparency laws in the world, offering a legal framework for citizens to seek information with dignity and respect.
- However, the optimism surrounding the Act quickly diminished as the government and bureaucracy resisted this shift in power.

Systematic Issues and Judicial Interpretations that Weakened the RTI Act

- **Bureaucratic Resistance and Systemic Erosion**
 - One of the earliest challenges to the RTI Act was the reluctance of government officials to relinquish control over information.



- Recognising that the Act effectively transferred power from public servants to citizens, **the government attempted to weaken the law through amendments.**
- However, **strong public opposition forced it to abandon these efforts.** Despite this, a gradual erosion of the Act's effectiveness ensued through bureaucratic resistance and judicial reinterpretations.
- The **implementation of the Act was entrusted to Information Commissions**, which functioned as appellate authorities.
- Unfortunately, **most of the commissioners appointed were retired bureaucrats**, many of whom viewed these positions as post-retirement sinecures rather than opportunities to uphold transparency.
- **Their reluctance to impose penalties for non-compliance further weakened the Act.**
- Additionally, **delays in appointing commissioners led to massive backlogs**, rendering the right to information ineffective.
- **The mandated 30-day period for providing information was often not adhered to**, turning RTI into a tool that provided historical records rather than timely insights.
- **Judicial Interpretations Restricting RTI**
 - **Central Board of Secondary Education vs Aditya Bandopadhyay (2011)**
 - A significant shift in the interpretation of the RTI Act **occurred with the Supreme Court's ruling in Central Board of Secondary Education vs Aditya Bandopadhyay (2011).**
 - The **judgment challenged the strict interpretation of Section 8**, which outlines **exemptions to the right to information.**
 - The **Court's assertion that indiscriminate use of RTI could hinder administrative efficiency** and national development introduced a restrictive view of the law.
 - This **perspective justified the denial of information** on broad grounds and cast suspicion on RTI applicants, **leading to an environment where transparency was seen as an obstruction** rather than a fundamental right.
- **Girish Ramchandra Deshpande vs Central Information Commissioner (2012)**
 - The erosion of the RTI Act continued with the Supreme Court's decision in **Girish Ramchandra Deshpande vs Central Information Commissioner (2012).**
 - In this case, **the Court ruled that information about a public servant's disciplinary records and financial dealings was 'personal information'** and therefore **exempt under Section 8(1)(j).**
 - The **judgment did not fully consider whether the information was related to a public activity** or if its disclosure was in the larger public interest.
 - By narrowly interpreting the law, **the Court set a precedent that allowed authorities to withhold crucial information**, effectively converting the RTI into a Right to Deny Information (RDI).
 - This **interpretation has been cited in multiple subsequent rulings**, further restricting transparency.

The Implications of a Weakening RTI Act

- **Reduced Government Accountability and Transparency**
 - One of the **core objectives of the RTI Act was to make the government more transparent** and accountable to the public.
 - By allowing citizens to seek information on governmental decisions, policies, and expenditures, **the Act aimed to ensure that public officials remained answerable** for their actions.
 - However, **the increasing reluctance of Information Commissions to impose penalties**, the excessive delays in providing information, and **judicial restrictions on disclosure have made it easier for authorities to evade scrutiny.**
 - For example, **the SC's ruling in Girish Ramchandra Deshpande vs Central Information Commissioner (2012) set a precedent that allows government officials to withhold crucial information** by classifying it as "personal."
 - This **significantly reduces public oversight** over government functionaries, making it easier for misconduct, inefficiency, and corruption to go unchecked.
- **Increase in Corruption and Misuse of Public Funds**



- A strong RTI framework acts as a deterrent against corruption by ensuring that public officials are aware that their actions are subject to scrutiny.
- When the implementation of the RTI Act is weakened, **corrupt practices become easier to hide.**
- **Government contracts, public procurement processes, and financial allocations, areas where corruption is most prevalent, become opaquer,** allowing misappropriation of public funds without fear of exposure.
- For instance, **activists have used RTI to uncover major scams in the past,** such as the Adarsh Housing Society scam and **the Vyapam scam.**
- **Hindrance to Investigative Journalism and Public Awareness**
 - The RTI Act has been a **critical tool for journalists and researchers who rely on access to government data** to investigate issues of public interest.
 - **Many major news stories and investigative reports have been based on information** obtained through RTI applications.
 - However, as government departments and Information Commissions become more reluctant to disclose information, **the ability of journalists to report on corruption, policy failures, and governance issues is severely affected.**

The Way Forward: A Call for Citizen Vigilance

- To safeguard the integrity of the RTI Act, **active citizen participation is essential.**
- **Public awareness and media discourse must highlight attempts to dilute the Act** and push for reforms that restore its effectiveness.
- **Information Commissions must be strengthened** by appointing independent and competent officials with a commitment to transparency.
- Additionally, **the legal framework must be reviewed to ensure that exemptions under Section 8** are interpreted in a manner that prioritizes public interest over bureaucratic convenience.

Conclusion

- While the RTI Act was initially seen as a powerful tool to uphold transparency and democracy, **its effectiveness has been steadily eroded by bureaucratic resistance,** judicial restrictions, and legislative amendments.
- **The shift from an era of optimism to one of scepticism underscores the challenges** in maintaining government accountability.
- However, **the responsibility to preserve the essence of the RTI Act lies with the citizens and media,** who must actively defend their fundamental right to information.

8. Supreme Court's View on Gag Orders

Why in the News?

- Recently, the Supreme Court granted interim protection from arrest to podcaster and influencer Ranveer Allahbadia in connection with the First Information Reports (FIRs) registered against him over remarks made on the YouTube show "India Got Latent".

Introduction:

- The Supreme Court of India has repeatedly ruled on **gag orders,** which prevent individuals from making public statements or publishing content.
- The **recent case of influencer Ranveer Allahbadia,** who was granted **interim relief from arrest but banned from posting on social media,** highlights the **judicial approach toward speech restrictions.**

Background: The Ranveer Allahbadia Case



- On **February 18, 2025**, the Supreme Court granted **interim protection from arrest** to **Ranveer Allahbadia**, a podcaster and influencer, over multiple FIRs related to alleged **obscene and explicit content** on the YouTube show India Got Latent.
- However, the Court **imposed stringent conditions**, barring Allahbadia and his associates from posting any content on social media until further orders. Additionally, he was directed to surrender his passport.
- This **controversial restriction**, effectively a **gag order**, contradicts prior Supreme Court rulings, which have cautioned against imposing excessive speech restrictions while granting bail or interim relief.

Legal Basis for Gag Orders in India:

- A **gag order** refers to **judicial or executive action that prohibits individuals from making public statements**. Such orders usually fall under:
 - **Section 144 of CrPC** – Allows the government to restrict public statements in cases of **law and order concerns**.
 - **Contempt of Court Act, 1971** – Prohibits public discussion on **ongoing legal cases** to prevent judicial influence.
 - **Article 19(2) of the Indian Constitution** – Allows **reasonable restrictions** on free speech for **security, public order, and morality**.
- However, courts have **consistently ruled that speech restrictions must be proportionate and justified**.

Supreme Court's Principles on Interim Relief and Speech Restrictions:

- **Discretionary Conditions for Interim Relief**
 - Judges have the discretion to impose conditions when granting **bail or interim relief**. These conditions are typically based on:
 - **Flight risk** – Whether the accused may **abscond from trial**.
 - **Tampering with evidence** – If the accused could **interfere with investigations**.
 - **Intimidation of witnesses** – Preventing threats or coercion.
 - However, courts have ruled that restrictions **must not violate fundamental rights**.

Key Supreme Court Rulings on Gag Orders:

- **Parteek Bansal vs. State of Rajasthan (2022)**
 - The **Supreme Court condemned the practice of multiple FIRs** for the same offense, calling it **harassment and misuse of legal machinery**.
 - **Relevance:** This case supports Allahbadia's argument against **multiple FIRs in different states**.
- **Satender Kumar Antil vs. CBI (2022)**
 - The Supreme Court ruled that **bail conditions must be reasonable**, warning against **imposing impossible or unjustified restrictions**.
 - **Relevance:** The Allahbadia order **contradicts this ruling**, as barring him from social media **affects his profession**.
- **Frank Vitus vs. Narcotics Control Bureau (2024)**
 - The Court **struck down bail conditions** requiring the accused to **share Google Maps location**, ruling it **violated privacy under Article 21**.
 - **Relevance:** The Allahbadia gag order **violates free speech rights under Article 19**.
- **Rehana Fathima Case (2021)**
 - The Supreme Court **stayed a Kerala High Court order restricting activist Rehana Fathima** from posting content while on bail, ruling that such conditions **create a chilling effect on speech**.
 - **Relevance:** The Allahbadia case **raises similar concerns**, as his gag order **restricts online expression**.
- **Mohammed Zubair vs. Uttar Pradesh (2021)**
 - The Supreme Court **refused to prohibit Alt News co-founder Mohammed Zubair** from **tweeting while on bail**, stating it would be an **unjustified violation of free speech**.
 - **Relevance:** The Allahbadia case presents **identical legal challenges**, as the Court **restricted speech as a bail condition**.

Criticism of the Recent Order of the Supreme Court:

- Legal experts argue that the **social media ban is excessive**, as:
 - The case does not involve **national security or law and order threats**.
 - Speech bans violate Supreme Court precedents on bail conditions.
 - The order indirectly affects digital content creators and free expression online.
- Even if Allahbadia's content is found objectionable, the **IT Act and media regulations provide alternative legal measures** rather than outright speech bans.

Future Implications for Digital Speech in India:

- **Need for Clear Guidelines on Gag Orders**
 - Courts must define when speech restrictions can be imposed as bail conditions, ensuring consistency in rulings.
- **Balancing Free Speech and Legal Restrictions**
 - The government and judiciary must strike a balance between regulation and speech freedoms, ensuring prior restraint is imposed only in exceptional cases.
- **Strengthening Legal Safeguards Against Arbitrary Bans**
 - Gag orders should be time-bound and subject to review.
 - Affected parties must have the right to challenge speech restrictions in court.

Conclusion:

- The Supreme Court's interim order in the Ranveer Allahbadia case raises critical questions on **free speech, prior restraint, and judicial overreach**.
- Past rulings have consistently cautioned against excessive speech restrictions, making the social media ban controversial.
- Going forward, a **well-defined legal framework is necessary to ensure gag orders are applied only in exceptional circumstances and do not unjustly infringe upon fundamental rights**.

9. The Emerging Rift in the West- Trump's Policy Shift and Its Global Implications

Context:

- The return of Donald Trump to the White House has marked a **significant shift in U.S. foreign policy**, particularly in its approach to **European security, global trade, and domestic political values**.
- Trump's move to initiate **peace talks with Russia over Ukraine** and Vice President JD Vance's **criticism of European democracies** at the Munich Security Conference has shocked America's European allies.
- The traditional unity of the **"Collective West"** now appears fragile, raising concerns about geopolitical realignments.

U.S.-Europe Divide Under Trump:

- **America's changing stance on European security:**
 - **Trump's direct negotiations with Russia**, bypassing Kyiv and Brussels, indicate a shift in U.S. commitment to Ukraine.
 - The expected Trump-Putin summit suggests an effort to **restore Russia's influence in European security**, and bring Moscow back to "Western" institutions like the Group of Seven (**G7**).
 - Europe's concerns over Trump's reduced security commitments, which could **weaken** North Atlantic Treaty Organisation (**NATO**).
- **Tensions over global trade and economic policies:**
 - Trump seeks to **replace the existing trade order with bilateral trade deals**, arguing that the current system harms American workers.
 - The U.S. move to challenge international trade frameworks **may strain relations with European economies**.
- **Domestic political differences:**



- Trump's administration **opposes liberal values** such as **open borders, climate change policies, and gender identity rights**.
- JD Vance's speech in Munich criticized European efforts to sideline right-wing political parties.
- Elon Musk's support for European right-wing parties highlights **transnational conservative collaboration**.

The West's Historical Evolution and Current Crisis:

- **The formation of the modern West:**

- The West, traditionally bound by liberal values like **capitalism, democracy, and individual rights**, has seen **internal conflicts** throughout history.
- **The unity** of the West since World War II was primarily due to the **fear of communism** and the Soviet Union's expansionist policies.
- **The U.S.-led global order** was built through institutions like NATO, the United Nations, the IMF, and the World Bank.

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

- The ideological rift within the West is not just about the U.S.-Europe policy differences but also a **broader conservative pushback against liberal dominance**.
- The emergence of a Con-intern **parallels earlier movements** like the Communist International (Comintern) and liberal internationalism.
- **The Con-intern may reshape global policies** on security, trade, and social issues.

Geopolitical Implications and India's Stance:

- **'Russia and China's strategic advantage:**

- Moscow and Beijing **benefit from a divided West** and continue to exploit gaps in U.S. alliances.
- Both nations seek to **negotiate separate deals with Washington** despite their anti-West rhetoric.

- **India's pragmatic approach:**

- Unlike in the past, India is **no longer influenced by anti-Western propaganda** from Russia and China.
- Delhi recognizes emerging contradictions within the West and aims to **engage strategically to protect its national interests**.
- **India's balancing act** between Western powers and emerging geopolitical shifts aligns with its broader foreign policy objectives.

Conclusion:

- If President John F Kennedy said America must pay any price or bear any burden to lead the world, Trump and his followers are saying that the **cost and consequences of American leadership are no longer acceptable**.
- The perceived collapse of the "Collective West" is **reshaping global power dynamics**. Trump's realignment of U.S. policies has widened the rift with Europe, emboldening Russia and China.
- While uncertainties remain about the future of the U.S.-Europe relations, **India sees an opportunity to navigate this evolving landscape strategically**.
- Whether this divergence results in a complete realignment or merely a recalibration of existing ties remains to be seen.

10. The Panchayati Raj Movement is in Distress

Context

- The **73rd Amendment to the Indian Constitution**, enacted in 1992, marked a transformative moment in India's governance, **introducing a decentralised system** through panchayati raj institutions (PRIs).
- This amendment **sought to bring democracy to the grassroots** by establishing local self-government, ensuring representation, and empowering marginalised communities.



- However, despite its initial success, **the panchayati raj system is currently facing a crisis** due to systemic and policy-level challenges.

An Overview of Panchayati Raj System

- The Panchayati Raj System was introduced through the 73rd Constitutional Amendment Act, 1992, **to establish decentralised governance** at the grassroots level.
- The **system is based on the principle of democratic decentralisation**, giving power to local self-governments in rural areas.
- Its roots trace back to ancient India, but it was **formally recommended by the Balwant Rai Mehta Committee (1957)**, which proposed a three-tier structure, Gram Panchayat, Panchayat Samiti, and Zila Parishad.
- The primary purpose of the system is to **promote participatory democracy, empower rural communities**, and ensure effective local administration.
- Panchayats have been given **constitutional status under Article 243**, with elections held every five years to ensure accountability.
- They are **responsible for local governance, including rural development, sanitation, water supply, education, and poverty alleviation programs**.
- States have been granted flexibility in structuring their PRIs, leading to variations across India.
- Over the years, **the system has strengthened grassroots democracy but still faces challenges** like lack of financial autonomy, political interference, and capacity building issues.

The Achievements of Panchayati Raj Institutions

- The panchayati raj system has made **significant strides in democratising local governance**.
- Elections to PRIs have become highly competitive, and **political participation at the grassroots level has increased**.
- One of the most notable achievements has been the empowerment of women in leadership roles, with **nearly 14 lakh elected women representatives** currently serving in panchayats.
- Furthermore, PRIs have **played a crucial role in implementing various social sector programs**, particularly in rural development initiatives.
- The **Constitution mandated State Finance Commissions to allocate financial resources to local governments**, ensuring that panchayats had the necessary funds to carry out their responsibilities.
- These achievements **underscore the importance of panchayati raj institutions** in developing inclusive and participatory governance.
- Despite these accomplishments, **the panchayati raj system is facing a decline** due to several structural and policy-related challenges.

The Decline of Panchayati Raj: Key Challenges

- **Stagnation in Administrative Decentralisation**
 - While the initial phase of the panchayati raj movement saw significant progress in administrative devolution, **momentum has since stalled**.
 - Effective local governance requires state governments to delegate administrative control and staff to PRIs, yet this has not been fully realised.
 - **A 2022 report by the Ministry of Panchayati Raj** revealed that **less than 20% of Indian states have transferred all 29 subjects** listed in the Eleventh Schedule of the Constitution **to local bodies**.
 - Without adequate administrative authority, panchayats struggle to function effectively.
- **Erosion of Fiscal Autonomy**
 - Financial autonomy is crucial for effective local governance, but **panchayats have increasingly become dependent on centrally sponsored schemes**.
 - While **direct financial transfers** to PRIs have increased over time, untied grants, which allow local governments to make independent decisions, **have been significantly reduced**.



- The **proportion of untied grants dropped from 85%** under the Thirteenth Finance Commission (2010–15) to 60% under the Fifteenth Finance Commission (2021–26).
- This **reduction limits the flexibility of panchayats** in addressing local issues, thereby weakening their decision-making power.
- **The Changing Nature of Welfare Delivery**
 - Over the past decade, **India has witnessed a shift in welfare delivery mechanisms.**
 - With the advent of digital financial systems like the **Jan Dhan-Aadhaar-Mobile (JAM)** platform, direct cash transfers have become a **preferred method for implementing welfare schemes.**
 - While this approach enhances efficiency, **it sidelines PRIs, reducing their role in beneficiary selection and grievance redressal.**
 - For instance, the Pradhan Mantri Kisan Samman Nidhi (**PM-KISAN**) scheme provides direct cash transfers to farmers, bypassing local governance structures.
 - This **shift diminishes the accountability and engagement** that PRIs traditionally ensured in rural welfare programs.
- **The Impact of Urbanisation**
 - India's rapid urbanisation has also contributed to the declining relevance of PRIs.
 - **In 1990, nearly 75% of India's population lived in rural areas;** today, this figure has decreased to around **60% and continues to decline.**
 - As a result, **policy priorities have increasingly shifted toward urban governance** and municipal reforms, relegating rural development to the background.
 - This **demographic change threatens to marginalise PRIs**, as attention and resources are increasingly directed toward cities and towns.

Ways to Revitalising Panchayati Raj

- **Strengthening Administrative and Fiscal Decentralisation**
 - State governments **must commit to fully devolving administrative powers and resources** to PRIs.
 - This **includes granting panchayats greater control over local staff** and increasing the proportion of untied financial grants.
 - By doing so, **PRIs can regain their autonomy** and play a more proactive role in local decision-making.
- **Leveraging Technology for Citizen Engagement**
 - The **integration of digital tools in governance** presents an opportunity to strengthen citizen participation in local decision-making.
 - By adopting digital platforms for planning, monitoring, and accountability, **PRIs can enhance transparency and efficiency** in service delivery.
 - A **networked panchayati raj system can also bridge the rural-urban divide** by facilitating better coordination between urban and rural development initiatives.
- **Reimagining the Role of Panchayats in Rural Development**
 - **PRIs can play a crucial role in addressing emerging challenges** such as water conservation, renewable energy generation, and disaster risk management.
 - By **leveraging scientific practices, traditional knowledge**, and public financing, panchayats **can contribute to sustainable development** at the grassroots level.
 - Additionally, **they can support internal migration** by providing social security measures for migrant workers and their families.
- **Reviving Public Participation in Local Governance**
 - **Efforts must be made to rekindle public interest** and participation in the panchayati raj system.
 - **Encouraging community involvement in decision-making**, conducting awareness campaigns, and ensuring that local governance remains transparent and accountable can help restore trust in PRIs.

Conclusion



- The panchayati raj system was **envisioned as a means to bring democracy closer to the people and empower local communities.**
- However, **systemic constraints**, financial dependency, and shifting governance priorities **have undermined its effectiveness.**
- To ensure that PRIs remain relevant and impactful, **India must adopt a renewed approach that prioritises administrative and fiscal decentralisation**, integrates technological advancements, and redefines the role of panchayats in rural development.
- As 94 crore Indians still reside in villages, **revitalizing the panchayati raj system is not just a necessity but a fundamental step toward inclusive governance** and sustainable development.

