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Mains Daily News Analysis

General Studies I

1.1. Modernising India's Education System: Government's Push for 21st Century Readiness

Why in the News?

Prime Minister Narendra Modi has said that the government is modernising the country's education system to meet the **needs of the 21st century**.

Introduction

- India is undergoing a significant transformation in its education landscape, with the government taking **proactive steps to modernise the system** in alignment with global standards and the needs of a rapidly **evolving knowledge economy**.
- Addressing the **first-ever YUGM Innovation Conclave held at Bharat Mandapam, New Delhi**, PM Modi reaffirmed the government's commitment to creating a **dynamic, inclusive, and future-ready education ecosystem**.
- The centre piece of this transformation is the **New Education Policy (NEP)**, which aims to equip India's youth with the **skills, resources, and mindset** necessary to make the country a global innovation hub.

Driving Forces Behind Education Reform

- At the heart of this reform initiative is the belief that **India's future depends on its youth**, and preparing them for global competitiveness is crucial.
- The government's approach encompasses three key elements: **Talent, Technology, and Temperament**, which together form the trinity envisioned to drive India's ascent on the world stage.
- The NEP, introduced in 2020 and continuously **refined**, has become the cornerstone of this vision.
- From **curriculum redesign** to **technological integration**, the focus is on transforming Indian classrooms, research spaces, and learning ecosystems to meet international benchmarks.

Key Interventions and Infrastructure Development

- National Curriculum Framework and School Reforms**
 - The development of new **textbooks and teaching-learning materials** for Classes 1 to 7 under the **National Curriculum Framework** represents a foundational shift.
 - The framework prioritises **conceptual clarity, experiential learning, and multilingual education**, addressing the diversity of India's learners.
- Higher Education Expansion**
 - The government has committed to increasing **seats and capacity in premier institutions** such as IITs, and to launching **meditech courses** in partnership with institutions like AIIMS.
 - These efforts aim to **bridge the gap between academia and industry**, especially in areas such as biomedical engineering and AI-driven healthcare.
- Digital Education Infrastructure**
 - Under the **PM e-Vidya** initiative and the **DIKSHA platform**, a robust digital backbone is being developed to enable **'One Nation, One Digital Education Infrastructure'**.
 - Educational content is now being created in **over 30 Indian languages** and **seven foreign languages**, enhancing accessibility and equity across socio-economic groups.



Empowering Research and Innovation

- **Research Parks and R&D Cells**
 - India's research ecosystem has witnessed significant growth. Since 2014, the number of **operational research parks** has grown from 3 to 9, with 13 more planned.
 - Nearly **6,000 higher education institutions** now house **Research and Development Cells**, encouraging a research-driven academic culture.
- **National Research Foundation**
 - The proposed **Anusandhan National Research Foundation (ANRF)** will play a central role in promoting frontier research.
 - With the **Gross Expenditure on R&D (GERD)** doubling from ₹60,000 crore in 2013-14 to ₹1.25 lakh crore, India is signalling a **shift from rote-based education to a discovery-driven model**.
- **Innovation and Commercialisation**
 - To shorten the gap between **idea, prototype, and product**, the government is actively facilitating **lab-to-market transitions**.
 - This includes **catalysing public-private-academic partnerships** and encouraging youth-led innovation, making university campuses the new epicentres of transformative ideas.

Global Engagement and Academic Mobility

- India is not only transforming education domestically but also **internationalising its institutions**.
- **Campuses of IIT Delhi in Abu Dhabi, IIT Madras in Tanzania, and upcoming plans for IIM Ahmedabad in Dubai** signal India's academic footprint going global.
- Simultaneously, top foreign universities are being invited to establish campuses in India, enhancing **cross-border knowledge flows**.

Access to World-Class Knowledge

- The **'One Nation, One Subscription'** initiative ensures that Indian students and researchers can access top-tier research journals without institutional barriers.
- This initiative aims to **democratise academic access and foster a culture of continuous learning**.

India's AI Ambitions in Education

- Aligning with the larger **IndiaAI Mission**, the government is also investing in **AI-based educational infrastructure**.
- The objective is to leverage AI not just for administrative efficiency but to **personalise learning, predict skill gaps, and transform pedagogy** across education levels.

1. 2. India's Urban Future is At a Crossroads

Context

- **As summer intensifies** across India, **cities are grappling with severe water shortages, surging electricity demand, and escalating temperatures**.
- **Reports from metropolitan areas like Bengaluru and Hyderabad** reveal a sharp increase in water tanker bookings and frequent power cuts **driven by heightened air-conditioner usage**.
- These annual struggles highlight a pressing question: **Are Indian cities prepared to withstand climate extremes and the pressures of rapid urbanisation?**

The Complexities of Urban Growth and Limitations of Current Indices

- **The Complexities of Urban Growth**
 - Urbanisation in India has brought economic opportunities, innovation, and growth.



- However, it has also exacerbated pollution, congestion, and environmental degradation, disproportionately affecting the underprivileged.
- According to the Sustainable Futures Collective's report "Is India Ready for a Warming World?" (2025), Indian cities still have a long way to go in terms of long-term climate planning.
- **Repeated concerns raised in Parliament** about the worsening urban heat island effect reinforce the stark realities on the ground.
- As **India aims to achieve Sustainable Development Goal 11 (SDG-11)**, building inclusive, safe, resilient, and sustainable cities by 2030, these issues demand immediate and sustained attention.
- **Limitations of Current Indices**
 - While global frameworks for measuring SDG-11 progress exist, **India lacks robust, city-level tools for effective tracking.**
 - NITI Aayog's SDG Urban Index evaluates 56 cities across 77 indicators, yet **its assessment of SDG-11 is limited to just four parameters: Swachh Survekshan (sanitation survey),** road accident deaths, Pradhan Mantri Awas Yojana-Urban (housing scheme), and waste treatment coverage.
 - Meanwhile, **the Ease of Living Index covers 111 cities but does not provide a comprehensive evaluation of SDG-11 dimensions.**
 - International indices such as Mercer's Quality of Living Index and the Economist Intelligence Unit's Resilient Cities Index offer valuable insights but **often fail to account for India's unique urban realities.**
 - This **absence of a focused, context-sensitive SDG-11 index creates a significant policy-research gap, limiting policymakers' ability** to identify which cities are truly safe, sustainable, and inclusive.