11. The Freebies Debate in India: Welfare or Political Strategy?

Introduction:

- The debate on **freebies vs. welfare schemes** in India has intensified in recent years, especially after **Prime Minister Narendra Modi's statement in July, 2022**, calling the "revadi" culture (a reference to political freebies) **dangerous for the country's development.**
- The issue has since been taken up by the **Supreme Court**, which is examining whether promising and distributing freebies ahead of elections influences voters unfairly.
- At the heart of this debate is the question: **What differentiates essential welfare policies from election-driven freebies?**
- While welfare measures have played a crucial role in India's development, there is concern that excessive political giveaways could strain state finances and undermine economic growth.

Understanding the Freebies vs. Welfare Debate:

- **The Role of the Welfare State**
 - Welfarism has existed in **India's governance structure since independence**, evolving through various phases.
 - The **Five-Year Plans** initiated under **Jawaharlal Nehru** focused on industrial growth and economic development.
 - However, recognizing the need for direct social welfare, the **mid-day meal scheme, Public Distribution System (PDS), and employment guarantee schemes** were later introduced to support the poor.
 - The **Directive Principles of State Policy** in the Indian Constitution also recognize the **state's responsibility** to provide basic needs such as **education, healthcare, employment, and food security**. Over time, states have played a key role in expanding these social security measures.
- **Welfare Measures vs. Freebies:**
 - The **lack of a clear definition of freebies** has fuelled the controversy.
 - While some argue that providing free electricity, water, or cash transfers is an economic burden, others claim that **these initiatives empower marginalized communities.**
 - Welfare measures such as **subsidized food, healthcare, and education** are recognized as **essential for human development.**
 - Freebies like **laptops, TVs, gold coins, and cash handouts** often serve **political objectives rather than economic needs.**
 - Some items, like **bicycles for girls to improve education access**, blur the line between essential welfare and election-oriented giveaways.

Judicial and Regulatory Interventions:

- **Supreme Court's Stand on Freebies**
 - The **Supreme Court has historically struggled** to distinguish between **welfare policies and political inducements:**



- In **Subramaniam Balaji v. State of Tamil Nadu (2013)**, the Court ruled that while freebies influence voters, they **do not constitute bribery or corruption**.
- However, in **2022**, the Supreme Court referred a petition challenging **the constitutional validity of freebies to a three-judge bench**, arguing that they may **disrupt free and fair elections**.
- **Election Commission's Guidelines**
 - The **Election Commission of India (ECI)** initially remained silent on the issue but later **introduced a pro-forma in October 2022**, requiring political parties to explain the financial feasibility of their **poll promises**.
 - This move sparked criticism from opposition parties, who viewed it as an **interference in democratic rights**.

The Political Landscape: Freebies in Elections:

- The **Delhi Assembly elections** showcased how all major political parties competed through **subsidy and freebie promises**:
 - **AAP pledged ₹2,100 per month for women and ₹500 LPG cylinders** for low-income families.
 - **BJP countered with ₹2,500 monthly aid for women and a solar-powered free electricity plan**.
 - **Congress joined in with its own welfare promises**, making it clear that **electoral freebies are a cross-party phenomenon**.
- **Popularity of Freebies in Elections**
 - **Immediate Appeal to Voters** – Unlike long-term policies, freebies provide **direct and tangible benefits**.
 - **Clientelism in Politics** – Welfare benefits are often distributed **strategically to influence key voter segments**.
 - **Lack of Structural Development** – In the absence of **strong employment generation and skill-building programs**, cash transfers and subsidies act as **short-term relief measures**.

Economic Concerns: The Fiscal Impact of Freebies

- **Rising State Debts and Fiscal Risks**
 - The **RBI report on State Finances (2022)** raised concerns that:
 - **Subsidy expenditure has sharply increased**, leading to financial instability.
 - Many states are **running large fiscal deficits**, which could impact their ability to fund long-term infrastructure projects.
- **Revenue Deficit and Fiscal Burden**
 - **Delhi's revenue surplus fell from ₹14,457 crore in 2022-23 to a projected ₹3,231 crore in 2024-25** due to increased freebie expenses.
 - **Annual revenue expenditure is expected to rise by ₹10,000-12,000 crore** in states where freebies dominate election promises.
 - **Potential consequences include higher taxation and reduced investment in productive sectors**.
 - Economists warn that unless subsidies and giveaways are **carefully rationalized**, they could **slow down economic growth and reduce capital for essential public services**.

The Way Forward: Balancing Welfare and Fiscal Responsibility

- **Institutional Reforms and Regulatory Measures**
 - The **parliament must lead the discussion** on defining and regulating **freebies vs. essential welfare**.
 - Stronger **financial oversight** is needed to **monitor both central and state-level subsidies**.
 - The **Fiscal Responsibility and Budget Management (FRBM) Act, 2003**, which limits deficit spending, should be **enforced more strictly**.
- **More Targeted Welfare Programs**
 - Welfare schemes should be **needs-based and designed for long-term economic impact**.
 - Instead of **universal free handouts**, policies should focus on **specific disadvantaged groups**.
 - Digital governance tools like **Direct Benefit Transfers (DBT)** can reduce leakages and ensure funds **reach the intended beneficiaries**.
- **Enhancing Economic Growth Instead of Short-Term Sops**



- **Employment generation programs** and **skill development** initiatives should replace **pure cash subsidies**.
- Infrastructure investments in **education, healthcare, and agriculture** can **uplift communities sustainably**.

12. Future of USAID- Implications and Global Impact

Why in News?

The future of the **United States Agency for International Development (USAID)** is **uncertain**, with the Trump administration planning its merger with the US Department of State.

This move involves significant funding cuts and a potential downsizing of USAID's workforce, **raising concerns about the future of US humanitarian aid**.

What is USAID and Its Role?

- **About USAID:**
 - It was established in the **1960s** to **oversee and administer international humanitarian aid**.
 - USAID was established under **the Foreign Assistance Act of 1961**, making its existence **legally mandated by Congress**.
 - It employs approximately 10,000 personnel, with operations in over 60 countries.
- **Its key areas of work include:**
 - **Food security:** USAID provides famine relief and operates an advanced food shortage prediction system.
 - **Healthcare:** It funds **vaccination programs, pandemic prevention, and global disease control**.
 - **Infrastructure and development:** The agency supports **clean water initiatives, disaster relief, and economic development programs**.
 - **Humanitarian aid:** USAID plays a vital role in war-torn regions like Ukraine and sub-Saharan Africa.

USAID's Budget and Global Spending:

- In 2023, the US allocated **\$68 billion** to international aid, with **USAID receiving over half** (\$40 billion).
- The largest share of USAID funds is directed toward **Asia, Africa, and Europe**, particularly **Ukraine**.
- The US remains the **largest global donor**, outspending other major aid contributors like the UK.

Why is the Trump Administration Targeting USAID?

- **Criticism of foreign aid spending:**
 - **Donald Trump:** He has long criticized foreign aid, arguing **it lacks value for US taxpayers**. Trump issued an executive order pausing international spending for 90 days, leading to the suspension of multiple aid programs.
 - **Public opinion:** Polls indicate that American voters have historically favored reducing foreign aid.
 - **Elon Musk:** A key Trump advisor, Musk has pushed for drastic spending cuts, leading to tensions between USAID and the administration.
- **Impact of spending freeze:**
 - Critical programs, such as **medical aid and clean water initiatives, were halted**.
 - Security concerns arose, with reports of prison guards in Syria (responsible for detaining Islamic State militants) nearly abandoning their posts due to funding cuts.
 - International aid workers described the move as **a severe disruption to global humanitarian efforts**.

Can Trump Unilaterally Shut Down USAID?

- Any attempt to abolish it would **likely face legal challenges** and require congressional approval.
- **An alternative strategy** under consideration is 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.

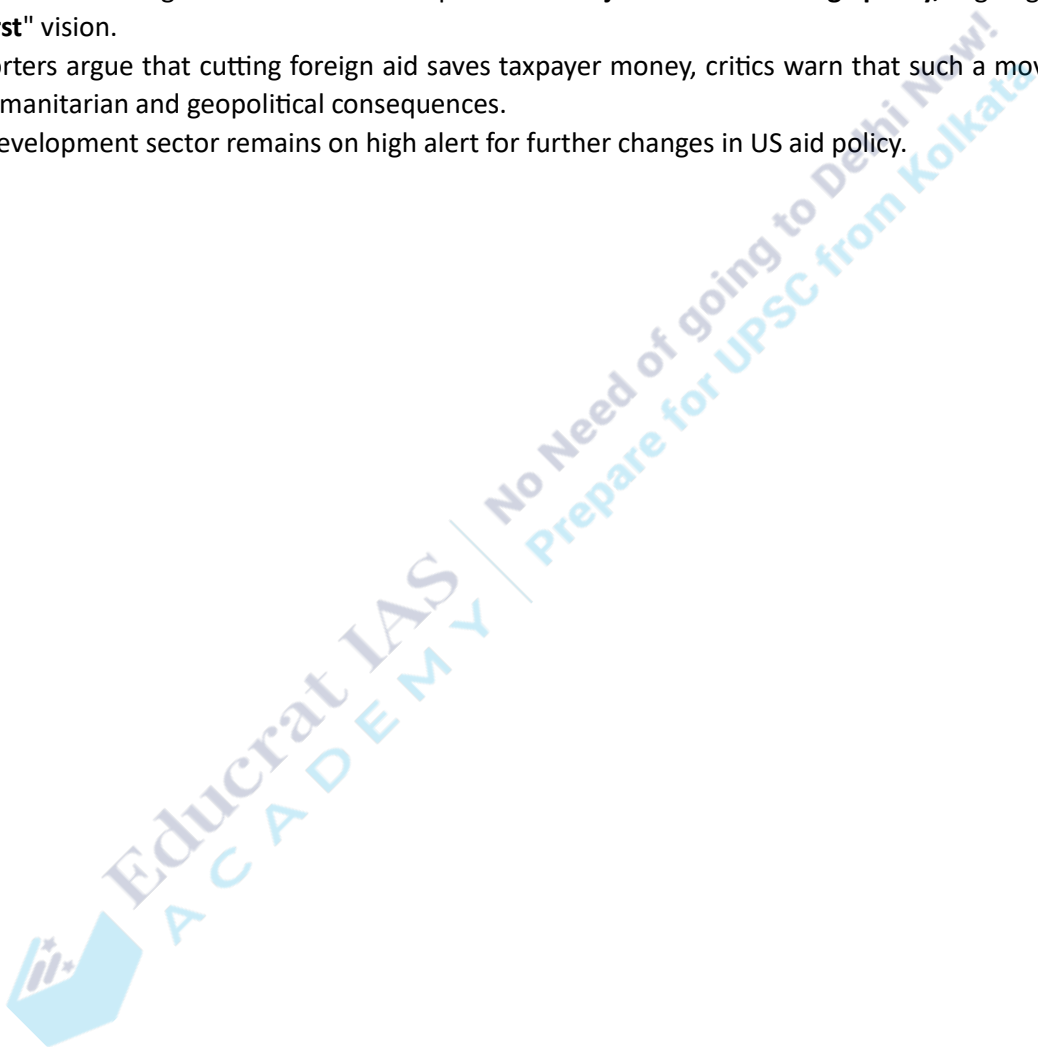
Global Impact of USAID's Closure:



- **Humanitarian crisis:** Cuts in funding may impact critical programs like **mine clearance, pandemic response, and prosthetic aid for war victims.**
- **Foreign policy concerns:** Critics argue the move could reduce US global influence and damage diplomatic relationships.
- **Security implications:** Funding disruptions could lead to instability in conflict zones where USAID plays a vital role.
- **Geopolitical shift:** A weakened US aid presence might allow **countries like China to expand** their influence through alternative development projects.

Conclusion:

- The proposed restructuring or closure of USAID represents **a major shift in US foreign policy**, aligning with Trump's "**America First**" vision.
- While supporters argue that cutting foreign aid saves taxpayer money, critics warn that such a move could have profound humanitarian and geopolitical consequences.
- The global development sector remains on high alert for further 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 released the **2nd edition of the Time Use Survey.**

What's in Today's Article?

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

Introduction:

- The Ministry of Statistics and Programme Implementation (MoSPI) recently released the **Time Use Survey (TUS) 2024**, highlighting significant trends in **how Indians allocate their time to various activities, including employment, caregiving, and leisure.**
 - The **National Statistics Office (NSO), MoSPI conducted the first all-India Time Use Survey during January – December 2019.**
 - The present TUS conducted during January – December 2024 is the second such All-India Survey.
- A key takeaway from the report is the **increase in women's participation in employment-related activities**, signalling a gradual shift from unpaid domestic work to paid jobs.
- This transformation is a crucial development in **India's labor market dynamics, reflecting economic and social changes.**

Key Findings of Time Use Survey 2024:

- **Rise in Workforce Participation**
 - The participation of women in employment-related activities has increased from **21.8% in 2019 to 25% in 2024.**
 - For men, the figure has risen from **70.9% to 75%.**
 - This data reflects an expanding economic role for **women, although the gender gap in labor participation remains substantial.**
- **Decline in Time Spent on Unpaid Domestic Work**
 - Women spent **305 minutes per day** on unpaid domestic services in 2024, compared to **315 minutes in 2019**, indicating a transition toward paid work.
 - Male members spent significantly less time on such tasks, averaging **88 minutes per day.**
- **Women's Role in Caregiving**
 - **41% of women aged 15-59** participated in caregiving activities, compared to only **21.4% of men** in the same age group.
 - Women spent **137 minutes per day** in caregiving, nearly double the **75 minutes spent by men.**
 - These figures highlight the continued burden of unpaid caregiving on women despite an increase in their economic participation.

Implications of the Changing Work Dynamics:

- **Economic Impact**
 - The shift of women from unpaid domestic duties to paid jobs has economic benefits, including:
 - **Higher household incomes:** Additional earnings from female members contribute to family well-being
 - **Enhanced productivity:** More women in the workforce can drive economic growth.
 - **Formalization of labor:** More women entering paid jobs can lead to increased labor formalization and social security benefits.



- **Social and Policy Implications**

- Despite progress, gender disparities in workforce participation persist. The findings highlight the need for:
- **Skill Development Programs:** To help women transition into better-paying jobs.
- **Flexible Work Policies:** Including remote work and part-time options to balance professional and domestic responsibilities.
- **Government Support:** Policies like **maternity benefits, affordable childcare, and financial incentives to encourage female workforce participation.**

Leisure and Cultural Activities:

- **People aged 6 and above** spent **171 minutes per day** on cultural, leisure, and mass-media activities.
- Men spent slightly more time on these activities (**177 minutes**) than women (**164 minutes**), reflecting the gendered division of time.

Education and Self-Care:

- **89.3% of children aged 6-14** participated in learning activities, spending around **413 minutes per day** on studies.
- **Self-care and maintenance** accounted for an average of **708 minutes per day** across all age groups.

Future Outlook and Recommendations:

- **Strengthening Skill Training:** Expanding vocational training programs for women 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 benefits, pension schemes, and workplace protections for female workers.
- **Workplace Inclusivity Initiatives:** **Promoting gender-sensitive policies in both urban and rural employment sectors.**

Conclusion:

The **Time Use Survey 2024** underscores a positive shift toward greater female workforce participation in India. While progress has been made, gender disparities remain, necessitating **policy interventions, skill development, and supportive work environments** to ensure that more women can transition from unpaid domestic work to meaningful employment.

A continued focus on gender equity in employment will play a crucial role in **India's economic growth and social progress.**

2. AI Has an Environmental Problem

Context

- **Artificial Intelligence (AI)** has become an **indispensable force in modern society**, revolutionising industries, economies, and daily life.
- With recent advancements in computing power and data availability, **AI adoption has surged, driving economic value at an unprecedented scale.**
- The **global AI market, currently valued at \$200 billion**, is projected to contribute up to \$15.7 trillion to the global economy by 2030.
- However, **while AI offers immense economic potential, its rapid expansion also raises critical concerns**, particularly regarding its environmental footprint.

AI's Environmental Impact Across Stages

- **Hardware Production and Infrastructure**



- **Raw Material Extraction and Manufacturing**
 - The manufacturing of **AI hardware requires rare earth metals like lithium, cobalt, and nickel**, which are mined under environmentally damaging conditions.
 - **Mining operations contribute to deforestation**, habitat destruction, and significant carbon emissions.
 - Additionally, **the extraction of these materials often involves unethical labour practices** in some regions.
- **Energy-Intensive Production**
 - The **fabrication of semiconductors** and other AI hardware **involves complex chemical processes and high-temperature treatments**, consuming vast amounts of energy.
 - The **semiconductor industry alone** accounts for a notable share of **global industrial emissions**.
- **E-Waste Crisis**
 - As AI-driven systems demand more computing power, **the lifecycle of AI hardware shortens**, contributing to a **growing electronic waste (e-waste) problem**.
 - **Many GPUs and TPUs become obsolete** within a few years, leading to discarded electronic components that contain **hazardous substances like lead, mercury, and cadmium**, which pollute the environment when not properly recycled.
- **Data Centre Operations: The Backbone of AI**
 - **Energy Consumption**
 - Data centres are **responsible for approximately 1% of global greenhouse gas emissions**, according to the International Energy Agency (IEA).
 - This **figure is expected to double by 2026** as AI applications become more widespread.
 - **AI models**, particularly generative AI models like ChatGPT and DeepSeek, **require significantly higher computing power** than traditional algorithms, **further escalating energy demand**.
 - **Water Usage for Cooling**
 - **AI data centres generate immense heat** due to their continuous operations, necessitating efficient cooling systems.
 - Many **large-scale data centres rely on water-based cooling systems**, which consume millions of litres of water annually.
 - This **exacerbates water scarcity in regions** where such facilities are located.
 - **Location-Based Carbon Footprint**
 - The environmental impact of data centres is **also influenced by their geographical location**.
 - Data centres in regions **powered by coal and fossil fuels have a much higher carbon footprint** than those situated in areas using renewable energy.
 - Companies that fail to strategically place their infrastructure contribute more to global emissions.
- **AI Model Life Cycle Emissions**
 - **Training AI Models**
 - Training state-of-the-art AI models is **an extremely energy-intensive process**.
 - For instance, **GPT-3's training process emitted approximately 552 tonnes of carbon dioxide equivalent (CO₂-e)**, comparable to the emissions from nearly 125 gasoline-powered cars over a year.
 - Advanced models like **GPT-4 require even more computational resources**, escalating their environmental impact.
 - **Inferencing and Continuous Operation**
 - Once AI models are deployed, they **require substantial computational power to process user queries** and make real-time predictions.
 - **This is known as inferencing**, which can sometimes consume 10–100 times more energy than earlier AI models.
 - Since these models run continuously on cloud servers, **their energy consumption compounds over time**.
 - **Data Storage and Retrieval**



- AI models **rely on massive datasets that require ongoing storage and retrieval**, further increasing energy usage.
- Maintaining these vast datasets **involves constant processing and updating, which contributes to sustained power consumption.**
- **Model Retirement and Re-training**
 - Unlike traditional software that can run for years with periodic updates, **AI models often require retraining as new data becomes available.**
 - **Each retraining cycle demands significant computational resources**, leading to recurring carbon emissions.

The Global Response to AI's Environmental Challenges

- As awareness of AI's environmental impact grows, **global discussions on sustainable AI practices have gained momentum.**
- At COP29, the **International Telecommunication Union emphasised the need for greener AI solutions**, urging businesses and governments to integrate sustainability into their AI strategies.
- **More than 190 countries have adopted ethical AI recommendations** that address environmental concerns, and legislative efforts in the European Union and the U.S. aim to curb AI's carbon footprint.
- However, despite these initiatives, **concrete policies remain scarce.**
- **Many national AI strategies primarily focus on economic growth** and technological innovation, often **overlooking the role of the private sector in reducing emissions.**

Strategies for Sustainable AI Development

- **Need to Strike a Balance**
 - Achieving a balance **between AI-driven innovation and environmental responsibility** requires a multi-faceted approach.
 - A key step in this direction is **investing in clean energy sources**. Companies can reduce AI's carbon footprint by transitioning to renewable energy and purchasing carbon credits to offset emissions.
 - Additionally, **locating data centres in regions with abundant renewable resources can help alleviate energy strain** and minimise environmental damage.
 - AI itself can contribute to sustainability by optimizing energy grids.
 - For instance, **Google's DeepMind has successfully applied machine learning to improve wind energy forecasting**, enabling better integration of wind power into the electricity grid.
- **Hardware Efficiency**
 - Hardware efficiency is another critical factor in reducing AI's environmental impact.
 - The **development of energy-efficient computing components** and regular maintenance of hardware **can significantly lower emissions.**
 - Moreover, **optimising AI models can lead to substantial energy savings.** Smaller, domain-specific models designed for particular applications require less computational power while delivering comparable results.
 - Research suggests that the **carbon footprint of large language models (LLMs) can be reduced by a factor of 100 to 1,000 through algorithmic optimisation**, specialized hardware, and energy-efficient cloud computing.
 - Businesses can also reduce resource consumption by **adapting pre-trained models** rather than training new models from scratch.
- **Transparency and Accountability**
 - Transparency and accountability are **essential to driving sustainability efforts.**
 - Organisations **must measure and disclose the environmental impact of their AI systems** to gain a comprehensive understanding of life cycle emissions.
 - **Establishing standardised frameworks for tracking and comparing emissions across the AI industry will promote consistency** and encourage companies to adopt greener practices.

Conclusion



- **Sustainability must be embedded into the core design of AI ecosystems** to ensure their long-term viability.
- While AI presents groundbreaking opportunities for economic growth and technological progress, **it is crucial to address the environmental costs associated with its expansion.**
- By investing in renewable energy, **optimising hardware and software efficiency, and developing transparency in emissions tracking, we can achieve a sustainable AI future.**

3. India's Industries Depend on Cheap Labor Over Innovation

What is the Current Working Condition of Workers in India?

1. **Long working hours:** Many factory workers, especially in Ludhiana, work 11-12 hours daily without breaks during high-demand periods.
2. **Low job security:** Only 21.7% of workers have regular salaried jobs, and half of them lack contracts, paid leave, or social security.
3. **High work hours:** ILO (2024) data shows Indian workers work 46.7 hours per week, compared to 38 hours in the U.S. and 36.6 hours in Japan.
4. **Rise of contract labor:** 56% of new factory workers since 2011-12 are contract workers, earning lower wages with no protection.

How Do Indian Industries Benefit from These Working Conditions?

1. Indian industries benefit by **keeping labor costs low instead of investing in technology and innovation.**
2. Big firms shift production to **small, unregistered enterprises, avoiding labor laws.** Over 70% of manufacturing workers are in such units.
3. **56% of new factory workers since 2011-12 are contract workers,** receiving lower wages and no labor protections.
4. Factory sector profits increased from 31.6% (2019-20) to 46.4% (2021-22) while wages stayed low.
5. Industries avoid modernization, limiting growth, as seen in **India's stagnant 3.1% global garment export share.**
6. These practices reduce costs in the short term but hurt long-term competitiveness.

What Challenges Do Small Firms Face?

1. **Delayed Payments:** Big firms delay payments to small businesses for several months after receiving supplies, causing financial distress.
2. **Low Prices for Parts:** Large companies refuse to increase payments for parts despite rising material and production costs.
3. **Lack of State Support:** Small businesses face inadequate access to bank credit and rising competition from cheaper imports.
4. **Overdependence on Cheap Labor:** 70% of India's 68 million manufacturing workers (2021-22) work in small, unregistered enterprises (each with fewer than 10 workers).
5. **Exploitative Relations with Large Firms:** Unlike Japan, where small and large firms cooperate, India's small firms face exploitative conditions that weaken them.

What Are the Long-Term Consequences?

1. Depending on **cheap labor hurts innovation and economic growth.** Even in new industries like IT, low wages slow progress.
2. Workers with low wages cannot buy much, which reduces demand in the domestic market.
3. Industries that focus only on short-term profits will struggle to grow in the long run.
4. **Indian businesses must modernize and invest in technology to remain competitive.**

4. What ails India's textile industry

Why in news?

India's textile industry is one of the largest globally, covering the entire value chain from cotton cultivation to apparel manufacturing. However, **it lags behind China, Vietnam, and Bangladesh in exports due to fragmented supply chains, higher costs, and complex regulations.**

Despite being a major producer of cotton and synthetic fibres, the industry has seen slow growth. Rising sustainability and compliance requirements are expected to further increase costs, particularly for smaller firms.

India's Textile Journey: From Fibre to Fabric

• Cotton Production and Employment

- India is the **second-largest cotton producer** globally, contributing **24% of global production.**
- Cotton farming involves around 60 lakh farmers, primarily in **Gujarat, Maharashtra, and Telangana.**
- The cotton textile value chain, from fibre processing to garment manufacturing, employs over 4.5 crore people.

• Man-Made Fibre (MMF) Industry

- India is also the **second-largest producer of MMF**, with Reliance Industries leading in polyester and Grasim Industries being the sole domestic producer of viscose.
- However, MMF consumption in India remains low at 3.1 kg per capita, compared to 12 kg in China and 22.5 kg in North America.
- Overall fibre consumption, including natural and synthetic fibres, is 5.5 kg per capita, below the global average of 11.2 kg.

• MSME Clusters and Specialisations

- Around 80% of India's textile value chain operates within MSME clusters, each specializing in different textiles:
 - **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 and Export Trends

- India's textile and apparel sector is a key economic driver, contributing **13% to industrial production, 12% to exports, and 2% to GDP.**
- However, manufacturing growth has slowed over the past decade.
- **Growth trends**
 - Between FY15 and FY19, the textile sector grew at a CAGR of 0.4%, while apparel grew at **7.7%.**
 - From FY20 to FY24, the industry contracted, with textiles shrinking by **1.8% annually** and apparel by **8.2%**, largely due to post-pandemic economic challenges.
- **Export Performance and Key Markets**
 - Despite a trade surplus, textile and apparel exports have seen sluggish growth.
 - In FY24, exports stood at \$34.1 billion, slightly up from \$33.4 billion in FY20.
 - Nearly 50% of exports were to the U.S. and EU, serving brands like JCPenney, Gap, and Decathlon.
- **Sector-Wise Export Trends**
 - **Garment and Apparel Exports** – Declined from \$15.5 billion in FY20 to \$14.5 billion in FY24.
 - **Cotton Textiles and Home Textiles** – Grew from \$10.2 billion in FY20 to \$12.3 billion in FY24, with key players like Welspun Living and Trident Ltd.
- **Challenges for MSMEs**
 - The slowdown has hit MSME clusters, especially in Tamil Nadu, due to **global and domestic economic headwinds, impacting production and exports.**

India's Textile Export Challenges

- **Lagging Behind Competitors**



- India trails China, Vietnam, and Bangladesh in textile exports due to **higher production costs and a fragmented supply chain**.
- In contrast, Vietnam exported \$40 billion worth of apparel in 2023, benefiting from vertically integrated supply chains that lower manufacturing costs.
- **Fragmented Cotton Supply Chain**
 - India's cotton supply chain is spread across multiple states, **increasing logistical costs and hindering large-scale production**.
 - The **lack of localisation makes production costlier compared to fibre-to-fashion firms in China and Vietnam**, which offer low-cost, high-quality, and adaptable exports.
- **Regulatory and Trade Barriers**
 - Competitor nations benefit from free trade agreements (FTAs) and **simpler customs procedures**, reducing regulatory costs.
 - In contrast, India's complex export procedures, requiring detailed accounting of every fabric, button, and zipper, increase compliance burdens for exporters.
- **High Raw Material Costs in MMF Sector**
 - India's man-made fibre (MMF) sector suffers from **high raw material costs**.
 - Quality control orders (QCOs) restrict imports of polyester and viscose fibres, forcing domestic yarn makers to rely on costlier local alternatives.

The Sustainability Challenge in India's Textile Industry

- **Growing Global Focus on Sustainability**
 - With global markets tightening compliance norms, Indian manufacturers must increase renewable energy use, improve recycling, and ensure stricter sourcing and traceability.
- **Rising Costs Due to Sustainable Sourcing**
 - A global shift towards sustainable textiles is increasing production costs.
 - The **EU, which accounts for 20% of India's textile exports, has implemented 16 new regulations from 2021 to 2024**, making it challenging for small enterprises to transition to environmentally friendly production.
- **The Fast Fashion Waste Crisis**
 - The textile recycling market in India is projected to reach \$400 million, while the global market could touch \$7.5 billion.
 - With fashion waste expected to hit 148 million tonnes by 2030, PM Modi highlighted the need for higher recycling efforts, as currently, less than 25% of textile waste is recycled.

5. Talent Shortage, Global challenge, India's opportunity

Context

- The **global labour market is undergoing a significant transformation**, and it is evident that the skills required in 2030 will be markedly different from those needed today.
- This **shift presents both a challenge and an opportunity for India**. While the world faces an impending shortage of skilled workers, India is uniquely positioned to leverage its workforce potential.
- However, **to fully capitalise on this opportunity, India must address various challenges**, including regulatory barriers, skill mismatches, and immigration restrictions.

An Overview of The Global Talent Shortage and India's Potential

- A recent study by **FICCI-KPMG, Global Mobility of Indian Workforce, predicts a global talent shortage of over 85.2 million people by 2030**, which could result in \$8.45 trillion in unrealised annual revenue.
- This underscores the **urgent need for nations to develop a future-ready workforce**.



- **India**, with its vast pool of young and skilled workers, **has a unique opportunity to fill this gap** and contribute significantly to the global economy.
- However, **realising this potential requires strategic interventions at multiple levels**, including government policies, international collaborations, and workforce training programs.

Key Geographic Regions and Sectoral Demands

- **GCC and Australia:** These regions have a **strong demand for workers in manufacturing and construction**, sectors that require large-scale labour mobility.
- **Europe:** As one of the oldest post-industrial societies, **Europe has a growing need for service-sector workers**, particularly in healthcare, due to its aging population.
- **Emerging Sectors:** Across all regions, **there is a rising demand for expertise in automation, artificial intelligence (AI), big data, predictive analytics**, the Internet of Things (IoT), blockchain, and sustainability.

Barriers to Workforce Mobility and Strategies to Enhance Workforce Mobility

- **Barriers to Workforce Mobility**
 - **Regulatory and Immigration Barriers** – Complex visa processes and stringent work permit regulations restrict skilled migration.
 - **Recruitment Malpractices and Trafficking** – Exploitative recruitment practices and human trafficking pose risks to migrant workers, a concern highlighted by Prime Minister Narendra Modi.
 - **Policy Barriers and Skill Mismatches** – Many Indian degrees, particularly in medicine, are not universally recognized, leading to underemployment or unemployment of skilled professionals.
 - **Language and Cultural Barriers** – Integration challenges, such as language proficiency and cultural adaptation, affect workforce productivity.
- **Strategies to Enhance Workforce Mobility**
 - **Bilateral Agreements and Free Trade Agreements (FTAs):** Agreements with GCC nations and other key markets aim to protect the rights of Indian workers and facilitate their smooth migration.
 - **Skill Development Programs:** Government initiatives focus on aligning workforce training with global market demands.
 - **Digital Platforms for Workforce Support:** Online recruitment systems are designed to prevent exploitation and protect migrant workers, especially in the GCC region.
 - **Sector-Specific Skill Training:** Training programs must be tailored to meet the specific demands of different geographic regions.
 - **Regulation of Recruitment Practices:** Stricter oversight of recruitment agencies is necessary to prevent worker exploitation.
 - **Recognition of Qualifications:** International collaborations should ensure mutual recognition of academic and professional qualifications.
 - **Public-Private Partnerships:** The private sector should play an active role in skill development and global employment facilitation.
 - **Circular Migration and Mobility:** Temporary work visas and rotational workforce models can help address labour shortages while maintaining demographic balance.

The Political Climate, India's Resilience and Economic Future and the Road to 'Viksit Bharat'

- **The Political Climate and India's Resilience**
 - The political climate regarding immigration policies is constantly evolving.
 - While Europe may tighten its regulations, **Australia remains more open to skilled migration**.
 - The **FICCI-KPMG study** highlights that the **Indian diaspora in Australia is one of the largest and fastest-growing**.
 - **Strict immigration policies mainly target illegal migration**, making it crucial for India to position its skilled workforce globally while ensuring legal compliance.



- Unlike some other migrant groups, **Indian workers generally face minimal hostility** in international labour markets.
- However, **India must continue efforts to curb illegal migration to maintain its positive global reputation** and safeguard its workers from exploitation.
- **India's Economic Future and the Road to 'Viksit Bharat'**
 - **India's ability to capitalise on global labour market** opportunities will significantly **influence its economic trajectory**.
 - Arvind Panagariya, **Chairman of the Sixteenth Finance Commission**, has projected that **India's GDP could reach between \$6.5 trillion and \$9 trillion by 2030**.
 - The **extent to which India taps into the \$8.45 trillion global economic opportunity** will determine how close it gets to the higher end of this projection.
 - By effectively addressing workforce mobility challenges and strategically positioning its skilled labour force in international markets, **India can not only contribute to the global economy but also realize its vision of Viksit Bharat, a developed India**.

Conclusion

- As the global labour market undergoes a transformation, **India stands at a crucial juncture**.
- With a rapidly growing workforce, **the country has a unique opportunity to fill the talent shortage projected for 2030**.
- However, **achieving this goal requires a coordinated effort involving government policies, skill development initiatives**, and international collaborations.
- **By addressing regulatory challenges**, streamlining workforce mobility, and leveraging its young and skilled population, **India can secure a significant share of the global labour market and drive its own economic growth in the process**.

6. Rising servicification of manufacturing makes wage growth comparisons tough

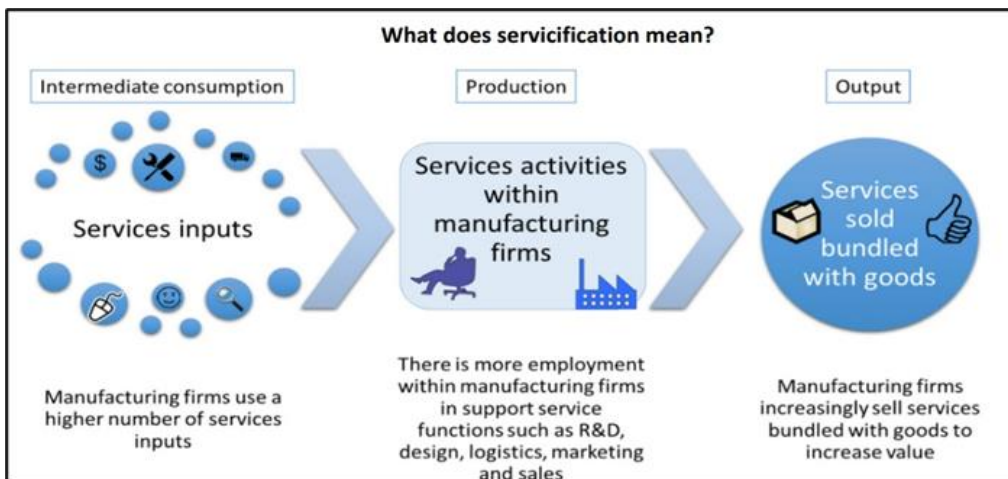
Why in news?

The **Economic Survey 2024-25 highlighted that while corporate profits have surged in recent years, wage growth has lagged**. However, the president of Confederation of Indian Industry (CII) argued that businesses are regularly increasing salaries.

He suggested that recent wage trends may not be directly comparable to the past due to the growing **servicification of manufacturing**, where firms increasingly integrate services with traditional manufacturing, altering employment structures and wage patterns.

Servicification of manufacturing

- Servification of manufacturing refers to the **increasing integration of services with traditional manufacturing processes**.
- It involves manufacturers offering value-added services such as **maintenance, consulting, customization, and digital solutions alongside physical products**.
- This shift is driven by changing consumer preferences, technological advancements, and competitive pressures.



- **Levels where servification takes place**
 - **Production Stage** – Incorporating automation, AI, and data analytics to enhance efficiency.
 - **Product Enhancement** – Bundling services like installation, maintenance, and software updates with products.
 - **Business Model Transformation** – Moving from selling products to offering solutions (e.g., subscription-based models, leasing instead of selling machinery).
- **Benefits of Servification:**
 - **Increased Revenue** – Generates new income streams beyond product sales.
 - **Customer Retention** – Enhances customer engagement and loyalty through ongoing services.
 - **Differentiation** – Provides a competitive edge in markets dominated by commoditized products.
 - **Sustainability** – Encourages circular economy practices like remanufacturing and extended product lifecycles.
- **Challenges of Servification**
 - **High Initial Investment** – Requires technological and skill upgradation.
 - **Complexity in Execution** – Managing both manufacturing and service aspects can be challenging.
 - **Workforce Transformation** – Employees need new skills, such as data analysis and customer service.
 - **Market Adaptation** – Customers may be resistant to paying for added services initially.

Economic Survey Flags Wage Growth Concerns

- The Economic Survey 2024-25 highlighted that while **corporate profits have surged, wage growth has slowed, potentially dampening demand and economic growth.**
- It noted that revenue for 4,000 listed firms grew by 6% in 2023-24, while corporate profits rose by 22.3%, but employment expanded by just 1.5%.
- Wage growth for employees and contract workers has not kept pace with inflation, raising concerns about weakening consumer demand.

Industry Perspective on Wage Trends

- Confederation of Indian Industry (CII) president countered that businesses are regularly revising wages based on inflation and industry benchmarks to retain talent.
- However, he argued that wage comparisons with the past may be misleading due to the increasing servification of manufacturing, where firms outsource various functions to specialized service providers instead of employing in-house staff.
- **Impact of Servification on Employment**
 - Manufacturing firms now rely more on external agencies for non-core functions like **utility management and logistics.**
 - This shift leads to structural changes in employment patterns, as many workers are now employed by service providers rather than manufacturers directly, making traditional wage comparisons less relevant.

Call for Balanced Growth

- There is an urgent need to balance profitability with wage growth, cautioning that without **higher wages, consumer demand may weaken, affecting long-term growth.**
- The Economic Survey echoed this, stressing that **sustained economic expansion requires stronger employment incomes,** which fuel consumption and investment.

7. The Silent Crisis of Rat-Hole Mining

Context

- Illegal mining has emerged as a **persistent and hazardous problem in Assam and Meghalaya,** leading to devastating consequences for both human lives and the environment.
- The **recent tragedy in Umrangso, Assam,** where nine labourers were trapped in a flooded mine, is yet another example of the ongoing crisis.
- Despite repeated accidents and legal interventions, **illegal mining continues unabated, largely due to weak enforcement,** political and economic interests, and inadequate policy reforms.

The Persistence of Illegal Mining

- **The Historical Roots**
 - The proliferation of illegal coal mining in Assam and Meghalaya can be **traced back to the 1980s** when industrial demand from West Bengal and Bangladesh led to the expansion of small-scale mining operations.
 - The region's **difficult terrain made mechanised extraction challenging,** prompting the widespread adoption of rat-hole mining, a dangerous technique involving narrow tunnels that put miners at significant risk.
 - **Two forms of rat-hole mining prevail:** side-cutting along hill slopes and box-cutting, where pits are dug up to 400 feet deep and coal is extracted horizontally.
- **Influence of Powerful Coal Mafias**
 - Despite a ban imposed by the National Green Tribunal (NGT) in 2014, upheld by the Supreme Court in 2019, **illegal mining continues under the influence of powerful coal mafias** and bureaucrats.
 - **Migrant labourers,** many trapped in cycles of debt and bonded labour, are **lured into these hazardous jobs** by exploitative labour agents known as 'Sardars.'
 - Disturbingly, reports indicate that **children are trafficked into these mines** due to their small stature, which allows them to navigate the narrow tunnels.
- **Legal and Administrative Challenges**
 - Illegal mining persists is the **failure of state authorities to enforce existing laws.**
 - While the **Meghalaya government has sought to exempt itself** from national mining regulations **under Schedule 6** of the Constitution, this effort remains unsuccessful.
 - The **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)** obligates states like Meghalaya and Assam to prevent illegal mining, but enforcement remains lax.
 - Moreover, political and economic interests play a crucial role in sustaining illegal mining.
 - **Coal mining generates substantial revenue,** and local politicians often have stakes in these operations, leading to selective enforcement or outright neglect of legal provisions.
 - **Whistleblowers and activists** who attempt to expose these violations **face threats,** further weakening accountability mechanisms.