A New Approach to Measuring Urban Progress

- To bridge this gap, **researchers have developed four distinct indices focusing on the core pillars of SDG-11: safety, inclusivity, resilience, and sustainability.**
- **Ten major cities**, Hyderabad, Delhi, Bengaluru, Chennai, Mumbai, Pune, Kolkata, Jaipur, Ahmedabad, and Surat, **were ranked using indicators drawn from United Nations urban frameworks.**
- **Data sources included the Census 2011, Road Transport Yearbook, Indian Forest Survey, National Crime Records Bureau, Periodic Labour Force Survey, National Family Health Survey-5, Reserve Bank of India, India Meteorological Department, and the Ola Mobility Institute's Ease of Moving Index 2022.**
- Employing the **Shannon Entropy Weighting Technique** from Multi-Criteria Decision-Making modelling, researchers assigned objective weights to the indicators, enhancing the reliability of the indices.
- The findings reveal striking disparities:
 - **Inclusivity: Ahmedabad ranked highest**, while Jaipur performed the worst.
 - **Safety: Bengaluru was found to be the safest city; Kolkata ranked the lowest.**
 - **Sustainability: Surat led**, whereas Kolkata lagged.
 - **Resilience: Chennai topped the resilience index; Jaipur ranked last.**
- Notably, **cities that were deemed front-runners in NITI Aayog's SDG-11 assessments performed poorly** under this new, more rigorous evaluation.

Key Insights and Challenges

- These variations spotlight urgent urban challenges:
 - **Inclusivity gaps** show deep-rooted disparities in economic and social access, underscoring the need for equitable urban development.
 - **Safety rankings** highlight inconsistent urban security and law enforcement across cities.
 - **Sustainability outcomes** point to uneven progress in waste management, environmental planning, and pollution control.
 - **Resilience disparities** reveal significant deficiencies in disaster preparedness and recovery strategies.
- **The Annual Survey of Indian City Systems 2023 by Janaagraha reinforces these concerns**, reporting that only 16 cities have a dedicated "city sustainability plan" and only 17 have formal **city resilience strategies.**



- Such **deficits reveal the groundwork still needed for India to achieve meaningful progress toward SDG-11.**

The Road Ahead

- **City-level Monitoring:** Urban Local Bodies (ULBs) **must adopt SDG-11 tracking frameworks**, similar to the district-level mechanisms established by some states.
- **Leveraging Technology:** Integrated Command and Control Centres (ICCCs) **under the Smart Cities Mission should be utilised for real-time urban data collection** to enhance planning and decision-making.
- **Addressing Urban Poverty:** With one-third of urban residents living in poverty, the reliance on outdated Census 2011 data is inadequate. A **Periodic Urban Poor Quality of Living Survey** at the state level is urgently needed.
- **Localized Governance:** Each city's unique challenges **must be addressed through localised, data-driven strategies rather than blanket national policies.**

Conclusion

- **Building safe, inclusive, resilient, and sustainable Indian cities demands urgent, coordinated action** backed by robust data, inclusive governance, and strategic long-term planning.
- **Without addressing the multifaceted challenges** outlined here, **India risks falling short of its 2030 SDG-11 goals, with dire consequences for millions** living in its rapidly growing urban centres.

1. 3. Understanding the 2025 Papal Conclave: Dynamics, Divisions, and Decisions

Why in the News?

Recently, Pope Francis died at the age of 88 at **Domus Sanctae Marthae in Vatican City.**

Introduction

- The Catholic Church has entered a historic moment with the passing of Pope Francis.
- The Church now stands in the **sede vacante** period, the interregnum until a new Pope is elected.
- At the heart of this transition is the **Papal Conclave**, an **ancient, deeply spiritual**, yet inherently political process.
- Governed by strict rules under the apostolic constitution **Universi Dominici Gregis (UDG)**, the Conclave blends ritual, secrecy, diplomacy, and strategic negotiation to determine the next leader of the global Catholic community.

Governing Rules and Procedures of the Conclave

- The Conclave's procedures are strictly dictated by **UDG**, emphasizing complete **secrecy** and **isolation** within Vatican City to minimize external influence.
 - Only **cardinals under 80 years of age** are eligible to vote.
 - Voting requires a **two-thirds majority**, necessitating broad consensus and preventing narrow factional control.
 - Despite being barred from voting, senior cardinals (over 80) still participate in pre-Conclave deliberations, potentially influencing the electors.
- Behind the locked doors of the Sistine Chapel, **alliances are built, negotiations unfold, and influence is wielded** through respected figures known as the '**great electors**'.
- The secrecy ensures that **decisions are made based on conscience, away from public or political pressure.**

Political Divisions within the College of Cardinals

- The **College of Cardinals** is notably divided, largely reflecting debates over Pope Francis's reformist legacy and the Church's future direction. Two broad camps emerge:
- **Reformists/Progressives:**
 - Support Pope Francis's emphasis on **pastoral theology** over rigid doctrine.
 - Advocate for **social justice, climate action, migration rights**, and greater **inclusion of women and LGBTQ+ Catholics.**



- **Conservatives/Traditionalists:**

- Stress **liturgical tradition**, doctrinal **clarity**, and a return to pre-Francis norms.
- Seek to reaffirm **established moral teachings** and resist perceived doctrinal dilution.

- However, these divisions are nuanced. Many cardinals from the **Global South**, Africa, Asia, and Latin America, combine **social conservatism** (e.g., opposition to same-sex blessings like the **Fiducia Supplicans**) with a strong commitment to **social justice** and **environmental advocacy**, making their voting behaviour less predictable.

Geographical Shifts in Power Dynamics

- Pope Francis deliberately altered the traditional European dominance in the College of Cardinals:
 - **Europeans now constitute only about 39.3%** of the electors, down from over 50% in 2013.
 - **Asia-Pacific** represents about 17%, **Latin America** 15.6%, and **Africa** 13.3%.
- This diversification reflects the **global nature of Catholicism** and introduces new political complexities.
- Cardinals from the **Global South**, shaped by **poverty, migration, and interreligious dynamics**, will likely influence the focus of the Conclave toward broader global challenges rather than traditional European concerns.
- The shrinking European share and growing southern representation increase the possibility of a **non-European Pope**, and make **cross-regional coalition-building essential** to reach the two-thirds voting threshold.