Consequences of Illegal Mining: Environmental and Human Costs

- The consequences of illegal mining are **severe, affecting both human lives and the environment.**
- Accidents like the one in Umrangso are common, **with at least 30 miners losing their lives** in Meghalaya over the past five years due to similar incidents.
- The hazardous working conditions of rat-hole mines **expose labourers to fatal risks,** with many deaths going unreported.



- **Environmentally, illegal mining has caused severe degradation.** The unregulated extraction of coal has led to deforestation, water contamination, and soil erosion.
- The **abandoned mine openings**, estimated to be around 26,000, **pose ongoing risks, serving as potential death traps** for both miners and wildlife.

The Way Forward: The Need for a Multi-Faceted Approach

- **Stricter Legal Enforcement**
 - The **MMDR Act must be amended to explicitly criminalise rat-hole mining**, with harsher penalties under Section 21.
 - Additionally, states should implement localized frameworks under Section 23C to ensure tailored enforcement mechanisms.
- **Alternative Livelihoods**
 - The reliance on illegal mining stems from economic necessity.
 - Promoting alternative employment opportunities, such as **eco-tourism and sustainable forestry**, can **reduce dependence on coal mining** and provide safer, legal sources of income.
- **Technological Solutions**
 - Advanced monitoring techniques, **such as satellite-based surveillance**, can help track illegal mining activities.
 - The **Ministry of Mines' Mining Surveillance System**, which has been successful in Karnataka, **could be implemented in Assam and Meghalaya** to enhance enforcement.
- **Community Involvement**
 - **Strengthening local governance by enforcing the Forest Rights Act, 2006**, and ensuring community consent before granting mining permits can help hold mining operations accountable.
 - **Empowering indigenous communities** in decision-making processes can lead to more sustainable resource management.

Conclusion

- The **Gauhati High Court's suo motu cognizance of the Assam mining tragedy offers a renewed opportunity** for meaningful reform.
- However, **judicial interventions alone will not be enough unless proactive measures are taken to enforce existing laws**, promote alternative livelihoods, and leverage technology to curb illegal mining.
- The **continued failure of Assam and Meghalaya to prevent such activities** not only constitutes administrative negligence but also **violates the fundamental right to life enshrined in Article 21 of the Constitution**.

8. Gross Domestic Knowledge Product

Why in news?

The government is reviving its 2021 plan to supplement GDP with a new metric, the Gross Domestic Knowledge Product (GDGP), to measure the impact of knowledge on economic and social life.

Recently, the **Ministry of Statistics and Programme Implementation (MoSPI) held a session to discuss the conceptual framework**.

GDGP would better reflect the contributions of innovation, intellectual assets, and knowledge-driven sectors to India's economic growth.

About Gross Domestic Knowledge Product (GDGP)

- The GDGP is a proposed metric to supplement Gross Domestic Product (GDP) by capturing the contribution of **knowledge-driven sectors, intellectual assets, and innovation** to the economy.
- Unlike GDP, which primarily measures economic output through production and consumption, GDGP aims to assess the impact of knowledge on economic and social development.



Need for GDKP in India

- The government recognizes that in an era of rapid technological advancements and digital transformation, traditional economic indicators may not fully reflect the value generated by **intellectual capital, research, and innovation**.
- **Capturing the Knowledge Economy**
 - India is experiencing growth in **research, patents, software development, AI, digital services, and intellectual property**.
 - These knowledge-driven sectors significantly contribute to economic progress but are not fully accounted for in GDP measurements.
- **Beyond Traditional Economic Indicators**
 - **GDP focuses on tangible goods** and services but does not adequately reflect knowledge creation, education, and digital transformation.
 - A more holistic metric is required to understand how knowledge impacts economic and social well-being.
- **Aligning with Global Trends**
 - Many advanced economies are working on alternative indicators that measure **intangible assets, digital innovation, and intellectual capital**.
 - India aims to develop a framework that aligns with these international efforts.
- **Policy and Investment Decisions**
 - A well-defined GDKP could help the government formulate better policies for sectors like **education, research, technology, and entrepreneurship**.
 - It could guide investment in knowledge infrastructure, such as **R&D, digital connectivity, and skill development**.

Capturing the impact of knowledge on economic and social life

- Currently, Intellectual Property Products (IPP) are recorded under Gross Fixed Capital Formation (GFCF) in the GDP dataset.
 - GFCF is the total value of assets acquired for production purposes, minus the value of assets disposed of. It's also known as investment.
- **Satellite Account for Knowledge Economy**
 - Currently, discussions are underway to explore the feasibility of a **satellite account** to measure the knowledge base of the economy.
 - MoSPI has prior experience with **tourism, culture, ocean, and blue economy satellite accounts**.
 - However, a framework for capturing the knowledge economy is lacking.
 - A **technical committee** will be formed to evaluate and guide the proposal.
- **NITI Aayog's GDKP Proposal**
 - The **GDKP was initially proposed in 2021 by NITI Aayog, but the National Statistical Commission found that it lacked a clear methodology for data collection and computation**.
 - It noted the **need for identification of knowledge parameters and adjustments to ensure accurate reflection of outcomes**.
 - However, due to various complexities, after a review by NITI Aayog in August 2021, the project was shelved.

Challenges in Implementing GDKP

- **Data Collection Issues**
 - Unlike GDP, which relies on well-established economic indicators, GDKP requires new methodologies to measure knowledge output.
 - Data on **intellectual property, research output, digital innovation, and human capital development is fragmented and difficult to quantify**.
- **Integration with GDP**
 - Since some aspects of knowledge contribution are already captured in GDP (e.g., Intellectual Property under Gross Fixed Capital Formation), integrating GDKP with GDP without duplication is a challenge.

- **Subjectivity in Measurement**

- The National Statistical Commission earlier noted that defining and quantifying knowledge parameters is highly subjective and requires extensive refinement.
- MoSPI has acknowledged the need for a **proper methodology to ensure accuracy and avoid perception-based estimations.**

Conclusion

India's move to explore GDGP reflects its ambition to shift from a **production-based economic model to a knowledge-driven one.**

While challenges exist in defining and measuring knowledge contributions, a **well-structured GDGP could provide valuable insights for policymaking, investment, and long-term economic planning** in an increasingly digital and innovation-led economy.

9. Paradigm Shift in India's Science Policy- From State Control to Private Innovation

Context:

- India has historically placed **high importance on science and technology.** Initially, state-led institutions dominated the landscape.
- **Private organisations**, such as **Tata Institute of Fundamental Research (TIFR)** or **Bhabha Atomic Research Centre (BARC)**, were brought under the fold of the government, yielding successes like the 1974 nuclear test.
- Over time, there has been a **shift towards a more comprehensive approach**, incorporating **private firms and universities** into the innovation ecosystem.

The Need for Intellectual Capacity in Private Firms:

- **Innovation** requires intellectual capabilities in people and firms, not just in government organizations.
- Comprehensive national power and GDP growth depend on **private sector involvement in research and development (R&D).**
- **Examples** from the US and France illustrate successful private sector integration into public-funded research.

Lessons from Global Models:

- **United States:**
 - NASA contracts **80% of its budget to private firms and universities.**
 - The **Jet Propulsion Laboratory (JPL)** was created at **Caltech** and later funded by NASA.
- **China:** Private AI research teams, like **DeepSeek**, emerged from algorithmic trading backgrounds, demonstrating the spillover effect of private R&D.
- **France:** Defence research is primarily conducted in private defence firms with government funding.

India's Shift Towards Private Sector-Led Innovation:

- **Policy advocacy:**
 - A December 2024 paper argued for **taxpayer-funded R&D in private firms** and universities.
 - **Emphasized risk management** through contracting research to multiple firms.
- **Government initiatives:**
 - **Anusandhan National Research Foundation (ANRF):** Allocating Rs 2,800 crore annually to private R&D initiatives.
 - **Budget 2024-25:** Rs 20,000 crore allocated to private sector-driven research and innovation.
 - **ISRO's new approach:** Contracting private firms for launch vehicles to enhance global competitiveness.
- **Ministry of Electronics and Information Technology (MEITY) initiative:**
 - Allocated 18,693 Graphics Processing Units (GPUs) for AI research.
 - Private IT infrastructure firms to operate GPUs, making them available to researchers at \$1 per hour.



- Shift from state-owned research equipment to a **'buy, not make'** strategy.

Challenges in Implementation:

- Unlike procurement of tangible goods, R&D funding requires **adaptive auditing mechanisms**.
- **Need for legal reforms**, strategic public finance planning, and institutional restructuring.
- **Balancing risk and accountability** in contracting private firms for scientific research.

Conclusion:

- **2025** is poised to be a **turning point** in India's science policy.
- The country is embracing the idea of **shifting public money into private universities and firms** that produce cutting-edge research. The taxpayer gets more value for their money as a result.
- When a private firm is working in an area, it will try to do the research well, because it also has a **direct interest in the knowledge sought to be produced**.
- However, the challenge lies in developing **effective implementation frameworks** to maximize innovation and societal gains.

10. The Kind of Jobs Needed for the 'Viksit Bharat' Goal

Context

- The **Union Budget plays a crucial role in shaping the trajectory of India's economy**, particularly in job creation.
- While short-term measures such as tax relief can stimulate consumer demand, **long-term structural reforms are necessary to ensure sustained employment growth** and real wage increases.
- The **2024 Budget introduced Employment Linked Incentives (ELI) under the Prime Minister's five-scheme initiative**, aiming to generate over four crore jobs in five years.
- However, **to realise the vision of a Viksit Bharat, it is imperative to deliberate on the kind of jobs that need to be created**.

Essential Categories of Employment That India Must Focus On

- **Climate-Resilient Jobs**
 - Climate change is an **urgent and escalating concern**.
 - **In 2019, India ranked as the seventh most-affected country by climate change**, suffering a \$159 billion income loss in 2021.
 - The **Reserve Bank of India (RBI) estimates that adaptation costs will reach nearly \$1 trillion by 2030**.
 - The **impact of climate change** on agriculture, labour productivity, and livelihoods **necessitates massive investments in rural and urban adaptation strategies**.
- **AI-Resilient Jobs**
 - The **rapid advancement of Artificial Intelligence (AI) poses a significant challenge to employment**, particularly in the IT and business services sectors, which currently account for over 70% of India's service exports.
 - According to McKinsey Global Institute, **50% of automation adoption in India could take place within the next decade**.
 - **Technologies such as metaGPT, AI-powered coding, and chatbot-driven customer service** are already replacing human jobs, **raising concerns about employment sustainability**.
- **Aspiration-Centric Jobs**
 - India's youth, particularly in rural areas, face a paradox.
 - **While exposure to digital media and startup culture has broadened their aspirations, their foundational education, particularly in English and technical skills, remains weak**.
 - **Many still rely on government jobs** and coaching institutes to secure employment, reflecting a deeper insecurity rooted in their socio-economic backgrounds.



Necessary Measures for India to Focus on Essential Categories of Employment

- **A Response to Environmental and Economic Challenges**
 - To address climate related challenges, **job creation must align with sustainability goals.**
 - The **government can introduce large-scale programs** that create employment while promoting environmental resilience.
 - For example, **state-subsidised e-rickshaws could be provided in six lakh villages, generating two million jobs,** particularly for women, while improving last-mile mobility.
 - Similarly, **investments in compressed biogas plants can bridge the gap between the current 82 plants and the ambitious target of 5,000 set in 2018.**
 - Additionally, **accelerating the 500GW non-fossil energy capacity target can generate over one million jobs,** particularly in decentralized and rooftop solar, which is seven times more labour-intensive than conventional energy projects.
 - **These initiatives not only enhance employment but also contribute to India's net-zero goals for 2070.**
- **Safeguarding Employment in the Age of Automation**
 - To counteract the effects of AI, **India must focus on AI-resilient jobs that prioritise human creativity and physical engagement.**
 - One avenue is **expanding investment in education and healthcare,** addressing the shortage of teachers and healthcare professionals across states.
 - Similarly, **enhancing support for the National Rural Livelihood Mission (NRLM) can empower rural artisans, farmers, and craftsperson** by connecting them with global and urban markets.
 - **These initiatives not only create sustainable employment but also safeguard traditional industries** from AI-driven disruptions.
- **Meeting the Needs of India's Ambitious Youth**
 - Job creation must align with youth aspirations.
 - One effective strategy is **rapid infrastructure development,** such as constructing **70,000 integrated pack-houses** to address the existing 95% infrastructure gap in agricultural supply chains, generating over two million jobs.
 - Additionally, **boosting local manufacturing of agri-inputs and promoting high-value exports** can create sustainable off-farm employment opportunities.
 - Rebranding rural industries and leveraging digital platforms can also make these jobs more attractive.
 - For example, accelerating the National Mission on Edible Oils – Oilseeds could **reduce India's 57% import dependence on edible oils** while revitalizing rural oilseed processing.
 - This initiative, coupled with greater use of technology and social media for marketing, can turn traditional rural jobs into aspirational career paths.
 - Moreover, fostering **public-private partnerships** in large-scale industries can provide a structured employment ecosystem, addressing the frustrations of youth facing examination leaks and low recruitment vacancies.

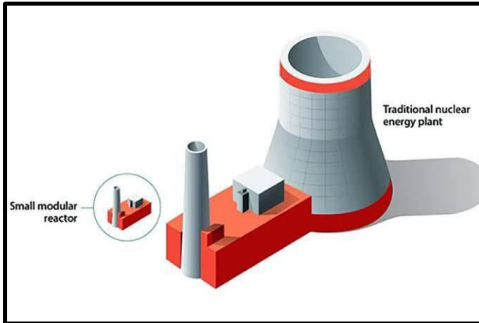
Conclusion

- While tax relief and short-term policies can provide temporary economic boosts, **India needs long-term structural reforms to sustain employment and wage growth.**
- The **government must focus on climate-resilient jobs that support sustainability, AI-resilient jobs that protect human creativity, and aspiration-centric jobs** that align with youth ambitions.
- **By strategically investing in these areas, India can not only mitigate the risks of climate change and automation but also unlock the full potential of its workforce,** paving the way for a truly developed Viksit Bharat.

PRELIMS BOOSTER AND PIB COMPILATION (THE HINDU & INDIAN EXPRESS)

3 FEBRUARY

1. Small Modular Reactors



Small Modular Reactors (SMRs) are designed to be **smaller, more flexible, and easier to build than traditional nuclear reactors**. They aim to **produce less than 300 MW of power**. They are cheaper to build and safeguard compared to conventional reactors. Parts can be pre-manufactured and assembled on-site, reducing construction complexity. The government announced a **₹20,000 crore “Nuclear Energy Mission” to study SMRs and operationalize five indigenous units by 2033**. SMRs are still experimental and require substantial capital investments without guaranteed profitability. First-generation SMRs use **low-grade uranium, necessitating frequent refueling, which is less desirable**. SMRs often require high-assay low-enriched uranium (HALEU), enriched to 5-20%, as nuclear fuel.

2. Green Cardamom's New Relatives



Six new species closely related to **green cardamom (Elettaria cardamomum)** have been identified, two of which are newly described species (**Elettaria jafrensis and Elettaria tulipifera**) from Kerala's Western Ghats. The genus now includes seven species: **E. cardamomum, E. ensal, E. floribunda, E. involucrata, E. rufescens, E. jafrensis, and E. tulipifera**. Four species

were earlier classified under the genus *Alpinia*. The genus name "**Elettaria**" originates from the

Malayalam word “ellettari,” mentioned in Hendrik van Rheede’s 17th-century botanical treatise Hortus Malabaricus.

3. Uttarakhand UCC on Live-in Relationships



Under the Uniform Civil Code (UCC), **live-in relationships are defined as a heterosexual partnership resembling a household. Only Uttarakhand residents, including those residing outside the state, can register their live-in relationships**. A 16-page form must be filled, and couples must provide a statement of their relationship within 30 days of entering it. **A certificate from a religious leader certifying marriage eligibility is mandatory**. Registered live-in relationships grant certain **legal protections, such as maintenance rights for women if deserted. Legitimacy of children born in these relationships is upheld under the law**. Failure to register within 30 days may result in fines (up to ₹25,000) or imprisonment (up to 6 months).

4 FEBRUARY

1. Iran’s New Missiles



Iran recently unveiled two missiles, named **Etemad and Ghadr-380**.

Etemad Missile:

It is a **new ballistic missile built by the Iranian Defence Ministry**. Dubbed Etemad, or "**trust**" in Persian, it has a maximum range of 1,700 kilometres. With a length of 16 meters and a diameter of 1.25 meters, the missile is equipped with a precision-guided warhead.

Ghadr-380:

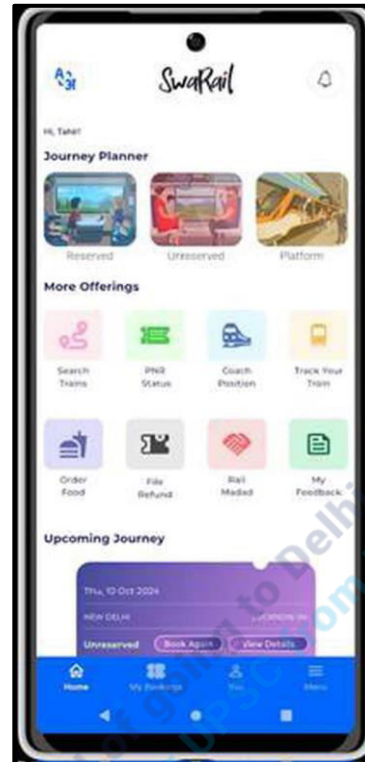
It is an **anti-warship cruise missile** developed by Iran. It has a range of over 1,000 kilometers. It has **anti-jamming capability**.

2. Deepor Beel:



It is a **perennial freshwater lake located on the outskirts of Guwahati**, in the Kamrup district of Assam. It lies in a former channel of the Brahmaputra. It is **the only major stormwater storage basin for the city of Guwahati**. It was **recognised as a Ramsar Site in 2002** and as an Important Bird and Biodiversity Area (IBA) in 2004. It is the **only Ramsar site in Assam**. The Rani and Garbhanga hills, the habitat of the Asiatic elephants on the southern side of the beel, are part of this ecosystem.

3. SwaRail:



It integrates various railway services, eliminating the **need for multiple applications and reducing space consumption on user devices**. A key focus of the App is enhancing user experience with a seamless and clean user interface (UI).

The App caters to a wide range of user needs, including: **Reserved and Unreserved ticket bookings, Parcel and Freight Enquiries, Train and PNR status enquiries, Food Orders on Trains, Rail Madad for Complaint Management, etc.** It has been developed by the **Centre for Railway Information Systems (CRIS)**.

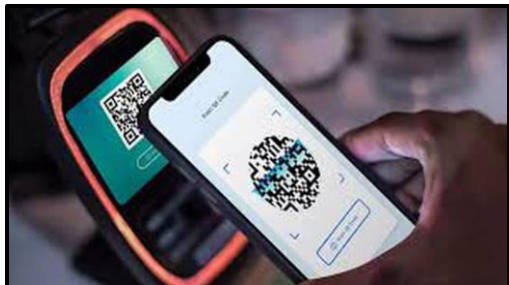
4. World Wetlands Day:



It is **celebrated annually on February 2**. This date marks the **adoption of the Ramsar Convention in 1971**. It aims to spread awareness about conserving the wetlands, one of the most critical ecosystems on the planet. This year, the theme **was "Protecting Wetlands for Our Common Future"**. India has been a party to

the Convention since 1982, designating 89 Ramsar sites.