Key Issues Likely to Shape the Conclave Deliberations

- Several pressing theological and social issues are expected to dominate discussions:
 - **Synodality:** Pope Francis's project to promote a more **consultative Church** faces uncertain prospects, with some seeing it as renewal, others as a threat to hierarchical authority.
 - **Handling of LGBTQ+ Issues:** The backlash to **Fiducia Supplicans** (allowing blessings for same-sex couples) highlights tensions between pastoral outreach and doctrinal purity.
 - **Role of Women:** Calls for greater inclusion, including possibilities like **women deacons**, are gaining momentum.
 - **Clerical Celibacy and Bioethics:** Sensitive discussions on evolving traditional stances are expected.
 - **Sexual Abuse Crisis:** Despite reforms like **Vos Estis Lux Mundi**, concerns about enforcement and accountability persist, **making transparency and survivor support key litmus tests for candidates**.
 - **Geopolitical and Internal Reforms:** The next Pope must address **international conflicts (e.g., Ukraine, Gaza)**, **navigate relations with powers like China (especially regarding the controversial Vatican-China deal)**, and continue internal financial reforms after scandals like the London property case.

The Unpredictability of the Outcome

- Unlike previous Conclaves where front-runners were clear, the 2025 Conclave is marked by unpredictability:
 - The **diverse composition** of cardinals, many unfamiliar with each other, adds complexity.
 - The **secrecy** of the proceedings ensures that real alliances and shifts remain invisible until the **white smoke** announces the decision.
 - The traditional Vatican saying, "**He who enters the Conclave as Pope, leaves it as a cardinal**," reflects the uncertainty, often, unexpected candidates emerge as compromise choices acceptable to various factions.
- The final choice will be a product of **political manoeuvring, individual discernment**, and, for believers, **divine guidance** within the sacred walls of the Sistine Chapel.

1. 4. Food Safety and Nutrition in India- A Public Health Challenge

Context:

- In India, **food safety and nutrition are often overshadowed by socio-political considerations**, despite alarming public health indicators like widespread child malnutrition and rising non-communicable diseases.
- **Rampant food adulteration** - ranging from milk and paneer to spices and oils - not only **endangers health** but also **undermines** the country's **economic credibility and regulatory framework**.



Food and its Socio-Political Dimensions:

- **Food as a social construct:** Decisions around food in India, including **mid-day meals and public functions**, are influenced more by social and political contexts than by nutritional needs.
- **Neglect of health aspects:** Health considerations often take a back seat despite alarming nutrition indicators.

Nutritional Status and Policy Apathy:

- **NFHS-5 (2019–21) findings (among under five children):**
 - **Stunting:** 35.5%
 - **Wasting:** 19.3%
 - **Underweight prevalence:** 32.1%
- **Lack of nutritional prioritization:** Despite such indicators, public health and nutrition continue to be low on the policy agenda.

The Menace of Food Adulteration:

- **Adulteration in dairy products:**
 - **Milk adulteration:**
 - **National survey on milk adulteration (2011):** 70% of milk samples failed safety standards.
 - **Common adulterants:** Water, salt, detergents, glucose.
 - **Fake paneer:** Detected in Delhi, Mumbai, Noida with adulterants like starch, synthetic milk, acetic acid.
- **Spices:**
 - Hong Kong banned (April 2024) MDH and Everest spice blends for **containing ethylene oxide (carcinogen)**.
 - **The EU has raised concerns** about the presence of **ethylene oxide in chilli peppers** from India, and **banned** 400 spice items between 2019–2024 due to contamination.
- **Edible oil contamination:**
 - **Common adulterants:** Rice bran oil, argemone oil, artificial allyl isothiocyanate.
 - **Health implications:** Linked with non-communicable diseases like diabetes.

Public Health Implications:

- **India's health crisis:**
 - Referred to as the "**Diabetes Capital**" with 77 million adults (above 18) suffering from this non-communicable disease.
 - A recent study by the Indian Council of Medical Research (**ICMR**) has attributed this to the **dietary patterns**, including **ultra-processed** and **fried food consumption**.
- **Lack of public awareness:** Adulterated food leads to **food poisoning and even death** in severe cases.

Regulatory and Institutional Gaps:

- **Role of Food Safety and Standards Authority of India (FSSAI):**
 - Conducts raids, tests sample, cancels licenses.
 - Urges the public to be cautious - **a shift of responsibility** from the state to individuals.
- **Challenges in implementation:**
 - **Weak state infrastructure** hampers effective food regulation.
 - **Need for capacity building** among food producers and vendors.

Way Forward - Reforms and Recommendations:

- **Stricter FSSAI enforcement:** Nationwide standardization and compliance.
- **Improved food supply chain:** Focus on farming, processing, and packaging hygiene.
- **Food literacy:** Promotion of awareness regarding safe and nutritious food consumption.
- **Review of pesticide permissibility:** Update safety norms to align with global standards.



- **Empowering citizens without abdicating state responsibility:** Balanced accountability framework.

Conclusion:

- **Food safety** is not just a health concern - it is a **governance issue** with socio-economic and international ramifications.
- **Ensuring clean, nutritious, and unadulterated food** must be a state priority backed by institutional strength, regulatory vigilance, and public engagement, especially in a country **facing dual burdens** of undernutrition and non-communicable diseases.

1. 5. India's Silent Youth Mental Health Crisis- A Call for Urgent Reform and Empathy

Context:

- Being a **young person** in contemporary India is increasingly fraught with **emotional and psychological challenges**.
- Far from being carefree, adolescence today is marked by **academic stress, digital overexposure, and emotional isolation** - contributing to a **mental health crisis** that remains dangerously under-addressed.