5. RBI's Digital Payments Index:



It is a **first-of-its kind index to measure the spread of digital payments across the country**. It has been constructed by the RBI. It was **launched in January 2021**.

Base Year: It has been constructed with **March 2018 as the base period**, i.e., the DPI score for March 2018 is set at 100. The DPI index comprises five broad parameters that enable the measurement of deepening and penetration of digital payments in the country over different time periods.

The parameters include:

- **Payment enablers (25 percent weightage in the index)**
- **Payment Infrastructure Demand-side factors (10 percent)**
- **Payment Infrastructure Supply-side factors (15 per cent)**
- **Payment performance (45 percent)**
- **Consumer centricity (5 per cent)**

Each of the parameters has sub-parameters, which, in turn, consist of various measurable indicators.

6. About Cardamom

Cardamom is one of the world's most exotic spices – along with Saffron and Vanilla. It belongs to the same botanical family as **ginger and turmeric (Zingiberaceae)**. It is also **one of the world's oldest spices** – cultivated for more than 4000 years. Evergreen forests of Western Ghats of South India are considered as the centre origin of cardamom. **Guatemala is the world's largest producer of cardamom, India is the second largest producer**. Top Producing States: **Kerala (56.71%), Karnataka (35.91%) and Tamil Nadu (7.31%)**.

7. About Samudrayan Mission

Launched in **2021**, it is **India's first manned ocean mission to explore the deep ocean**. It is a project of the **Ministry of Earth Sciences (MoES) under the Deep Ocean Mission**. The technology is being developed by the National Institute of Ocean Technology (NIOT). **NIOT is an autonomous institute under MoES**, has developed a 6000m depth-rated Remotely Operated Vehicle (ROV) 'Matsya 6000'. **The mission aims to send three people to a depth of 6,000 meters in a submersible called the MATSYA 6000**. The submersible will have an operational endurance of 12 hours, which is extendable up to 96 hours in the event of an emergency.

8. About: Democratic Republic of Congo (DRC)

It is the **second-largest country in Africa after Algeria and also Africa's most ethnically diverse**, with over 200 ethnic groups. It shares borders with nine countries: Angola, Burundi, Central African Republic, Republic of the Congo, Rwanda, Sudan, Tanzania, Uganda, and Zambia, extending from Eastern Africa to the Atlantic Ocean. **Kinshasa is the capital and largest city of the DRC, situated on the banks of the Congo River**.

9. About the Point Nemo

Point Nemo, located in the **South Pacific and also known as the Oceanic Pole of Inaccessibility**, is one of the most remote places on Earth, situated approximately 2,688 kilometers from the nearest landmass. **Due to its extreme isolation, the closest human presence is often aboard the International Space Station (ISS) orbiting above**. Additionally, Point Nemo serves as a **spacecraft cemetery**, where space agencies deliberately direct decommissioned satellites and space stations to safely re-enter Earth's atmosphere and fall into the ocean, minimizing risks to populated areas.

10. Navika Sagar Parikrama II

Covering more than 21,600 nautical miles (approx 40,000 km), it will unfold in five legs with stopovers at four ports for replenishment and maintenance.

The five legs are:

- 1. Goa to Fremantle, Australia**
- 2. Fremantle to Lyttleton, New Zealand**
- 3. Lyttleton to Port Stanley, Falkland**
- 4. Port Stanley to Cape Town, S Africa**
- 5. Cape Town to Goa.**

5 FEBRUARY

1. North Sea:



It is a relatively shallow and enclosed sea located in Northwestern Europe. It is **considered to be a marginal sea of the Atlantic Ocean**. It connects to the Atlantic Ocean via the Norwegian Sea in the north and the English Channel in the south. It **connects to the Baltic Sea in the east via the Kattegat and Skagerrak straits**. **Bordering Countries:** United Kingdom, Norway, Denmark, Germany, the Netherlands, Belgium and France. It also hosts two of the world's largest ports (Hamburg and Rotterdam). It is one of the **most important fishing grounds globally**.

2. Gyan Bharatam Mission



The **Union Budget 2025-26** announced the **Gyan Bharatam Mission**, under which one crore manuscripts will be conserved and documented. It is a **special mission for the survey, documentation, and conservation of India's manuscript heritage lying with academic institutions, museums, libraries, and private collectors**. A key component of the Gyan Bharatam Mission is the **national digital repository of the Indian knowledge system**. It will serve as a platform for knowledge sharing. It will help in **digitising and centralising India's traditional knowledge**. It will be accessible to researchers, students, and institutions worldwide.

3. What is a Manuscript?

A manuscript is a **handwritten composition on paper, bark, cloth, metal, palm leaf, or any other material**

dating back at least 75 years that has significant scientific, historical and aesthetic value. **Lithographs and printed volumes are not manuscripts. Manuscripts are distinct from historical records such as epigraphs on rocks, farmans, and revenue records, which provide direct information on events or processes in history. Manuscripts have knowledge content.**

4. Kolleru Lake:



It is a **large, natural, shallow, freshwater lake located in northeastern Andhra Pradesh**. It lies between the Krishna and Godavari deltas near the city of Eluru. The **lake serves as a natural flood-balancing reservoir for these two rivers**. It is the **largest shallow freshwater lake in Asia**. The lake drains into the Bay of Bengal through the Upputeru river. **Kolleru Lake falls on the migratory route called the Central Asian Flyway (CAF)**.

5. Bandhavgarh Tiger Reserve:



It is nestled in the Satpura and Vindhya mountain ranges in the Umaria district of Madhya Pradesh. The name "**Bandhavgarh**" is derived from the ancient **Bandhavgarh Fort**, which sits atop a hill in the park. According to legend, **the fort was gifted by Lord Rama to his brother Lakshmana, hence the name "Bandhavgarh" (Brother's Fort)**. It is known to have one of the highest densities of tigers in the world.

6. Dhimsa Dance

Dimsa is a popular dance performed by tribes, including **Bagata, Valmiki, Poraja, Khond, Gadaba, Kondadora, Mukadora, Kotia** in Andhra Pradesh. It

represents the unity and cultural heritage of the tribal communities.

Themes: The dance variants are based on themes like mythology, folktales, economic activities, kinship, and marital life.

Music and Instruments: Music is essential to the dance, with instruments like dappu, tudumu, mori, kidgi, gilka, and jodukommulu (now almost out of use) played by men.

Performance: It is performed during festivals, marriages, and religious occasions, with a strong presence during Chaitrapurab (Eetela Panduga) in the agency area of ASR District. Both men and women can dance together without hesitation, and while songs are not mandatory, music plays a vital role.

7. About Guru-Shishya Parampara Scheme

It is being implemented by The Ministry of Culture implements the “Financial Assistance for Promotion of Guru-Shishya Parampara (Repertory Grant)” It provides financial assistance to cultural organizations engaged in performing arts (music, dance, theatre, folk art, etc.) for training artists (shishyas) under the guidance of a Guru.

Eligibility: Cultural organizations across the country are eligible to apply, provided they follow the Guru-Shishya Parampara.

Target Group: The scheme supports shishyas aged 3 years and above in dance, music, theatre, and traditional art forms.

Financial Assistance: The scheme offers financial support of Rs. 15,000 per month for each Guru/Director. A maximum of 18 Shishyas in theatre and 10 Shishyas in music and dance can receive assistance under each Guru.

Objective: The goal is to ensure regular training of shishyas by their respective Gurus, following the traditional Guru-Shishya Parampara

8. About Caribbean Sea

The Caribbean Sea is a part of the Atlantic Ocean, located southeast of the Gulf of Mexico and north of South America. It is bounded by the Greater Antilles (Cuba, Jamaica, Hispaniola, Puerto Rico) to the north, the Lesser Antilles to the east, and the coastlines of Central and South America to the south and west. It is a major maritime route connecting North and South America, Europe, and Asia. It is home to one of the world's largest coral reef systems, including the

Mesoamerican Barrier Reef (2nd largest after the Great Barrier Reef)

9. About Makhana (Black Diamond)

Common Name: Fox nut

Botanical Features: Recognized for its violet and white flowers. Has large, round, and prickly leaves, often exceeding one meter in diameter.

Nutritional & Economic Importance: Considered a superfood, rich in carbohydrates, protein, and minerals. Widely used in medicine, healthcare, and nutrition.

Mithila Makhana received the Geographical Indication (GI) tag in 2022.

Cultivation: Cultivated across South and East Asia, with Bihar contributing nearly 90% of global production.

6 FEBRUARY

1. Indrayani River:



It is a **103.5 kilometres long river located in Maharashtra**. It originates from the Western Ghats, near the hill station of Lonavala. It is a **rain-fed river and flows through Pune district before merging into the Bhima River**, which is a tributary of the Krishna River. The Indrayani also passes through the industrial town of Pimpri-Chinchwad and plays a role in irrigation and local agriculture. Valvan Dam is a gravity dam on the Indrayani river near Lonavla.

2. Gambusia affinis (Mosquitofish) and Poecilia reticulata (Guppy)



Recently, the **National Green Tribunal** has asked a **response from the Central government on the use of *Gambusia affinis* (Mosquitofish) and *Poecilia reticulata* (Guppy)** as biological mosquito control agents. ***Gambusia affinis* is known as mosquito fish, and is widely used as a biological agent for controlling mosquito larvae.** It is native to the waters of the south-eastern United States. The **International Union for Conservation of Nature (IUCN)** declared ***Gambusia* as one of the 100 worst invasive alien species in the world.** *Poecilia reticulata* (Guppy) is a small benthopelagic fish native to **Brazil, Guyana, Venezuela and the Caribbean Islands.**

3. International Big Cat Alliance:



It was established by **Government of India, through the nodal organisation viz., National Tiger Conservation Authority (NTCA), Ministry of Environment, Forest & Climate Change (MoEFCC).** It was launched on 9th April 2023, during the event 'Commemorating 50 years of Project Tiger'. It **aims to conserve the seven big cats - Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma.**

Membership: It is open to 97 'range' countries, which contain the natural habitat of these big cats, as well as other interested nations, international organizations, etc.

Present Member countries: Nicaragua, Eswatini, India, Somalia and Liberia

4. About Sacred Groves:

What are Sacred Groves

Community-protected Forest patches **with cultural and ecological significance, conserved through traditional customs and religious beliefs.** Found across India, these groves serve as biodiversity hotspots and water recharge zones.

Distribution of Sacred Groves in India

- **Sacred groves** exist across all states, with the highest concentration in:
- **Western Ghats & Central**

- **Plateau:** Kerala, Karnataka, Maharashtra, Chhattisgarh.
- **Northeastern States:** Meghalaya, Assam, Arunachal Pradesh.
- **Tribal Belts:** Odisha, Jharkhand, Madhya Pradesh.

5. About Trickle-Down vs. Trickle-Up Approach:

Trickle- Down Economics:

Focuses on **wealth accumulation at the top**, assuming benefits will gradually reach lower income groups. **Prioritizes corporate tax cuts, subsidies for big businesses, and deregulation.** E.g. India's corporate tax cuts (2019) reduced revenue for social programs.

Trickle-Up Economics:

Directly invests in lower and middle-income groups to boost demand and economic growth. Prioritizes public welfare, education, healthcare, and employment programs

6. About Fort William:

Located in: Fort William is situated in Kolkata, West Bengal, on the eastern banks of the Hooghly River, a major distributary of the Ganga.

Built in:

The original Fort William was constructed in 1696 and completed in 1706. The **current fort was rebuilt between 1758 and 1781 after the Battle of Plassey**

7. What is Stryker?

Eight-wheeled armoured infantry combat vehicle (ICV) designed for rapid deployment and enhanced battlefield mobility. **Developed by General Dynamics Land Systems (GDLs) Canada and U.S.**

7 FEBRUARY

1. Pong Dam Lake Wildlife Sanctuary:



Pong Dam Lake (also known as Maharana Pratap Sagar) is a **manmade reservoir formed due to the construction of Pong Dam on Beas River** in the wetland zone of Shivalik hills in Kangra district of

Himachal Pradesh. It is one of the **largest man-made wetlands in Northern India**. It covers an area of almost 307 sq km. It was **designated a Ramsar site in 2002**.

2. Jevons Paradox:



It is the idea that technological progress that makes a resource cheaper or more efficient to use often leads to an increase in demand for that resource. This refers to a **form of induced demand wherein efficiency improvements in the use of a resource causes increased consumption of the resource rather than a decrease in its use**. It was proposed by the English economist, William Stanley Jevons, in his 1865 book **The Coal Question**.

3. Dibru Saikhowa National Park:



It is a **National Park as well as a Biosphere Reserve situated in the south bank of the river Brahmaputra in the extreme east of Assam state in India**. It is **bounded by the Brahmaputra and Lohit Rivers in the north and Dibru River in the south**.

Vegetation: It mainly consists of moist mixed semi-evergreen forests and moist mixed deciduous forests. It is the **largest Salix swamp forest in north-eastern India**, with a tropical monsoon climate with a hot and wet summer and cool and usually dry winter.

4. Rhododendron wattii Tree



Recently, a **study highlights endangered Rhododendron wattii in Nagaland**. It is a small tree attaining a maximum height of 25 feet. It is **endemic to India and is found in Manipur and Nagaland**, in its natural habitat at Dzukou Valley (Nagaland). It was **first collected by Sir George Watt from Nagaland's Japfu Hill range during his 1882-85 survey**

5. About the Kalbeliya Community

The **Kalbeliya are a nomadic tribe from Rajasthan**, historically known for snake charming, folk songs, and dances. They are divided into two main groups: **Daliwal and Mewara**, and are also referred to as **Sapera, Jogira, Gattiwala, and Poogiwara**. Despite being Hindu, the **Kalbeliyas do not cremate their dead; instead, they bury them and place an idol of Shiva's Nandi bull on the grave**. The 12th and 13th centuries were considered the golden era for the community, as noted by **Polish poet Jan Kochanowski**. However, after Prithviraj Chauhan's defeat by Muhammad Ghori, their prominence began to decline. The **Wildlife Protection Act of 1972 further disrupted their traditional snake-handling profession, forcing them into alternative livelihoods**.

Kalbelia Dance: A Living Heritage

Kalbelia dance, also known as Sapera dance, is an integral part of Kalbelia culture and a symbol of their identity. Both men and women participate:

1. **Women wear flowing black skirts, twirl gracefully, and imitate serpent movements.**
2. **Men accompany them with musical instruments such as the khanjari (percussion instrument) and poongi (woodwind instrument), traditionally used for snake charming.**

Dancers adorn traditional tattoo designs, intricate jewellery, and richly embroidered garments with mirror work and silver thread. **Recognized globally, Kalbelia dance was inscribed in 2010 on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.**

6. About State Emblem of India

The **State Emblem of India** is an adaptation of the **Lion Capital of Asoka at Sarnath**. The original Lion Capital features four lions mounted back-to-back on a circular abacus, resting on a bell-shaped lotus. The abacus frieze has sculptures of **elephant, galloping horse, bull, and lion, separated by Dharma Chakras**.

The adopted State Emblem (since January 26, 1950) shows three lions mounted on an abacus with:

- A **Dharma Chakra** in the center.
- A **bull on the right** and a **galloping horse on the left**.
- **Dharma Chakras at the extreme right and left**.
- The bell-shaped lotus was omitted in the adopted design.

7. What is Jevons Paradox?

Jevons Paradox states that **when a resource becomes more efficient and cheaper to use, its overall consumption tends to increase rather than decrease**. First observed by **William Stanley Jevons** in his **1865 book The Coal Question**. He noted that improvements in the efficiency of steam engines, which used coal, led to increased coal consumption, not a decrease as one might expect.

Key Features of the GREAT Scheme

- It is an initiative under the **National Technical Textiles Mission (NTTM)** by the **Ministry of Textiles**.
- Provides funding of up to **INR 50 lakhs** per startup.
- Focuses on critical areas like **medical textiles, industrial textiles, and protective textiles**.
- Encourages **R&D, product development, and commercialization** of innovative textile solutions.

8. About Beggar-thy-neighbour Policies

It refers to **protectionist measures aimed at benefiting a country's economy at the expense of others**. Common examples include **trade wars (imposing tariffs and quotas)** and **currency wars (depreciating a country's currency to boost exports and discourage imports)**.

10 FEBRUARY

1. Cayman Islands:



It is a **British overseas territory in the Caribbean Sea** located south of Cuba and northwest of Jamaica. The Cayman Islands are made up of three distinct islands - **Grand Cayman, Cayman Brac and Little Cayman**. The Cayman Ridge is an enormous underwater mountain range that is responsible for the formation of the islands. The islands are themselves the peaks of this ridgeline. **The islands are famous for coral reefs, crystal-clear waters, and white sand beaches**. Grand Cayman is the largest and the most populous island.

2. Klub-S Missile System:



Developed by Russian defense company **NPO Novator**, the **Klub**, also known as **Kalibr**, is a cruise missile inducted into Moscow's defense forces in 1994. The **Klub-S** missiles have a **warhead payload of 400 kilograms** and are capable of **targeting surface ships, submarines, and ground targets up to 300 kilometers away**. It is known for its excellent performance in dangerous combat zones. It can accelerate to supersonic speeds in the terminal phase, making it difficult for enemy defenses to intercept. It **cruises at an altitude of 10-15 meters, reducing the reaction time for enemy defenses**.

3. Dashavatar Theatre:



This traditional folk theater is performed in **Maharashtra and Northern Goa region.**

Theme: The stories presented in these shows are based on the 10 incarnations of Vishnu namely **Matsya, Koorma, Varaha, Narsimha, Wamana, Parashurama, Ram, Krishna, Buddha and Kalki.**

Musical instruments used: Paddle harmonium, Tabala and Zanj. The show is **mostly musical sometimes dialogues are used.**

4. Vishwamitri River:



It **originates on the hill of Pavagadh hills in Gujarat.** It is linked with two other tributaries **Dhadhar and Jambuva** and finally **culminates in the Gulf of Kambhat.** It is **primarily rain-fed, flows through a 25-km stretch of Vadodara,** along the way before meeting the sea in Bharuch district. It is highly meandering sinuous river which has a unique ecosystem bearing a plethora of beautiful ravines right from its beginning till its end. The **Vadodara stretch of the Vishwamitri is unique in that it is home to a large population of mugger or marsh crocodiles (Crocodylus palustris).**

5. Mugger Crocodiles:

It is **one of the 24 extant species of crocodylians found globally.**

Habitat: It is native to freshwater and inhabits marshes, lakes, rivers and artificial ponds.

Distribution: In India it is found in 15 states, with the largest populations in the **middle Ganges (Bihar-Jharkhand) and Chambal (Madhya Pradesh, Gujarat and Rajasthan) basins.**

They are also found in **Pakistan, Sri Lanka, Nepal and Bangladesh — as well as south-eastern Iran.**

Conservation status:

IUCN: Vulnerable

CITES: Appendix I

6. Potash:



Potash is the general name given to various inorganic compounds that contain potassium in a water-soluble form.

Ores: The principal ore is sylvinite, a mixture of sylvite (KCl) and halite (NaCl).

Over 90% of potash is used as fertilizer and it is one of the three primary agricultural nutrients (Nitrogen, Phosphorus and Potassium or N-P-K).

Potash reserves in India: **Rajasthan (alone contributes 89% to the total resources),** Punjab, Madhya Pradesh and Uttar Pradesh.

Potash reserves across world: It mainly located in Canada (31%), Belarus (21%), Russia (11%), China (10%), USA (6%), Germany (4%) and Chile (3%).

7. Supreme court ruling

The Court held that failing to inform the accused of the reasons for arrest amounts to a violation of fundamental rights enshrined under **Article 22, Part III of the Constitution.** The information must be conveyed in a manner that **effectively communicates the grounds of arrest to the accused in a language they understand.** The court also referred to Article 21 and said no person could be deprived of their liberty except in accordance with the legal procedure.

8. About the National Commission for Safai Karamcharis (NCSK)

It was **established on 12th August 1994 under the National Commission for Safai Karamcharis Act, 1993,** initially for a period of 3 years as a statutory body. **The Act was extended until 2004, after which the Commission became a non-statutory body under the Ministry of Social Justice and Empowerment.** The Commission takes suo-motu notice of issues affecting Safai Karamcharis based on media reports or observations.

9. White-Box vs. Black-Box Algorithms

White-Box Algos: These are **transparent and replicable algorithms.** Retail investors can use them

freely, provided they meet necessary requirements and are registered with brokers and exchanges.

Black-Box Algos: Proprietary systems where the underlying logic is not disclosed. Providers of such algos must register as research analysts with exchanges and submit detailed research reports for each algo they offer.

10. Restructured National Bamboo Mission (NBM)

The **Restructured National Bamboo Mission (NBM)** was launched in 2018-19 as a **Centrally Sponsored Scheme (CSS)** to boost bamboo cultivation, value addition, and market integration.

Objective: It provides assistance for the **propagation and cultivation of bamboo in non-forest land, bamboo treatment, establishment of markets, incubation centers, value added product development & processing and development of tools & equipment.** The **funding pattern follows a 60:40 ratio between the Centre and States (except 90:10 for NE & Hilly States, and 100% for UTs).**

12 FEBRUARY

1. What is Quipu?



It is a recently discovered superstructure in which galaxies group together in clusters and clusters of clusters (superclusters). It is **the largest known structure in the universe in terms of length.** It is over 13,000 times the length of the Milky Way. It is also hundreds of thousands of times more massive than a single galaxy. **Despite its vast size, Quipu will not last forever.** Scientists believe it will eventually break into smaller, collapsing units. They **describe it as a "transient configuration" that will change over time.**

2. R-37M Missile



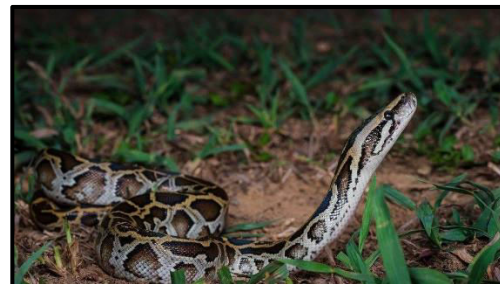
Russia has reportedly offered the R-37M missile, one of the world's best air-to-air missiles, to India. The R-37M missile, known by its NATO reporting name AA-13 Axehead, is a **long-range air-to-air missile developed by Russia.** It is designed to eliminate enemy fighter jets and drones beyond visual range (BVR). It **features a jettisonable rocket booster that allows it to achieve a range of 300 to 400 kilometers,** making it one of the longest-reaching air-to-air missiles in service globally. Its speed can reach hypersonic levels, up to Mach 6, which is crucial for intercepting fast-moving targets.

3. Exercise Cyclone 2025



It is a **joint military exercise held between India and Egypt army.** This is the third edition of Cyclone exercise. **The first edition of the exercise was conducted in 2023 (In India) and second edition (In Egypt) was in 2024.**

4. Burmese Pythons



It is **one of the largest snake species in the world.** It can grow up to 20 feet and weigh more than 250 pounds, with females being larger than males. It is a **non-venomous, solitary and mainly nocturnal forest dwellers snake.** It is also excellent swimmers and is

able to stay submerged for up to half an hour. It is an **invasive species in Florida, as a result of the pet trade.**

Conservation Status:

IUCN: Vulnerable

5. What is La Nina?

It means **Little Girl in Spanish**. La Niña is also sometimes called El Viejo, anti-El Niño, or simply “a cold event.” The **trade winds become stronger than usual, pushing more warmer waters towards the Indonesian coast**, and making the eastern Pacific Ocean colder than normal.

6. Lymphatic Filariasis

Commonly known as **elephantiasis (Haatipaon)**, it is a **serious debilitating disease caused by parasitic worms known as filarial worms**. It is **transmitted through the bite of a Culex mosquito that breeds in dirty/polluted water**. Infection is usually acquired in childhood causing hidden damage to the lymphatic system with visible manifestations (lymphoedema, elephantiasis, and scrotal swelling/hydrocele) which occur later in life and can lead to permanent disability. It is a **priority disease that is targeted for elimination by 2027**.

7. About ‘Bombay’ Blood Group

It is one of the **rarest blood groups in the world and was first discovered in Mumbai (formerly Bombay), India, in 1952 by Dr. Y.M. Bhende**. In the **Bombay blood group (hh phenotype)**, individuals lack the **H antigen completely**. This means they **cannot receive blood from any ABO group, including O**. Most blood groups (A, B, AB, and O) depend on the presence of the H antigen, which forms the basis of the ABO system. It is **more commonly found in India, Sri Lanka, Bangladesh, and some Middle Eastern regions due to genetic inheritance patterns**

Blood Transfusion

People with this blood group can donate blood to any ABO group, but they can only receive blood from another Bombay blood group individual.

8. About PM-AJAY Scheme

Definition: PM-AJAY is a **Central sponsored scheme launched in 2021 for the upliftment of Scheduled Caste (SC) communities in India**.

Objectives: Reduce poverty through **skill development and income-generating initiatives**.

Increase literacy rates and encourage SC enrolment in educational institutions, especially in aspirational districts

13 FEBRUARY

1. Vancomycin:



It is a **glycopeptide antibiotic used to treat severe but susceptible bacterial infections such as MRSA (methicillin-resistant Staphylococcus aureus)**. It is commonly used to treat infections in the **bloodstream, skin and soft tissues, heart valves (endocarditis), bones, joints, and certain intestinal infections like difficile-associated diarrhea**. However, it may cause some serious side effects, including damage to hearing and kidneys. These side effects may be more likely to occur in elderly patients. **Vancomycin will not work for colds, flu or other viral infections**.

2. SAFTA:



It is the **free trade arrangement of the South Asian Association for Regional Cooperation (SAARC)**. The agreement came into force in 2006, succeeding the 1993 SAARC Preferential Trading Arrangement.

SAFTA signatory countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAFTA recognizes the **need for special and differential treatment for LDCs in its preamble**.

3. Market Intervention Scheme:



It is implemented on the request of the State/UT Government for procurement of various perishable agricultural/horticultural commodities such as **tomato, onion and potato etc. for which Minimum Support Price (MSP) is not applicable.** It is implemented only when there is a **minimum reduction of 10% in the prevailing market price as compared to the previous normal year.**

Revised Market Intervention Scheme Guidelines: It made **MIS a component of the integrated scheme of PM-AASHA.** The procurement/coverage limit of production quantity of crops has been increased from the existing 20 percent to 25 percent.

4. Brahmagiri Wildlife Sanctuary:



It is nestled in the **Western Ghats in the Kodagu district of Karnataka.** The sanctuary gets its name from the highest point, the Brahmagiri peak, which is 1607 m in height.

Rivers: The **Lakshmana Tirtha River originates in the sanctuary and is a tributary of the Cauvery River.**

Terrain: The area is generally of undulating terrain with several steep valleys and hillocks.

5. Bailey Bridge:



A Bailey bridge is a **portable, prefabricated truss bridge, capable of supporting vehicular traffic.** It was conceptualized and designed by **Sir Donald Bailey, UK in 1941** and used **extensively since World War II.** The characteristics of the Bailey bridge were **standardization and simplicity of panels, readiness of assembly in the field,** capacity for additional strengthening by doubling or tripling the truss girders, and adaptability to long spans with the aid of pontoons. Bailey bridge assembly covers a small area, which can avoid the situation that large hoisting equipment cannot enter the construction site.

6. Sant Guru Ravidas

About

Guru Ravidas, a revered saint of the Bhakti movement in the 15th and 16th centuries, is known for his powerful message of unity, devotion, and service to humanity. He was a **disciple of Sant Kabir,** and is considered the founder of the Ravidassia religion.

Life and Teachings

He was a **staunch advocate against caste-based discrimination and worked tirelessly for the upliftment of marginalized communities.** He promoted the principles of human equality, love, and brotherhood, transcending religious and social barriers. He **gave a very broad message of 'karma' to society by coining in the popular Hindi saying 'Mann Changa to Kathauti Mein Ganga' (If your mind is pure, the Ganges is in your tub)**

7. Foot and Mouth Disease

FMD is a **highly transmissible disease caused by infection with an Aphthovirus, a member of the family Picornaviridae.** The disease affects cattle, swine, sheep, goats and other cloven-hoofed ruminants.

Symptoms: Fever, Blisters on the tongue, lips, mouth, hooves, and mammary glands, Erosions, Excess saliva, Loss of appetite, Lameness and Abortions.

Transmission: FMD is transmitted by;

- Direct contact with **infected animals**,
- Indirect contact with contaminated objects like **vehicles, clothing, footwear, and bedding**,
- **Consuming contaminated feed or milk**,

Treatment: There's no specific treatment for FMD. Symptoms usually clear up in 7 to 10 days. A **topical oral anesthetic may help relieve the pain of mouth sores**

National Animal Disease Control Programme (NADCP)

The Programme was launched in 2019 with a provision of **100% central assistance to states and Union Territories for Foot and Mouth Disease (FMD) vaccination**. NADCP was included as a component under Livestock Health and Disease Control programme (LHDCCP) scheme from 2021.

8. BIMSTEC

The **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** was established in 1997 with the signing of the **Bangkok Declaration**. Initially called BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation), it later expanded to include Myanmar in December 1997 and Bhutan and Nepal in 2004, changing its name to BIMSTEC.

Focus: Initially focused on six sectors (trade, technology, energy, transport, tourism, fisheries), cooperation expanded in 2008 to include agriculture, health, poverty alleviation, counter-terrorism, environment, culture, people-to-people contact, and climate change.

9. About Gross Domestic Knowledge Product (GDKP)

The concept of GDKP was first propounded by Prof. **Umberto Sulpasso of the University of Southern California along with Prof. Jeff Cole**. It is a proposed metric designed to measure the knowledge generated and utilized within an economy and serve as a supplementary indicator to GDP.

10. World's 1st Hybrid Quantum Supercomputer

Engineers in Japan have successfully activated Reimei, the world's first hybrid quantum supercomputer.

About

The 20-qubit quantum computer has been seamlessly integrated into Fugaku, the world's sixth-fastest supercomputer, marking a significant milestone in high-performance computing. Unlike most quantum computers that rely on superconducting qubits, Reimei utilizes trapped-ion qubits—a technology that isolates charged atoms (ions) in an electromagnetic ion trap and uses lasers to precisely manipulate their quantum states. The **integration of Reimei into Fugaku aims to tackle complex calculations that traditional supercomputers struggle with, particularly in physics and chemistry research**.

11. IIT Madras Develops Indigenous Shakti Semiconductor Chip

IIT Madras & ISRO has developed SHAKTI-based semiconductor chip.

About

The chip, named **IRIS (Indigenous RISC-V Controller for Space Applications)**, is based on the **SHAKTI microprocessor**. SHAKTI systems use RISC-V, an open-source processor technology, and are supported by the **Ministry of Electronics and Information Technology under the 'Digital India RISC-V' (DIRV) initiative**. This development marks a significant step toward self-reliance in space and semiconductor technology. It is designed **for fault tolerance and reliability, making it suitable for space missions**.

14 FEBRUARY

1. Dokra Artwork:



Dokra art which is also known as bell metal craft traces its origins back more than 4,000 years. It is a **form of folk art practiced by the Dhokra Damar tribes, who are traditionally metalsmiths**. These artisans are primarily found in eastern India, including **West Bengal, Odisha, and Jharkhand**, with a notable presence in Chhattisgarh as well. No two pieces are

ever the same. Each sculpture is painstakingly handcrafted, drawing **inspiration from mythology, nature, and daily rituals.**

2. Srjanam Rig:

It is an innovative, automated biomedical waste treatment rig, **developed by CSIR-NIIST (National Institute for Interdisciplinary Science and Technology).**

Features of Srjanam Rig:

It can disinfect pathogenic biomedical waste such as **blood, urine, sputum, and laboratory disposables, without the use of costly and energy-intensive incinerators.** The rig imparts a pleasant fragrance to the otherwise foul-smelling toxic waste. It has a **daily capacity of 400 kg**, the equipment is capable of handling 10 kg of degradable medical waste per day in the initial phase.

3. Fulani Community

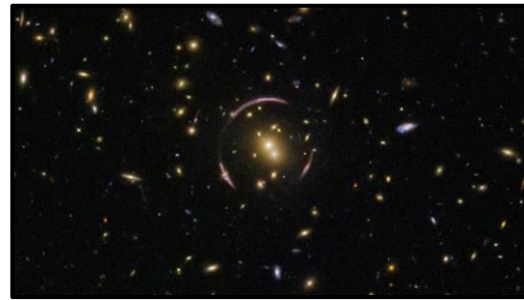


A new study has found that **the Fulani, one of Africa's largest pastoral populations, have a history going back to the 'Green Sahara' period (12,000–5,000 years before the present).** They are concentrated principally in **Nigeria, Mali, Guinea, Senegal, and Niger** but can also be found in several other countries.

4. MITRA Platform

Mutual Fund Investment Tracing and Retrieval Assistant (MITRA) will assist investors in tracking and reclaiming inactive or unclaimed mutual fund folios. It is **developed by the Registrar and Transfer Agent (RTAs) to provide investors with a searchable database of inactive and unclaimed mutual fund folios** at an industry-level which will empower the investors.

5. Einstein Ring:



It is a rare ring of light around a form of dark matter, **galaxy or cluster of galaxies.** It is essentially an example of gravitational lensing. **Einstein rings are not visible to the naked eye, and can be observed only through space telescopes such as Euclid.**

What is Gravitational lensing?

It is a phenomenon which occurs when a **massive celestial body — such as a galaxy or cluster of galaxies — creates a gravitational field which distorts and amplifies the light from distant galaxies** that are behind it but in the same line of sight. The body causing the light to curve is called a gravitational lens.

6. Hindon River:



It is a **tributary of the Yamuna.** It is a **monsoon-fed.** It **originates in the Saharanpur district of Uttar Pradesh,** in the Siwalik Hills, at an elevation of about 800 meters above sea level. It flows across the industrial belt of Western Uttar Pradesh for 400 kilometres before discharging into the Yamuna River in Noida. The **Kali (West) River and Krishni River are the main tributaries of River Hindon.** It is on **the banks of this river that archeologists found traces of the Harappan civilization** with sites dating back to as long as 2500 BC. In **2015, the Central Pollution Control Board (CPCB) found the Hindon's pollution levels were so severe that it was declared a 'dead river' and 'unfit' even for bathing in several sections of the river.**

7. Forest Rights Act (FRA), 2006: A Landmark Legislation

Background:

Before the enactment of the **FRA, 2006**, **Scheduled Tribes (STs) and Other Traditional Forest Dwellers (OTFDs) lacked legal recognition over their ancestral forest lands**. Colonial forest laws and post-independence conservation policies often labeled them as encroachers. The **FRA was introduced to correct these historical injustices and provide a framework for recognizing forest land and resource rights**.

8. Public Accounts Committee (PAC)

Genesis: It is one of the oldest parliamentary committees, established in 1921 following the Montagu Chelmsford Reforms.

Composition: It is formed every year under **Rule 308 of the Rules of Procedure and Conduct of Business in Lok Sabha**. It consists of up to **22 members (15 from Lok Sabha, and 7 from Rajya Sabha)**. A Minister is not elected as a member of a Committee.

Function: It is responsible for **auditing the revenue and the expenditure of the government**, examines various government accounts, & reviews income and expenditure statements of autonomous bodies audited by the CAG.

9. Avian Influenza

Depending on the origin host, influenza A viruses can be classified as avian influenza (bird flu, subtypes A H5N1 and A H9N2), swine influenza (swine flu, subtypes A H1N1 and AH3N2). **Avian influenza, commonly known as bird flu, is a viral infection that primarily affects birds**. It is a **zoonotic disease**, meaning it can spread from animals to humans. The **H5N1 subtype has been responsible for numerous human infections and fatalities in the past**.

10. National Mission on Edible Oils – Oil Palm (NMEO-OP) (launched in 2021)

Goal: Promote domestic oil palm cultivation and reduce dependence on imports.

Targets: Increase oil palm cultivation to 10 lakh hectares by 2025-26.

Support farmers with financial incentives & subsidies.

11. What is an Einstein Ring?

An Einstein ring is a circular formation of light caused by gravitational lensing, where a massive celestial object bends and magnifies light from a more distant

object behind it. **Gravitational lensing is an example of Einstein's theory of general relativity.**

Lensing Effect: If the alignment between the observer, the foreground lens, and the background source is nearly perfect, the light from the background galaxy can be smeared into a ring. In the **recently observed Einstein ring, the galaxy NGC 6505 acted as the gravitational lens.**

12. About BrahMos NG

BrahMos NG is an advanced supersonic cruise missile developed under the India-Russia joint venture. The BrahMos NG will retain the same 290 km range and Mach 3.5 speed as its predecessor. It is lighter (1.6 tonnes vs. 3 tonnes) and smaller (6m vs. 9m), making it more adaptable for various platforms, including the **Sukhoi-30MKI and Tejas fighter aircraft. It will feature a homemade AESA radar. The first test flight is expected by next year (2025-26).**

18 FEBRUARY

1. Typhoid

Typhoid is a **bacterial infection caused by Salmonella Typhi, spread through contaminated food, water, or contact with infected individuals**. It can be life-threatening without treatment, and antibiotics like chloramphenicol, ampicillin, or ciprofloxacin are used for treatment.

Typhoid Burden: Typhoid fever is a significant public health issue in India, with approximately 4.5 million cases annually, especially in urban areas, making it a major health concern.

Vaccines in India: **Typhoid vaccines available in India include Typbar-TCV, Ty21a, Typhim Vi, and Typherix. Typhoid conjugate vaccines (TCVs) are for children over 6 months, while Vi vaccines are for children over 2 years. TCVs are currently available only in the private sector.**

Latest Developments: **The ICMR-National Institute for Research in Bacterial Infections (NIRBI) has developed a technology for an enteric fever vaccine based on outer membrane vesicles from two strains of typhoidal Salmonella.**

2. Abortion Laws in India

The Medical Termination of Pregnancy (MTP) Act permits abortions in specific predetermined situations. Before the enactment of the MTP Act in

1971, the medical termination of pregnancy was governed by the Indian Penal Code (IPC). **Most of these provisions aimed at criminalising abortions, except where the procedure was done in good faith in order to save the woman's life.** The provisions failed to make a **distinction between wanted and unwanted pregnancies**, making it extremely onerous for women to access safe abortions.

3. Messenger RNA (mRNA)

It is a type of single-stranded RNA involved in protein synthesis. **mRNA is made from a DNA template during the process of transcription.** The role of mRNA is to **carry protein information from the DNA in a cell's nucleus to the cell's cytoplasm (watery interior),** where the protein-making machinery reads the mRNA sequence and translates each three-base codon into its corresponding amino acid in a growing protein chain.

4. Green Bonds

Green bonds are **debt instruments issued by governments, corporations, and multilateral banks to raise funds for projects that reduce emissions or enhance climate resilience.** Issuers typically offer green bonds at lower yields than conventional bonds, assuring investors that the proceeds will be used exclusively for green investments.