The Hidden Epidemic of Youth Mental Health:

- **Startling statistics:**
 - Over 40,000 student **suicides** in the last 5 years (NCRB) - over 20 daily.
 - **1 in 10** adolescents suffers from a **mental health disorder** (National Mental Health Survey, 2016).
 - India allocates **less than 0.5%** of its total health budget to **mental health**.
 - India has **over 250 million people below age 20**, making the underinvestment a serious crisis.
- **Post-pandemic impact:**
 - COVID-19 **exacerbated emotional distress** among adolescents.
 - **Digital dependency** and **compulsive social media** use during lockdown led to:
 - **Online validation** replacing self-esteem.
 - **Unrealistic beauty and success standards**.
 - Increased **performance anxiety** and **emotional insecurity**.

Cultural and Social Pressures on Mental Health:

- **The influence of online culture:**
 - Social media contributes to **comparison culture**, fear of missing out (**FOMO**), and **digital burnout**.
 - **Netflix series Adolescence** highlights gaps in youth support systems.
- **Rise of toxic masculinity:**
 - Influencers promoting **dominance, aggression, and emotional suppression** harm both boys and girls.
 - Boys are discouraged from showing vulnerability or seeking help.
 - Urgent need to redefine **masculinity around empathy**, emotional expression, and resilience.

The Need for Systemic and Cultural Reform:

- **Education system reforms:**
 - Mental health support must be integrated into **school infrastructure** - trained counsellors, preventive programmes, and emotional education
 - **Teach digital literacy and emotional intelligence** to combat negative online influences.
- **Budget and infrastructure:**
 - **Increase mental health budget** allocation significantly.
 - **Expand services to rural** and underserved areas.
 - Address shortage of trained professionals and weak infrastructure.



Shaping a Healthier Emotional Ecosystem:

- **Family and community involvement:** Stigma starts at home - families must be educated to:
 - Recognise signs of distress.
 - Encourage emotional expression.
 - Treat mental health with the same seriousness as physical health.
- **Role of public figures:** Celebrities, politicians, and influencers should:
 - Speak about their own emotional challenges.
 - Promote a culture of openness and authenticity.

The Road Ahead - Policy and Empathy:

- **National priority:**
 - Addressing youth mental health is not merely a health issue, but a **developmental imperative**.
 - Inaction leads to **lost potential, lost futures, and lost lives**.
- **Civil society and government responsibility:** India must listen with **empathy**, invest with **urgency**, and act with **compassion**.

Conclusion - A Call to Action:

- India's youth need more than academic goals and digital success.
- They need **emotional support, safe spaces**, and a society that values mental well-being.
- **If we call them the future, we must protect their present.** The choice is ours - silence or solidarity.

1. 6. Feminism for Polarised Times

Context

- The implementation of the **Women's Reservation Bill, 2023**, marked a **transformative moment in India's socio-political landscape**.
- It signified a **shift in gender equity** from the peripheries to the core of political discourse.
- Yet, **this mainstreaming of feminist concerns, while undeniably progressive, has also led to a paradox:** the very centrality of gender issues in public dialogue has made critical engagement with feminism increasingly fraught.
- **Feminist discourse today, while more visible and powerful than ever, can at times feel rigid, polarised, and disconnected** from the emotional complexity of lived experience.

Feminism's Two Terrains: Structural and Interpersonal

- The first is structural, **the institutional and societal frameworks that have historically marginalized women**.
- These include issues of **political representation, economic opportunity, education, and safety**.
- The second is the interpersonal, **the realm of relationships, family dynamics, and everyday interactions**.
- **While the two inevitably intersect, the danger lies in overextending structural critiques** into interpersonal spaces, potentially distorting the human richness of relationships.
- To suggest that **every domestic expectation or traditional role is an expression of patriarchal oppression is to flatten the complexity** of human interactions.
- For instance, **in many Indian households, men silently sacrifice comfort** and endure harsh work conditions to support their families.
- **A husband may expect a home-cooked meal, but also hand over his entire income to his wife.**
- These actions are **steeped not merely in control, but also in care, duty, and emotional dependence**.
- **Such contradictions do not absolve patriarchy, but they complicate it**, and understanding these layers is crucial to building a truly inclusive feminist framework.



Structural Change and Everyday Negotiations

- This complexity extends to how social change is affected.
- While systemic reform through protest, legislation, and policy is indispensable, **change also emerges through subtle, daily negotiations**: a father sending his daughter to college, a husband adjusting to a partner's career, or a family rethinking traditional gender role.
- **These micro-level shifts**, especially in marginalised communities, **are often facilitated by men** who may not identify as feminists but act as quiet allies.
- **Acknowledging their role does not weaken feminism**, it strengthens it by recognising the multi-dimensional nature of progress.
- There are, of course, **clear and egregious instances of gender-based violence and suppression**, from honour killings to proxy political representation.
- These demand **unequivocal institutional intervention** and **cultural transformation**.
- To address such structural barriers, **we must build the state's capacity to deliver justice and protection effectively**.
- However, **the most sustainable feminist interventions** are those that work at both the institutional and societal levels, and that are sensitive to context and diversity of experience.

A Major Challenge in Contemporary Feminist Discourse: The Dangers of Collapsing Contexts

- A major challenge in contemporary feminist discourse is the **tendency to collapse varied experiences into a singular narrative**.
- **The struggles of an urban, financially independent woman** navigating domestic expectations are profoundly different from the existential threats faced by rural women lacking basic safety.
- Yet, too often, **feminist rhetoric treats these inequities as part of a homogenous whole**.
- This **not only risks misrepresenting reality but also alienates potential allies**, particularly men, who may themselves be navigating vulnerability and hardship.
- **Indeed, many men today feel embattled**, a sentiment that, while sometimes exaggerated, is not always unfounded.
- **A man who earns less and faces public humiliation may not immediately recognise his privilege over a woman** who, though unpaid, is shielded from those same indignities.
- **Such complexities must be acknowledged if feminism is to build solidarity** rather than provoke defensiveness.

The Way Forward: Towards a Compassionate Feminism

- In today's hyper-antagonistic social climate, **a more compassionate feminism may be the need of the hour**.
- This is not a retreat from principles, **but a strategic and ethical recalibration**.
- **A feminism that recognises the emotional and economic pressures faced by men**, particularly those on the margins, **has the potential to invite empathy and support**, rather than opposition.
- What we need now is **a feminism that can hold contradiction without collapsing into complicity**.
- One that **distinguishes between systemic injustice and interpersonal dynamics**, that respects cultural context while pushing for reform, and that views men not solely as oppressors, but also as partners in the struggle for equality.
- **Such a feminism is better equipped to transform society** because it begins not with blame, but with understanding.