Greenium: The difference in yield — known as the green premium, or greenium — determines the cost advantage of green bonds. **A higher greenium allows issuers to raise funds at lower costs, making green investments more attractive.**

5. Biobank Established in Darjeeling Zoo

As part of a national programme, **India's first 'bio bank' is to be established in Padmaja Naidu Himalayan Zoological Park in West Bengal.**

About

It is in **collaboration with the Centre for Cellular and Molecular Biology (CCMB), under the Ministry of Science and Technology.** The facility collects and preserves cell and tissue samples from endangered animals, as well as reproductive cells from deceased animals. **These can be used for future research and potentially even bring back critically endangered species that have gone extinct or are on the verge of extinction.**

6. Gravehawk System:



It is a **short-range surface-to-air missile system developed by the United Kingdom.** It is designed to address short-range threats, particularly those posed by fast-moving airborne objects. It is **mounted on an all-terrain vehicle chassis, allowing for rapid deployment and mobility on the ground.**

7. Yamuna River:



Yamuna is the major tributary of the Ganga River. Originating near **Banderpooch peaks at a height of 6,387 meters** at Yamunotri Glacier, it travels a length of 1,376 kilometers before merging with River Ganges at Sangam in Prayagraj, Uttar Pradesh. It is the **longest river in India which does not directly flow to the sea.** It has four main tributaries in the Himalayan region: **Rishi Ganga, Hanuman Ganga, Tons and Giri.** In the plains, the main tributaries are Hindon, Chambal, Sind, Betwa and Ken. **Tons, being the major tributary, contributes to about 60 percent flow of the Yamuna.** **The Chambal River is Yamuna's biggest tributary on the right.**

8. Measles:



It is a **highly contagious and serious airborne disease.** It is **caused by a virus in the paramyxovirus family,** and is normally passed through direct contact and the air.

The virus infects the respiratory tract, and then spreads throughout the body, causing severe disease, complications and even death. Any non-immune person (not vaccinated or vaccinated but did not develop immunity) can become infected. Unvaccinated young children and pregnant persons are at the highest risk of severe measles complications. **No specific antiviral treatment exists for measles.**

9. International Classification of Diseases:



It is a **flagship World Health Organization product that serves as the basis for identifying health trends and statistics at country level and worldwide.** It serves a broad range of uses globally and provides critical knowledge on the extent, causes and consequences of human disease and death worldwide via data that is reported and coded with the ICD. In India, the **Central Bureau of Health Intelligence (CBHI)** is an agency under the Ministry of Health and Family Welfare that serves as the WHO Collaboration Centre for ICD-related activities.

10. Loggerhead Turtle:



It is a **species of oceanic turtle belonging to the family Cheloniidae.** It is named Loggerhead for their large heads that support powerful jaw muscles. It is the **world's largest hard-shelled turtle**, slightly larger at average and maximum mature weights than the Green sea turtle and the Galapagos tortoise. It is also **the world's second largest extant turtle after the leatherback sea turtle.** It uses the **geomagnetic field as a map** when navigating large distances.

Conservation status:

IUCN: Vulnerable

19 FEBRUARY

1. Souparnika River



It is a **west-flowing river in Karnataka.** The river is surrounded by lush green forests of the Western Ghats. **Originating from the Kodachadri Hills in the Western Ghats, it flows through the Byndoor taluk,** passing near the renowned Mookambika Temple in Kollur, before falling into the Arabian Sea. A unique feature of the Souparnika River is observed near Maravanthe Beach, where the river runs parallel to the Arabian Sea, separated by a narrow stretch of land.

2. Javelin Anti-Tank Guided Missile



India and the US recently announced plans to pursue new procurements and co-production arrangements for **Javelin anti-tank guided missiles**, to meet the defense requirements of India. It is a **man-portable, fire-and-forget, anti-tank guided missile.** It has an effective range of 2.5 km. It is a fire-and-forget missile with lock-on before launch and automatic self-guidance. It uses **automatic infrared guidance that allows the user to seek cover immediately after launch.**

3. Parambikulam Tiger Reserve:



It is a **protected area located in the Palakkad and Thrissur districts of Kerala**. It was declared a Tiger Reserve in 2009 under Project Tiger. The **Parambikulam, Sholayar, and Thekkady rivers flow through the reserve, supporting its rich biodiversity**. It is home to the four different tribes of **Kadar, Malasar, Muduvar, and Mala Malasar** which are settled in six different colonies inside the protected reserve.

4. Project Waterworth



Recently, **Meta announced its most ambitious subsea cable endeavour ever – Project Waterworth**. It stretches over 50,000 km long cable which connects **India, US, Brazil, South Africa and other “key regions”**. Its cable will reach depths of up to 7,000 meters in deep waters. **Project Waterworth, by leveraging advanced machine learning models, aims to predict and mitigate potential disruptions**, enhancing the resilience of subsea networks. It would provide "industry-leading connectivity" to five major continents and help support its AI projects.

5. Exercise Dharma Guardian:



It is a **joint military exercise between India and Japan**. It is an annual exercise and conducted alternatively in India and Japan. It **aims to enhance interoperability between the two forces while undertaking joint urban**

warfare and counter-terrorism operations under UN mandate.

6. Aravali Safari Park Project

It seeks to **conserve endangered species and boost tourism in the region**.

Project Announcement: In 2022.

Phase 1 Development: Covering 2,500 acres and is focusing on creating large enclosures for big cats and other wildlife.

Conservation Efforts: The project includes a specialized unit dedicated to **conserving and breeding endangered species such as blackbucks, vultures, and soft-shelled turtles**.

Environmental Concerns: The project has faced opposition from environmentalists and retired Indian Forest Service officers, who have urged the government to reconsider the plan due to potential ecological impacts.

7. Bacteria-made Band-Aid for Plants

According to a recent study, Bacterial cellulose can be used as a bandage to improve healing and regeneration in plants.

Bacterial cellulose

It is a **natural and renewable nanomaterial produced by certain bacteria**. It is characterized by a unique three-dimensional structure that endows it with **excellent mechanical properties and high water-holding capability**. It is a very **pure, crystalline and biocompatible polymer**. It has been widely used in human medicine, often for wound healing.

8. About DDoS (Distributed Denial-of-Service)

It is a **type of denial-of-service (DoS) attack, which includes all cyberattacks that disrupt or stop services**. It aims to disable or take down websites, web applications, cloud services, or other online resources. It overwhelms the target with fake packets, pointless connection requests, or malicious traffic. It **involves traffic from multiple sources, making them “distributed.”**

Effect: DDoS attacks cause the target to slow down or crash, making it unavailable to legitimate users. They can lead to service downtime, disrupting operations and potentially causing revenue loss. **DDoS attacks do not directly steal data, they can serve as distractions for other cyberattacks**

Mitigation Measures: Traffic filtering, bot detection, rate limiting, strong authentication, and collaboration with cybersecurity agencies can prevent such attacks.

9. SAKSHAM Campaign

Indian Oil Corporation Limited and Bharat Petroleum Corporation Limited launched a 14-day awareness campaign called SAKSHAM.

About

The campaign was launched on **green energy and fuel conservation**. It aims to **raise awareness about fuel conservation and the judicious use of petroleum products to ensure a safer environment and sustainable energy resources for future generations**. The idea is to convince consumers to switch to cleaner fuels and bring in behavioural change to use fossil fuel intelligently.

10. Blair House

About

The PM stayed at the historic building during his two-day visit to the US. Blair House has been the premier accommodation for dignitaries visiting Washington DC since it was bought by the US government in 1942. It is **also known as 'The President's Guest House', and is maintained by the US Department of State and the General Services Administration**. Blair House hosted Prime Ministers Jawaharlal Nehru and Indira Gandhi during their US visits.

20 FEBRUARY

1. Sariska Tiger Reserve (STR):



It is **located in Rajasthan**. It is spread over the **Aravallis**. It was once a hunting ground of the Maharaja of Alwar before being proclaimed a **natural reserve in 1955 and a national park in 1979**. It was the **first reserve in the world to successfully relocate tigers**. It is also famous for old temples, palaces, and lakes such as **Pandu Pol, Bhangarh Fort, Ajabgarh, Pratapgarh, Siliserh Lake, and JaiSamand Lake**.

2. Caspian Pipeline Consortium (CPC):



CPC is a \$2.6 billion project consisting of a 935-mile crude oil pipeline that runs from the **Tengiz oil field in Kazakhstan to the Russian Black Sea port of Novorossiysk**. It is a **key East-West pipeline that will carry oil from the Caspian Sea region to international markets**. CPC includes the Russian and Kazakh governments, as well as Western energy majors - Chevron, ExxonMobil and Shell. **This pipeline accounts for two-thirds of Kazakhstan's oil exports**. The pipeline's total capacity is 1.4 million barrels per day of oil. This is 3 percent of global seaborne oil trade.

3. Inland water transport terminal:



The terminal is set to transform the connectivity in the region and bolster our trilateral trade with Bhutan and Bangladesh. It has **the potential to boost trade by reducing transportation expenditure and offering an eco-friendly and alternative mode of transport via the Brahmaputra river**. By **2027, this terminal is expected to handle cargo of 1 million tonnes per annum**.

4. Inland Waterways Authority of India:

It is a statutory body established under the **Inland Waterways Authority of India Act (IWAI), 1985**.

Purpose: The Authority primarily undertakes projects for development and maintenance of IWT infrastructure on national waterways through grant received from the **Ministry of Ports, Shipping and Waterways**. It presently has **five regional offices in Guwahati (Assam), Patna (Bihar), Kochi (Kerala), Bhubaneswar (Odisha) and Kolkata (West Bengal)**.
Headquarter: Noida, Uttar Pradesh.

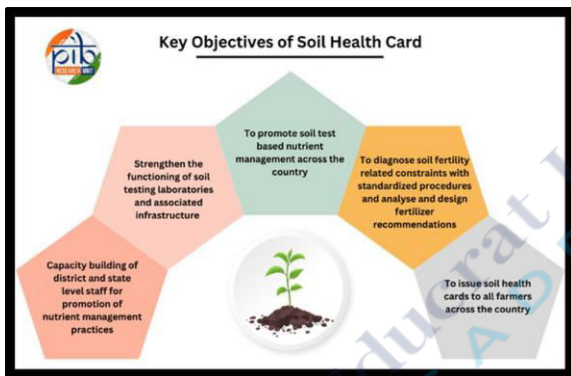
Nodal Ministry: Ministry of Ports, Shipping and Waterways.

5. Peppara Wildlife Sanctuary:



It is located in the Thiruvananthapuram district of Kerala spread over 53 sq km. area. It was declared as wildlife sanctuary in 1983. The sanctuary constitutes the catchments of peppara dam constructed across the Karamana River. Altitude ranging from 100 to 1717 m. The major peaks in the sanctuary are Chemmunjimottai (1717 m) and Athirumalai 1594 m. The vazhvanthol waterfall is located nearby it.

6. Soil Health Card Scheme:



The soil health card scheme was launched in 2015 to assist State Governments to issue soil health cards to all farmers. It provides information to farmers on nutrient status of their soil along with recommendation on appropriate dosage of nutrients to be applied for improving soil health and its fertility. It contains status of the soil with respect to 12 parameters, namely N, P, K, S (Macro-nutrients); Zn, Fe, Cu, Mn, Bo (Micro - nutrients); and pH (Acidity or Basicity), EC (Electrical Conductivity) and OC (Organic Carbon). Soil samples are taken generally two times in a year, after harvesting of Rabi and Kharif Crop respectively or when there is no standing crop in the field. A farmer will get the soil card once in every 3 years. Soil Health Card scheme has been merged in Rashtriya Krishi Vikas Yojana (RKVY) scheme as one of

its components under the name 'Soil Health & Fertility' from the year 2022-23.

7. Swami Ramakrishna Paramhansa

Swami Ramakrishna was born as Gadadhar Chattopadhyay on February 18, 1836, in Kamarpukur, Bengal, to a poor Brahmin family with strong religious values. His **deep spirituality led him to explore various religious paths, affirming that all faiths lead to the same divine truth.** His life was centered around uninterrupted contemplation of God His God-consciousness transcends time and place, appealing universally to seekers of all religions.

8. Anti cyclonic system

Key features of an anticyclone system:

- **High pressure at the center:** The air pressure in the center of the system is higher compared to the areas around it.
- **Air movement:** Air moves outward from the center of an anticyclone.
- **Sinking air:** The air within an anticyclone sinks rather than rising, preventing cloud formation and often leading to dry and clear conditions.

Impact: Anticyclones can influence local weather patterns significantly, sometimes causing **prolonged dry spells or heatwaves.**

9. Rarest of rare' Doctrine

The recent two separate murder convictions reignited the questions about the judiciary's approach to the 'rarest of rare' doctrine.

About

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

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

The definition of 'rarest of rare' was not clearly defined, leading to confusion.

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

10. About Samudrayan' project

Samudrayaan is a project under Deep Ocean Mission.

It is aimed to **develop a self propelled manned submersible** to carry 3 human beings to a water depth of 6000 meters in the ocean with a suite of scientific sensors and tools for deep ocean exploration. **Matsya-6000 is a 4th Generation deep-ocean submersible designed under the Samudrayan Project.** It can accommodate three humans inside its 2.1-meter diameter spherical hull and is a significant step in India's ocean exploration capabilities.

The Deep Ocean Mission

It was **launched in 2021 as a Central Sector Scheme by the Ministry of Earth Sciences**, approved by the Cabinet. It is a high-level multi-ministerial, multi-disciplinary programme for better **understanding of the deep sea living and non-living resources of the Indian Ocean and will aid in India's efforts to attain the Blue Economy status.**

21 FEBRUARY

1. Bacterial Cellulose:



It is a **natural polymer produced by certain bacteria.** It has been identified as an effective material for plant wound care. Its unique properties facilitate improved healing and regeneration in plants.

Advantages of Bacterial Cellulose bandages

- It offers a **sustainable solution to plant injuries**, potentially reducing the reliance on chemical treatments.
- By **enhancing the natural healing processes of plants, farmers can expect improved crop yields and resilience**, contributing to food security and environmental conservation.

Key facts about Cellulose:

It is a molecule, consisting of hundreds of **carbon, hydrogen and oxygen atoms.** **Cellulose is the main substance in the walls of plant cells**, helping plants to

remain stiff and upright. Humans cannot digest cellulose, but it is **important in the diet as fibre.**

2. Vertical Propellant Mixer:



It is the **largest solid propellant mixing equipment globally.** It is **developed and designed by Satish Dhawan Space Centre in collaboration with Central Manufacturing Technology Institute**, a Bengaluru-based research and development organisation under the Ministry of Heavy Industries.

Advanced Technology: It is equipped with multiple agitators which are hydrostatic driven and will be remotely operated using PLC based control system with SCADA stations. **A propellant mixer is a machine that mixes the ingredients of rocket propellants, specifically fuel and oxidiser**, to ensure a uniform and reliable mixture for solid rocket motors. The quality of the mixed propellant directly impacts the performance and reliability of the rocket motor.

3. OPEC+:



It is a group of **22 oil-exporting countries which meets regularly to decide how much crude oil to sell on the world market.** These nations aim to work together on adjusting crude oil production to bring stability to the oil market.

Origin: These nations came to an accord towards the end of 2016 "to institutionalize a framework for

cooperation between OPEC and non-OPEC producing countries on a regular and sustainable basis.” At the core of this group are the 12 members of OPEC (the Organization of the Oil Exporting Countries), which are mainly Middle Eastern and African countries.

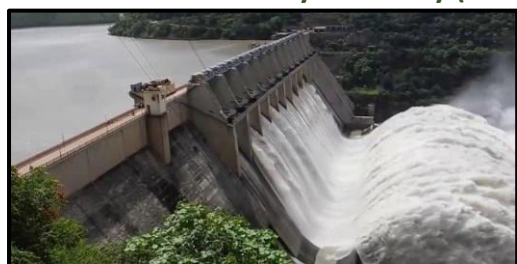
Members: It comprises 12 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman.

What is OPEC?

It is a permanent intergovernmental organization of oil-exporting countries. It was established in 1960 by the five founding members Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. Currently, it has 12 members, including Algeria, Congo, Equatorial Guinea, Gabon, Libya, Nigeria and the United Arab Emirates. Angola withdrew its membership effective 1 January 2024.

Headquarters: Vienna, Austria.

4. National Dam Safety Authority (NDSA):



NDSA is a statutory body set up by the Central Government in exercise of the powers conferred by Section 8(1) of the National Dam Safety Act, 2021. It operates with a clear mandate to regulate, oversee, and inspect dams. A key function of the NDSA is to resolve any issue between the State Dam Safety Organisations of states or between a State Dam Safety Organisation and any owner of a specified dam in that state. In the face of natural calamities or unforeseen events, the NDSA ensures that comprehensive emergency response plans are in place. It is headed by a chairman and assisted by five members to lead its five wings - policy and research, technical, regulation, disaster and resilience and administration and finance. It has its headquarters at New Delhi.

5. Chalukyas

The Chalukyas of Badami began their rule in North Karnataka. **Pulakesin I (543-66 CE), the founder of the Chalukya dynasty, fortified Badami and began territorial expansion. Pulakesin II defeated Harsha of**

Kanauj, securing a major victory and assuming the title “Parameshvara” (Supreme Lord). The Chalukyan rule in Badami ended around 750 CE when Rashtrakuta feudatory Dantidurga defeated Kirtivarman II, bringing an end to the Chalukya dynasty.

Chalukyas of Kalyana (Later Chalukyas): Known as the Later Chalukyas or Kalyani Chalukyas, descended from the Badami Chalukyas. Taila II, a key figure, rose to power under the Rashtrakutas around 957 CE. Defeated Rajaraja Chola (992 CE), Latas, Gurjaras, Chedis, and Paramaras.

6. International Organization of Aids to Marine Navigation (IALA)

IALA was established in 1957 as an NGO.

New IGO Status: Expands IALA’s role in harmonizing global maritime navigation systems, promoting safety, and addressing emerging challenges in safety and environmental protection.

India’s Hosting Role: India will host the IALA Council meeting in December 2025 and the IALA Conference & General Assembly in September 2027 in Mumbai.

Significance for India: India’s election highlights its commitment to maritime safety, navigational aids, and international cooperation in the maritime sector.

7. About Lithium

Lithium is a silvery-white metal and is highly reactive. **Applications:** Lithium has various industrial applications, most notably in rechargeable lithium-ion batteries. These batteries are widely used in electronic devices such as smartphones, laptops, and electric vehicles.

Global Production: The majority of the world’s lithium production comes from countries like **Australia, Chile, and Argentina.** These countries have significant lithium reserves and are major players in the global lithium market.

8. Digital Brand Identity Manual (DBIM)

It creates a consistent digital brand for the Government of India through standardized design elements. It is aimed at **“Minimum Government, Maximum Governance” and “Uniform Governance.”** It ensures a standardized, cohesive digital presence across all ministries and platforms

9. Role of Coronal Holes in Space Weather and Climate

Coronal holes shape space weather and cause geomagnetic disturbances on Earth. **High-speed solar wind interacts with Earth's magnetic field, leading to:**

- Disruptions in **satellite operations, GPS signals, and power grids.**
- Effects on the **Earth's ionosphere, impacting radio wave propagation and communication systems.**
- Recent studies show coronal holes contribute to climate variability. **Their radiative effects are linked to fluctuations in the Indian monsoon rainfall.**

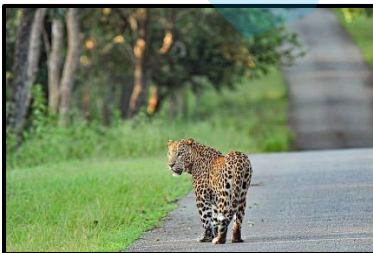
24 FEBRUARY

1. Jhumoir Binandini Dance:



It is also known as **Jhumur**, is a traditional folk dance performed by the **Adivasi tea tribes of Assam during the harvest season.** It is accompanied by traditional instruments like the **Madal, Dhol, Taal and Flute.** The dance is performed to celebrate various occasions, including **harvest festivals, weddings, and community gatherings.** It is performed by **both men and women**, who dance in a circular formation, holding each other's waists.

2. Extinction Filtering:



It is the **process where species sensitive to human disturbance disappear, leaving only those that can survive in degraded landscapes.** It predicts that species that have evolved and survived in high-disturbance environments should be more likely to

persist in the face of new disturbances, including those of habitat loss and fragmentation.

Impact on biodiversity:

It results in a **less diverse and more uniform mix of species in tropical forests.** Over time, this **weakens entire ecosystems and reduces their ability to recover from environmental changes.** The problem of "extinction filtering" is not unique to tropical forests. Across the world, human activities are affecting wildlife inside protected areas.

3. Bhavani River:



It originates in the upper regions of the Nilgiris of Western Ghats. It flows across **three districts of Tamil Nadu - Nilgiris, Coimbatore and Erode.** It is a major tributary of the Cauvery River and the second largest river in Tamil Nadu. **Bhavani Sangameshwarar Temple, situated at the meeting point of Bhavani and Cauvery Rivers, is a prominent pilgrim center.** The Bhavanisagar dam is constructed on this River which is one of the world's largest earthen dams.

4. Palamu Tiger Reserve (PTR):



It is located in the **Chhota Nagpur plateau region of Jharkhand.** The reserve forms a part of the Betla National Park. It is the **first reserve in the world in which a tiger census was carried out as a pugmark count, as early as 1932 under the supervision of J.W. Nicholson** Three rivers namely **North Koyal, Auranga and Burha flow through the valleys of the PTR.** The area is drought-prone with Burha being the only perennial river. The **Reserve is very rich in minerals like Bauxite and Coal.** It is primarily dominated by Northern Tropical Dry Deciduous, Sal Forest and its associates.

5. Gulf of Tonkin:



It is referred as “Beibu Gulf” in Chinese and “Bac Bo Gulf” in Vietnamese. It is a crescent-shaped, shallow, semi-enclosed water body situated off South China and Northern Vietnam coasts in the South China Sea’s northwestern portion.

Bordering regions: It is bordered by the northern coastline of Vietnam in the west and northwest; by China’s Guangxi Zhuang Autonomous Region in the north; and by the Leizhou Peninsula and Hainan Island in the east. It is connected with the South China Sea via the gulf’s mouth in the south and the Hainan Strait in the northeast.

25 FEBRUARY

1. Ex Gratia Payment:



It is a type of payment made by an organization, government, etc., to an individual for damages or claims without recognizing any legal obligation. “Ex gratia” means “by favor” or “by virtue of grace” in Latin. Thus, an ex gratia payment is a voluntary payment that is not a part of an organization’s legal liability. Ex gratia payments are not common since companies or other organizations are usually only willing to cover the payments under legal enforcement. Ex gratia payments are not taxable in India unless they are made in lieu of salary or wages.

2. AKU5-CoV-2:



It is a newly discovered Bat Coronavirus. It closely resembles The SARS-Cov-2, The virus behind COVID-19 Pandemic. It belongs to the **Merbecovirus Subgenus**, which also includes the virus responsible for **Middle East Respiratory Syndrome (MERS)**. It has the potential for animal-to-human transmission. There are no confirmed cases of HKU5-Cov-2 in humans yet, so its symptoms are unknown.

3. Palk Strait:



It is an inlet of the Bay of Bengal between southeastern India and northern Sri Lanka. It is bounded on the south by Pamban Island (India), Adam’s (Ram’s) Bridge (a chain of shoals), the Gulf of Mannar and Mannar Island (Sri Lanka). The southwestern portion of the strait is also called Palk Bay. The strait is named after Robert Palk, who was a governor of Madras Presidency (1755-1763) during the Company rule. The port of Jaffna, the commercial centre for northern Sri Lanka, lies on the strait.

4. International Finance Corporation:

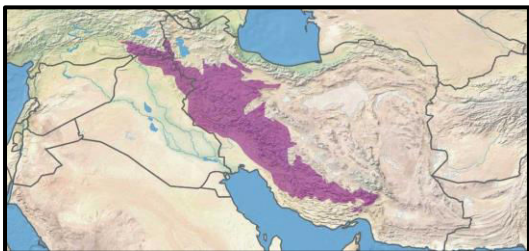


It is the private lending arm of the World Bank. It was established in 1956 as a member of the World Bank Group, focused on investing in economic development. It provides financing of private-enterprise investment in developing countries around the world, through

both loans and direct investments. It also provides advisory services to encourage the development of private enterprises in nations that might lack the necessary infrastructure or liquidity for businesses to secure financing. **The President of the World Bank Group is also the President of the IFC.**

Headquarter: Washington, D.C

5. Zagros Mountains



Recently, a geologist said that a hilly area surrounding the **Zagros Mountains in Iraq is being pulled into Earth.** Mount Dena, with a peak achieving an elevation of 14,465 feet, is the **highest peak in the Zagros Mountain system.**

6. About Ali Ai Ligang Festival

Celebrated on the **first Wednesday of Fagun (February-March), the festival is deeply rooted in agriculture, tradition, and cultural heritage.** Ali Ai Ligang has been celebrated for centuries in rural Mising villages. **The Mising people have transitioned to settled wet paddy farming and practicing Jhum Cultivation.** The festival begins with the hoisting of the **Laitom Tomchar (festival flag).** Offerings are made to Donyi Polo (Sun and Moon gods) for agricultural prosperity. Men and women perform Gumrag Dance, symbolizing joy and prosperity

7. Lepakshi temple

It is **located in Lepakshi, Andhra Pradesh,** is a remarkable 16th-century architectural and historical site. It is famous for its **Dravidian-style architecture, intricate stone carvings, and monolithic structures.** It is **dedicated to Lord Veerabhadra, a form of Lord Shiva.** In **March, 2023, UNESCO included the Lepakshi Veerabhadra Temple complex** in its provisional list of Heritage Sites.

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

Established: 2003 to support sustainable coastal fisheries development in the Bay of Bengal.

Purpose: Provides technical and management advice to member countries (Bangladesh, India, Maldives, Sri Lanka) on fisheries management.

Area of Competence:

- Exclusive Economic Zones (EEZs) of member states.
- Contiguous areas beyond national jurisdiction.

9. What is Stagflation?

Stagflation is an economic condition where **high inflation, slow economic growth, and high unemployment occur simultaneously.**

10. V.O.Chidambaranar Port

About

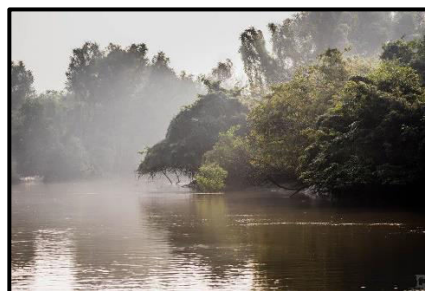
Location: V.O. Chidambaranar Port, formerly known as **Tuticorin Port,** is located on the southeastern coast of India in the Gulf of Mannar, at latitude 8° 45'N and longitude 78° 13'E.

Strategic Significance: It lies close to the East-West International sea routes, making it a crucial hub for maritime trade.

Natural Advantages: It is well-sheltered from storms and cyclonic winds, ensuring minimal disruptions in port operations. Deep-water, all-weather port, operational round the clock, 365 days a year

26 FEBRUARY

1. Bhitarkanika National Park:



It is **located in the Kendrapara district of Odisha.** It is also **designated as the second Ramsar site in Odisha after the Chilika Lake.** It is **India's second largest mangrove ecosystem after the Sunderbans.** It is home to the largest congregation of the endangered Salt Water Crocodile in the country. The **Gahirmatha Beach, which forms the boundary of the park in the east, is the largest colony of the Olive Ridley Sea Turtles.**

2. Caspian Sea:



It is the **world's largest water body that is enclosed or bordered by land on all sides**. This massive lake is located between Asia and Europe.

Bordering countries: It is bordered by Russia and Azerbaijan on the west, Kazakhstan and Turkmenistan on the north and east, and Iran on the south. The composition of the water of the Caspian Sea also varies from almost fresh in the northern parts of the lake to saltier southwards. **Three major rivers—the Volga, the Ural, and the Terek—empty into the Caspian from the north. It is the source of most of the world's caviar.**

3. Spices Board:



It is a **statutory body constituted in 1987 under the Spices Board Act 1986, with the merger of the erstwhile Cardamom Board (1968) and Spices Export Promotion Council (1960)**. It is one of the five Commodity Boards functioning under the Ministry of Commerce & Industry. It is an **autonomous body responsible for the export promotion of the 52 scheduled spices and development of Cardamom (Small & Large)**. The Board is an international link between the Indian exporters and the importers abroad. It enhances industry regulations, quality control, and global standards to boost sustainable spice exports and market growth.

4. Kalakkad – Mundanthurai Tiger Reserve:



It is located in the Southern Western Ghats. It **includes three main sanctuaries: Kalakad Sanctuary,**

Mundanthurai Sanctuary and a part of Kanyakumari Sanctuary. It is nestled between Kerala and Tamil Nadu. The Agastya Malai Hill Range forms the core area of the sanctuary and is part of one of the world's 18 biodiversity hotspots. It is also known as the **“River Sanctuary”**, with as many as **14 rivers originating from this Tiger Reserve.**

5. Black Plastic:



It is a **type of plastic used to make everyday items like food trays, containers, and utensils**. These are more likely to contain unregulated amounts of toxic chemicals including heavy metals and flame retardants. The issue is that these electronics typically contain substances such as the **flame retardant bromine; antimony;** and heavy metals such as **lead, cadmium, and mercury**. The **mentioned substances and heavy metals are known to be toxic to humans at high levels of exposure**. It is difficult to recycle and often ends up in landfills or incinerators, releasing toxic substances like dioxins and furans into the air.

6. What is Tea Horse Road?

The Tea Horse Road was an ancient trade route connecting China, Tibet, and India. It was primarily used for trading tea from China in exchange for horses from Tibet, forming an essential commercial network in the region. **It had two main pathways passing through cities like Dali and Lijiang in Yunnan province.** The routes reached Lhasa in Tibet before branching into India, Nepal, and Bangladesh. **It originated during the Tang dynasty (618-907 CE) in China.** Buddhist monk Yijing (635-713 CE) described goods like sugar, textiles, and rice noodles being transported from southwestern China to Tibet and India, while horses, leather, Tibetan gold, saffron, and medicinal herbs were sent to China.

7. Pagri Sambhal Jatta Movement

“Pagri Sambhal Jatta” means “take care of your turban, o farmer,” symbolizing self-respect and

honor. It was launched by Ajit Singh in 1907 to protest against three oppressive British agricultural laws.

The movement opposed the following British laws

- **Punjab Land Alienation Act, 1900** restricted farmers' rights to sell or mortgage land.
- **Punjab Land Colonisation Act, 1906** gave British control over land in the Chenab Colony.
- **Doab Bari Act, 1907** reduced farmers to contract workers.

Farmers were also burdened by higher taxes on land and irrigation.

8. Advocate-on-Record

An Advocate on Record (AOR) is an **advocate authorised under the Supreme Court Rules to act, plead, and file cases directly on behalf of a client in the Supreme Court.** It was introduced by the Supreme Court under **Article 145(1) of the Indian Constitution**, which grants the Court the power to regulate its practices and procedures. The Supreme Court Rules, 2013 lays down the requirements to be fulfilled to become an advocate on record.

9. National Commission for Indian System of Medicine (NCISM)

The **National Commission For Indian System Of Medicine** is the **statutory body constituted under NCISM Act, 2020.** This commission is working under the **Ministry of Ayush** and governs the Board of Ayurveda and Unani and the Board of Unani, Siddha and Sowaigpa.

Objectives:

- To ensure **availability of adequate and high-quality medical professionals of Indian System of Medicine (ISM);**
- Adoption of the latest medical research by medical professionals of Indian System of Medicine; and
- Periodic assessment of ISM medical institutions

27 FEBRUARY

1. Palaeognath Birds:



These are grouped together on the basis of their distinctive palate morphology, from which they receive their name ("old jaw"). **Most of the birds classified in the Palaeognathae are also flightless, but not all flightless birds are classified in the Palaeognathae.** They are the largest and heaviest avian specimens on Earth and may represent some of the first birds to evolve from dinosaurs.

These birds are classified into two groups:

Tinamiformes: These species have a keeled sternum and can fly (weakly), which include the tinamous of South and Central America; and the

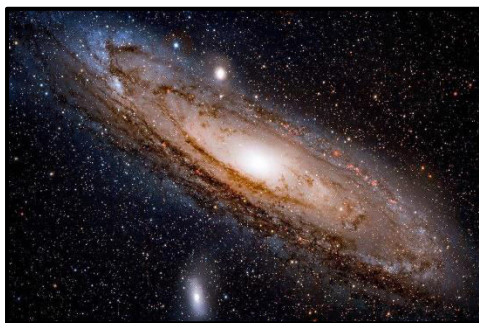
Ratitae, or ratite birds: They have flat sterna and reduced wings, and cannot fly at all.

2. Qualified Institutional Placement (QIP):



It is a capital-raising mechanism through which public listed companies use to issue equity shares or convertible securities exclusively to Qualified Institutional Buyers (QIBs). **QIBs include mutual funds, venture capital funds, pension funds, and other institutional investors.** A QIP is, at its core, a way for listed companies to raise capital without having to submit legal paperwork to market regulators. **It provides a quicker and cost-effective alternative to traditional public offerings (IPOs and FPOs) while ensuring minimal dilution of management control.** QIP allows companies to raise funds domestically, reducing dependence on foreign investors.

3. Dwarf Galaxies:



They are small galaxies that typically contain just a few billion stars, unlike their larger cousins, which can hold hundreds of billions. They are **the most abundant type of galaxy in the universe but are difficult to detect due to their low luminosity, low mass, and small size**. They are thought to have been created by gravitational forces in the early stages of the creation of these larger galaxies, or as a result of collisions between galaxies, forming from streams of material and dark matter ejected from the parent galaxies. **Some dwarf galaxies have spiral arms or look like mini-elliptical galaxies.**

4. SWAYATT Initiative:



It was **launched on 19th February, 2019**. It was conceptualised with a clear objective of invigorating participation of women-led enterprises and youth in public procurement. **SWAYATT is the GeM portal's commitment to enhance ease of doing business and establish direct market linkages to annual public procurement for startups, women entrepreneurs, Micro & Small Enterprises (MSEs), Self Help Groups (SHGs) and youth, especially those from backward sections of the society. It is rooted in GeM's foundational pillar of social inclusion.**

5. Government e Marketplace:

It is an online market platform that was set up in 2016 to facilitate the procurement of goods and services by government ministries, departments, public sector undertakings (PSU) etc. It has **been envisaged as the National Procurement Portal of India. This portal was**

developed by the Directorate General of Supplies and Disposals (Ministry of Commerce and Industry) with technical support from the National e-governance Division (Ministry of Electronic and Information Technology). It is a completely paperless, cashless and system-driven e-marketplace that enables procurement of common-use goods and services with minimal human interface.

6. Key Features of the RTI Act

Right to Access Information: Any citizen of India can request information from a public authority, which is obligated to provide a response within 30 days (or 48 hours in cases concerning life and liberty).

Applicability: The Act applies to all levels of government—**central, state, and local bodies, including government-funded NGOs and institutions.**

Public Information Officers (PIOs): Every government department must **appoint PIOs to handle RTI requests and provide information.**

Appeal Mechanism: If an applicant is not satisfied with the response, they can appeal to the First Appellate Authority and then to the Central or State Information Commission. Penalties: Officials failing to provide information within the stipulated time or providing incorrect details can be fined up to ₹25,000

7. What is the Japan-India-Africa Forum?

A **trilateral economic and strategic platform promoting investment, trade, and development projects across Africa.**

Facilitates collaboration between India, Japan, and African nations to drive **infrastructure, digital transformation, and human capital development**

8. Who is a Data Fiduciary?

Any entity that collects, processes, or stores personal data. Required to obtain consent before processing data and ensure compliance with privacy laws.

Who is a Data Principal?

The individual whose data is being processed. **For PwDs with legal guardians, the DPDP Act includes their guardian within the definition of Data Principal, raising concerns about autonomy and privacy.**

9. What is Delimitation

Delimitation refers to fixing the number of seats and defining the boundaries of parliamentary and

legislative assembly constituencies in each state. It ensures proportional representation based on population while determining reserved seats for Scheduled Castes (SCs) and Scheduled Tribes (STs).

Who Conducts Delimitation?

Delimitation Commission is established under an act of Parliament. It is a high-powered body, whose orders cannot be challenged in any court.

28 FEBRUARY

1. Mount Fentale:



It is a **stratovolcano** located in **Awash National Park in the Oromia Region, Ethiopia**. It rises approximately 600 m from the floor of the Rift Valley, and the lavas of the volcano cover an oval area of approximately 100 sq km. **An elliptical caldera, approximately 6 km in diameter, dominates the upper portion of the volcano.**

Recent Earthquake Activity:

A magnitude 6.0 earthquake hit under Fentale volcano on 14 February 2025. It is the **strongest earthquake to strike Ethiopia since 1989.**

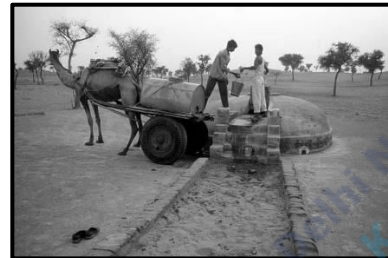
2. Petrification:



Geologists and forest officials recently unearthed a rare and well-preserved petrified fossil at Rajmahal Hills near Barmasia village in Pakur district, Jharkhand. **Petrification (petros means stone) occurs when the organic matter is completely replaced by minerals and**

the fossil is turned to stone. This generally occurs by filling the pores of the tissue and inter- and intracellular spaces with minerals, then dissolving the organic matter and replacing it with minerals. This method reproduces the original tissue. **This kind of fossilization occurs in both hard and soft tissues.**

3. Kundi Water Harvest System



The Kundi traditional Water Harvest System is an excellent example of how **local knowledge and architectural ingenuity can address environmental challenges in water scarce region.** The kundi (also known as a kund) is a traditional rainwater harvesting system that is predominantly found in **desert regions in Rajasthan, India.**

4. Cali Fund



Recently, the **'Cali Fund'** was launched at the resumed **16th Conference of Parties (COP16) to the United Nations Convention on Biological Diversity (CBD) in Rome.** It will collect money from private companies. These companies use genetic data from nature in their businesses. **The Cali Fund will receive money from businesses that rely on Digital Sequence Information (DSI).** This is the first time that a global biodiversity fund under the UN will receive direct contributions from businesses. This fund will be managed by the United Nations Development Programme (UNDP) and United Nations Environment Programme.

5. Svalbard Global Seed Vault:



It is the largest backup facility for the world's crop diversity. **Svalbard is the Norwegian archipelago half way between the Northern pole and Mainland Norway.** The Seed Vault's objective is to safeguard as much of the world's unique crop genetic material as possible while also avoiding unnecessary duplication. **It offers free-of-charge, long-term storage of seed duplicates from international, national and regional gene banks and institutions.** The ownership of the seeds remains with the depositing gene bank. **In the Seed Vault they are stored under so called black box conditions, meaning that only the institution that deposited the seeds has access and is allowed to withdraw them.** The facility serves a humanitarian purpose and is part of the international system for conserving plant genetic diversity guided by the UN organisation for Food and Agriculture (FAO).

6. Public Accounts Committee

Definition: The PAC is a committee in the Indian Parliament responsible for auditing the revenue and expenditure of the Government of India. It ensures that parliamentary control over the executive is maintained, particularly regarding government spending.

Composition: The PAC consists of up to 22 members: 15 from the Lok Sabha (Lower House) and 7 from the Rajya Sabha (Upper House).

No ministers can be members of the PAC. Members are elected annually by their respective houses using proportional representation through a single transferable vote. **The chairperson is appointed by the Speaker of the Lok Sabha. The term of office for members is one year.**

7. Deputy Speaker

Articles 93 (Lok Sabha) and 178 (State Legislative Assembly) state that the election of the Speaker and Deputy Speaker is mandatory under the Constitution. The Constitution says the Deputy Speaker must be elected "as soon as may be" but does not specify a time frame. **Generally, the Speaker is elected in the first**

session, and the Deputy Speaker is elected in the second session. The Deputy Speaker remains in office until the House is dissolved or if they cease to be a member.

8. PUNCH Mission

SPHEREx will launch alongside NASA's PUNCH mission, which studies the Sun's solar wind. PUNCH consists of four small satellites in low Earth orbit. It will make 3D global observations of the inner heliosphere to understand how the Sun's corona becomes the solar wind. **The satellites will map the transition zone where the Sun's corona turns into solar wind.**