Conclusion

- **In male-female relationships**, where the personal is inevitably political, **an adversarial stance may sometimes be necessary, but it should not be the default**.
- **A feminism rooted in solidarity, humility, and care may be more powerful in the long run**.
- After all, **the goal is not just to dismantle patriarchy, but to reimagine relationships**, both personal and political, in ways that are equitable, respectful, and deeply human.



1. 7. Jyotiba Phule: Pioneer of India's Social Awakening

Why in the News?

- Prime Minister Narendra Modi paid tributes to Jyotiba Phule on his birth anniversary falling on **April 11**.

About Jyotiba Phule

- Jyotiba Phule, born on April 11, 1827, was a **trailblazing thinker, educator, and social reformer** who revolutionized the 19th-century Indian society through his fight **against caste oppression and gender inequality**.
- His lifelong mission was to **build a more just and equal society**, which he pursued through **education, activism, and institution-building**, even in the face of harsh orthodoxy and resistance.

Early Inspirations and the Founding of India's First Girls' School

- Phule's transformative journey began in 1848 after facing caste-based humiliation at a Brahmin friend's wedding.
- This pivotal moment ignited his resolve to combat social discrimination. Inspired by missionary Cynthia Farrar and rationalist thinkers like **Thomas Paine**, **Phule, along with his wife Savitribai Phule, founded India's first school for girls that same year**.
- By the age of 24, he had opened 18 such schools and **several night schools for workers and underprivileged children**.

Satyashodhak Samaj and Fight Against Caste Hierarchy

- In 1873, Phule founded the **Satyashodhak Samaj** (Society of Truth-Seekers), which served as a counterforce to upper-caste-dominated reformist movements like **Brahmo Samaj and Arya Samaj**.
- His writings, including the influential **Gulamgiri** (Slavery), equated the condition of India's lower castes with that of African-American slaves, **denouncing Brahminical oppression as a tool of systemic subjugation**.

Emphasis on Education and Upliftment of the Working Class

- Phule championed **compulsory primary education for all**, especially the poor.
- In a statement to the Education Commission, he advocated **scholarships and incentives** to ensure school attendance, particularly for rural children who were often kept away to assist with farming.
- His vision was to **empower the lower castes** economically and intellectually to dismantle caste-based barriers.

A Rational and Inclusive Spiritual Philosophy

- Although critical of religious orthodoxy, Phule maintained a nuanced view of faith.
- He **respected Christianity and Islam for their emphasis on equality** but leaned toward a **rationalist and humanist philosophy**.
- His final work, **Sarvajanik Satya Dharma Pustak**, rejected dogma and called for a universal, inclusive approach to spirituality, questioning the sanctity of caste-based divisions.

Views on Social and Agricultural Reforms

- In **Shetkaryanche Asud** (Farmer's Whip), Phule advocated for administrative support to farmers, proposing innovative solutions like:
 - **Employing soldiers in civil works** such as building small dams and bunds
 - **Releasing pasture lands** from forest departments back to villagers
 - Importing cattle for meat to prevent depletion of farming livestock
- These ideas reflected his belief that **agricultural reform was crucial** to breaking the poverty cycle and ensuring food security.



Advocacy for Women and Radical Equality

- Phule's defense of **Pandita Ramabai's religious conversion** and his sharp **critique of polygamy** showcased his progressive stance on women's rights.
- He argued for **gender equality** with the same intensity as caste reform, challenging double standards in religious texts and patriarchal practices.

Lasting Legacy

- Jyotiba Phule's impact resonates **even today**.
- His relentless questioning of oppressive systems, pioneering work in education, and **establishment of inclusive social institutions** have inspired generations of social activists.
- His legacy continues to shape the discourse around **caste, education, and social justice in India**.

1. 8. Drop the Piecemeal Ways to Social Security for Workers

Context

- With the growing presence of app-based gig workers in its economy, **India has begun acknowledging the unique challenges this new workforce segment faces**.
- The **recent efforts to integrate gig workers** into the fold of social security, including proposed schemes such as health coverage under **Ayushman Bharat**, registration on the **eShram portal**, and a transaction-based pension policy, **signify a progressive step**.
- However, **while these moves represent a shift in policy mindset, they also cast a spotlight on the deeper structural shortcomings** of India's existing social protection framework.

A Promising Shift in Approach

- The **planned initiatives mark a departure from the traditional model** that tied social security exclusively to formal employment.
- **Gig workers**, who often operate outside conventional employer-employee relationships and may work across multiple platforms, have **historically been excluded from state welfare**.
- The **universal account number** system proposed in the pension scheme is a promising development.
- It **facilitates a seamless tracking of gig workers' earnings** across platforms and enables proportional contributions from each employer, thereby recognizing the fragmented nature of gig employment.
- In a country where informal workers have long been sidelined from formal welfare mechanisms, **these reforms hint at a more inclusive vision**.
- They **suggest a slow but meaningful shift from exclusionary practices** to a broader understanding of labour rights.

Systemic Flaws in the Existing Framework

- **Piecemeal Commitment: Incremental Approach to Reforms**
 - Despite these advances, the **broader structure of India's social protection remains fundamentally flawed**.
 - **India's failure to ratify the International Labour Organisation's Social Security (Minimum Standards) Convention, 1952 (No. 102)**, is emblematic of its **piecemeal commitment to comprehensive labour welfare**.
 - Even the **recently enacted Code on Social Security, touted as a landmark reform**, has faced criticism for its **ambiguous provisions**, diluted protections, and the persistent challenges in its implementation.
- **Over Reliance on Welfare Boards**
 - A major concern is the **over-reliance on welfare boards** for the delivery of benefits.
 - **These boards have frequently been marred by inefficiency** and underutilisation of funds.
 - **Recent reports**, including a Right to Information petition and a Comptroller and Auditor General (CAG) review, **have revealed massive unspent cess collections and delayed payments**.



- **Even states like Kerala**, long considered progressive in labour welfare, **show uneven performance, with many welfare boards failing to serve beneficiaries effectively.**
- **This reflects a chronic issue:** a well-intentioned policy apparatus undermined by weak governance and execution.

Implications of Incremental Approach

Fragmented Approach

- **Different worker groups**, beedi workers, construction workers, gig workers, domestic workers, **are all treated as separate silos**, each with its own welfare board, funding mechanism, eligibility criteria, and implementation process.
- While this might allow for tailored schemes in theory, in practice, it creates an **uneven landscape** where access to social protection depends more on bureaucratic classification than actual need or vulnerability.
- As a result, **workers who perform equally precarious labour may enjoy vastly different levels of support** simply because of the sector they are classified under.

Reinforcing Exclusion

- The emergence of gig workers as a focus for policy innovation is welcome, but **it raises an important question: what about the millions of other informal workers** who have been struggling without social protection for decades?
- By focusing reform energy on new categories of workers while neglecting older or less visible groups, India runs the risk of creating a **hierarchy of informality**, where some forms of informal work are seen as more deserving of attention and benefits than others.

Short Term Fixes Over Structural Reform

- This piecemeal strategy also tends to promote **short-term fixes over structural reform.**
- For instance, **establishing new welfare boards or funds for each new category of informal worker might provide temporary relief.**
- But it **does not solve the systemic issues of poor governance**, lack of transparency, and weak enforcement mechanisms that plague the overall welfare infrastructure.
- Rather than building resilient institutions capable of adapting to future challenges, **the state often opts for narrowly scoped schemes that quickly become outdated or defunct**, as seen with the closure of several older welfare boards.

The Case for Universal Social Protection

- To truly prepare for the future of work, **India must pivot towards a more robust, inclusive, and universal model of social protection.**
- Such a system **should not only accommodate current categories of workers but be flexible enough to adapt to future disruptions** brought about by technological advancement or economic shifts.
- **The Social Security Code**, despite its limitations, **could serve as a foundational framework.**
- If treated as a minimum baseline rather than a comprehensive solution, **the Code offers a springboard for more progressive state-level innovations.**
- **States should leverage the autonomy afforded to them** within the Code to develop schemes that are not only context-specific but also designed with a vision of universality and sustainability.

Conclusion

- **India's recent efforts to extend social security** to gig workers signal an **important policy transition.**
- However, **without addressing the structural weaknesses** of its social welfare systems and moving beyond reactive, segmented strategies, **these reforms may fall short of their transformative potential.**
- **A future-ready workforce requires a future-ready welfare architecture**, one that is inclusive, adaptable, and fundamentally grounded in the principle that no worker, **irrespective of their employment type, is left behind.**



1. 9. Digital Child Abuse, the Danger of AI-Based Exploitation

Context

- **One of the most alarming threats** is the use of AI to generate, possess, and **disseminate child sexual abuse material (CSAM)**.
- In response, **the United Kingdom (U.K.) has taken a pioneering step by introducing legislation targeting AI-generated CSAM**.
- This **development is accompanied by growing global concern** over the misuse of AI tools to create life-like child exploitation content.
- Given the increasing incidence of cybercrimes against children, **India must reassess its existing legal framework and adapt it to effectively counter this emerging threat**.

The UK's Legislative Approach to AI-Generated CSAM

- The **International AI Safety Report 2025**, released by the British government's Department for Science, Innovation, and Technology in collaboration with the AI Security Institute, highlights the risks posed by AI-generated CSAM.
- In response, **the U.K. is set to introduce legislation that will criminalize the possession, creation, and dissemination of AI tools designed for generating CSAM**.
- Additionally, **possessing manuals that guide individuals on using AI for CSAM production will also be illegal**.
- This **proposed legislation represents a shift from an 'accused-centric' and 'act-centric' approach to a "tool-centric" one**, recognizing that AI itself can facilitate child exploitation crimes.
- Existing U.K. laws, such as the **Protection of Children Act 1978** and the **Coroners and Justice Act 2009**, focus primarily on individuals and their actions.
- However, the **new legislation takes a proactive stance** by targeting the tools that enable such crimes, providing several advantages:
 - It **allows authorities to apprehend offenders at an earlier stage**, potentially preventing harm.
 - It **reduces the psychological and emotional damage caused to children** by limiting the spread of AI-generated CSAM.
 - It **closes a crucial legal loophole**, previously, laws addressed only materials involving actual children, whereas AI-generated imagery was not explicitly covered.

The Growing Threat of AI-Generated CSAM in India

- India, like many other nations, faces significant challenges in combatting CSAM.
- The **National Crime Records Bureau (NCRB) Report 2022 reveals a sharp rise in cybercrimes against children**.
- Additionally, **the National Cyber Crime Reporting Portal recorded 1.94 lakh cases of child pornography incidents as of April 2024**.
- These figures **highlight the increasing threat posed by CSAM**, exacerbated by the availability of advanced AI tools.
- While India has existing laws to counter child exploitation, such as Section 67B of the Information Technology (IT) Act, 2000, and provisions under the **Protection of Children from Sexual Offences (POCSO) Act, 2012**, these laws were drafted **before the rise of AI-generated content**.
- As a result, **they fail to adequately address the unique risks posed by AI-generated CSAM**.

Steps Needed to Effectively Counter AI-Generated CSAM in India

- **Expanding Legal Definitions**
 - The National Human Rights Commission (NHRC) **recommended in 2023** that the term **'child pornography' under the POCSO Act be replaced with "CSAM"** for broader legal coverage.
 - Additionally, the phrase **'sexually explicit' under Section 67B of the IT Act** must be clearly defined to facilitate real-time identification and blocking of AI-generated CSAM.



- **Regulating Digital Intermediaries**

- The definition of "intermediary" in the **IT Act** should explicitly include **Virtual Private Networks (VPNs), Virtual Private Servers (VPS)**, and cloud services.
- This will ensure that technology providers bear legal **responsibility for compliance** with CSAM-related laws.

- **Legislative Amendments for AI Risks**

- **Statutory amendments must be introduced to specifically address AI-generated CSAM**, following the U.K.'s example.
- This would **empower enforcement agencies** to act against individuals and platforms facilitating the creation of such material.

- **International Cooperation**

- India **should actively support the UN Draft Convention on 'Countering the Use of Information and Communications Technology for Criminal Purposes.'**
- **Global cooperation is essential** to tackling cross-border digital crimes, including AI-generated CSAM.

- **Incorporating AI-Specific Provisions in the Digital India Act**

- The Ministry of Electronics and Information Technology is currently working on the Digital India Act 2023, which aims to replace the outdated IT Act.
- This **legislation should include specific provisions to combat AI-generated CSAM**, drawing inspiration from the U.K.'s upcoming law.

Conclusion

- **The U.K.'s legislative approach serves as an important model for India** and other nations grappling with similar concerns.
- While India has existing laws to address child exploitation, **they lack explicit provisions for AI-generated content.**
- **By amending its legal framework to include AI-specific safeguards**, strengthening regulatory oversight, and developing international collaboration, **India can take decisive action to protect children in the digital age.**



General Studies II

2. 1. TN Revives Push for State Autonomy- Echoes of Rajamannar Committee After 50 Years

Why in News?

Citing concerns over the erosion of state powers, **Tamil Nadu Chief Minister M K Stalin has set up a high-level committee led by former Supreme Court judge Justice Kurian Joseph** to review Centre-State relations and suggest ways to strengthen states' constitutional rights.

Nearly 50 years ago, then **CM C N Annadurai had formed a similar committee under Dr. P V Rajamannar** to recommend measures for **maximizing state autonomy without compromising national integrity**.

Rajamannar Committee's Observations on Centre-State Relations

- It noted a **growing dominance of the Centre over the States**, with state-specific matters increasingly controlled by the Centre, often because the same party ruled both levels of government.
- Though initiated during Annadurai's tenure, the **Rajamannar Committee report was submitted under M Karunanidhi's leadership to then PM Indira Gandhi**.
- **De Facto Centralisation of States**
 - The committee argued that although the Constitution appeared federal, its practical implementation had **reduced States to mere administrative units of the Centre**.
- **Constitutional Provisions Enabling Central Control**
 - The report cited **Articles 256, 257, and 365**. These provisions gave sweeping powers to the Centre.
 - The Centre could issue directions to the States and enforce them.
 - The committee said **President's Rule was used as a drastic and unprecedented constitutional weapon**.
- **Key Recommendations**
 - **Repeal Article 356 to prevent misuse of President's Rule**.
 - Establish a robust **Inter-State Council under Article 263 to resolve Centre-State differences** through dialogue rather than coercion.
- **Criticism of Extra-Constitutional Institutions**
 - The Rajamannar Committee criticised the **rise of bodies like the Planning Commission**, created by an executive order and not by the Constitution.
- **Central Control Through Financial Powers**
 - The committee noted that **discretionary grants from the Centre gave it a "whip in its hands,"** allowing it to control States through financial dependence.
 - It argued that this made the constitutionally mandated **Finance Commission irrelevant and reduced States to "suppliants for aid" in their own areas**.
- **Erosion of Federal Balance**
 - The report warned of a growing **"Triple" threat—central planning, massive grants, and party politics—**which was steadily eroding the federal structure.
- **Increasing Central Interference**
 - The committee observed that the Centre's frequent involvement in State matters created the impression of an anxiety to exercise overall supervision, undermining State autonomy.
- **Rethinking the Idea of a Strong Centre**
 - The Rajamannar Committee challenged the notion that **centralisation strengthens India**.
 - It warned that by taking on too many responsibilities, the Centre risks becoming weak.
 - True strength, it argued, lies in restraint and clear focus, not in expansionism.



- Quoting C N Annadurai's 1967 speech, the report stressed that while the **Centre must have enough powers to safeguard India's sovereignty**.
 - It should not encroach on subjects like **health and education, which do not contribute to national security**.

Renewed Push for Federalism

- Half a century later, the Stalin-led DMK government is once again questioning the Centre-State balance, amid disputes over **NEET, GST compensation, delimitation, and language policy**.
- **Mandate of the New Committee**
 - The newly formed committee will review the current legal framework and suggest measures to restore the rights of States within the constitutional setup.
- **Uncertain Impact**
 - It remains unclear if New Delhi will act on the new committee's recommendations, as **the Rajamannar Report and later reviews by the Sarkaria and Punchhi Commissions were largely ignored**.
- **A Call for Cooperation**
 - The spirit behind these efforts echoes Annadurai's 1967 vision of strengthening Centre-State relations through mutual goodwill and understanding.

2. 2. The 'Political Trilemma' and the Crisis in the West

Context

- In recent years, **democracies across the Western world have faced an escalating crisis**.
- **Marked by deepening political polarisation**, growing mistrust in democratic institutions, and the rise of populism, **these societies are increasingly turning inward**.
- This phenomenon, although alarming, was foreseen in economic theory.
- **Economist Dani Rodrik's political trilemma, proposed over two decades ago, provides a powerful lens through which to understand these unfolding developments**.

Rodrik's Political Trilemma: Theoretical Foundations

- In his influential 2000 paper, *How Far Will International Economic Integration Go?* **Rodrik highlighted three objectives of countries**.
- Rodrik argued that **countries could, at most, achieve two of the following three objectives simultaneously**: deep international economic integration (globalisation), national sovereignty, and mass politics (popular democracy).
- **Pursuing all three together, Rodrik contended, would eventually result in unsustainable tensions**.
- Despite the strong rhetoric around globalisation, **he observed that national barriers to free trade and economic integration had persisted due to transaction costs** and protectionist policies, suggesting an inherent limit to how globalised the world could become.
- **Rodrik's once-theoretical framework is now being visibly manifested** in the political and economic struggles of Western democracies.
- The **ongoing crisis highlights the contradictions between the three goals and the grave consequences of attempting to balance them all**.

From Theory to Reality: The Western Experience

- **Reality of Globalisation**
 - The first configuration Rodrik identifies is the **combination of globalisation and popular democracy, achieved at the cost of national sovereignty**. The European Union (EU) exemplifies this model.
 - **EU member states have ceded significant control over monetary policy**, trade, and migration to a supranational body to benefit from economic integration.



- While the EU has created a vast single market and boasts impressive economic output, **it has also generated resentment among segments of the population.**
- **Many citizens feel economically marginalised or culturally threatened** by policies that facilitate free movement and open borders.
- This **discontent has fuelled nationalist backlashes, most dramatically witnessed in Brexit and the rise of far-right political parties across Europe**, showcasing the fragility of this configuration.
- **The Issue of National Sovereignty**
 - The **second option involves maintaining globalisation and national sovereignty** while sidelining mass politics.
 - **This results in governance by technocratic institutions insulated from public opinion.** Central banks and regulatory authorities often operate independently to prioritise market confidence over popular welfare.
 - However, **this arrangement risks both democratic disengagement and national sovereignty**, as global markets exert significant influence.
 - The **experience of countries like Kenya, where IMF-imposed austerity measures provoked widespread public anger**, illustrates the societal tensions that arise when global financial interests override domestic priorities.
- **Bretton Woods Compromise**
 - The third path, known as the **Bretton Woods compromise**, preserves national sovereignty and democracy while limiting globalisation.
 - **Countries like India have adopted protectionist policies and industrial strategies to foster domestic growth** while regulating foreign investment and influence.
 - **China and the East Asian Tigers pursued controlled globalisation**, allowing selective integration while maintaining political control.
 - While this model has delivered robust economic growth, **it often comes at the cost of individual freedoms and political dissent**, presenting a different set of trade-offs.

The Western Crisis: An Unattainable Balance

- The predicament facing Western democracies **stems from a persistent attempt to achieve all three goals simultaneously.**
- For decades, **policymakers believed that open markets, national self-determination, and vibrant democracy could coexist harmoniously.**
- However, **globalisation has produced uneven outcomes**, creating winners and losers within societies.
- **Manufacturing industries in the U.S., the U.K., and Europe have declined**, leaving once-thriving communities economically vulnerable.
- These **economic dislocations have been fertile ground for populist leaders like Donald Trump, Geert Wilders, and Viktor Orbán**, who capitalised on grievances against globalisation, immigration, and political elites.
- As traditional political parties and institutions lose public trust, **populist movements advocate protectionism, tighter immigration controls, and disengagement from global cooperative efforts** such as climate change initiatives.
- In doing so, **they offer a nationalist alternative but further deepen societal divisions and threaten democratic norms.**

The Way Forward: The Urgent Need for a New Strategy

- **Rodrik's trilemma remains profoundly relevant today:** nations cannot simultaneously sustain deep globalisation, full national sovereignty, and mass democracy.
- Without acknowledging and addressing the trade-offs, **countries risk prolonged social unrest and economic decline.**
- **Moving forward, Western democracies must strive to ensure that the benefits of globalisation are more evenly distributed** and that democratic institutions are revitalised to serve all citizens, not just the globalised elite.



Conclusion

- Revitalisation democratic institutions **will require much more than populist rhetoric or the wholesale dismantling of government structures.**
- Instead, it **calls for thoughtful reforms aimed at strengthening social safety nets, empowering local communities, and creating inclusive economic policies** that bridge the gap between the global and the local.
- **Only by doing so can the Western world hope to navigate the challenges of Rodrik's trilemma** and secure a stable, prosperous, and democratic future.

2. 3. 70 Years of Bandung- Reviving South-South Solidarity in a Polarised Global Order

Context:

- This year marks the **70th anniversary of the first Asia-Africa Summit held in Bandung**, Indonesia (April 18–24, 1955).
- This historical meeting of 29 newly independent Asian and African nations, set the stage for **South-South cooperation** and laid the foundation of the **Non-Aligned Movement (NAM)**.
- The relevance of the **Bandung principles is critical in today's geopolitical environment** - rising global polarisation, erosion of multilateralism, and challenges to the rules-based international order.

Bandung's Core Principles and Objectives:

- **Anti-colonial solidarity:** Shared experiences of colonial exploitation and marginalisation.
- **Common goals:**
 - Principles of sovereignty and independent policy making.
 - Collective action in the global south.
- **Key principles adopted:**
 - Political independence.
 - Mutual respect for sovereignty.
 - Non-aggression and non-interference in internal affairs.
- **Alignment with UN charter:** Commitment to a rules-based international order grounded in UN principles.

South Africa's Role and Anti-Apartheid Advocacy:

- **Strategic use of Bandung:** Brought global attention to the oppressive apartheid regime in South Africa that governed the country through White minority rule.
- **The African National Congress (ANC) delegation:**
 - The ANC was the foremost **liberation organisation** championing the freedom of the country both within and internationally.
 - It sent two delegates to the conference (Moses Kotane and Maulvi Chachalia) **to lobby support** internationally for South Africa's freedom struggle.

Challenges to the Multilateral World Order:

- **Erosion of multilateralism:**
 - Rise of **polarisation and trust deficit** among major powers.
 - Emergence of **"might is right"** as a guiding principle.
- **UN reform crisis:**
 - **Paralysis** of institutions like the UN Security Council.
 - **Stalled negotiations on equitable representation** and expansion of UNSC membership.
- **PM Narendra Modi's critique:** Described international organisations as **"irrelevant"** due to lack of reform.



The Global South - Then and Now:

- **Initial marginalisation:** Absence during UN's formation in 1945; continued exclusion from global decision-making bodies.
- **Bandung legacy:**
 - Precursor of the NAM (1961) and G77 (1964).
 - Advocated **collective aspirations** and a **multipolar world**.
- **Contemporary relevance and role:**
 - **Emerging powers:** Rise of China, India, Brazil, Indonesia, South Africa.
 - **South-south institutions:** Formation of BRICS as a counterweight to Global North's dominance.
 - **Strategic imperative:**
 - Forge new partnerships and alliances.
 - Collaborate with like-minded Global North nations.
 - Champion an **inclusive, equitable, just global order**.

Conclusion - Bandung's Vision in Today's Context:

- The Bandung spirit remains a **guiding force for the Global South**.
- The need to **reshape multilateralism** and **redefine global governance** is urgent.
- Global South must take proactive leadership to realise a **fair and multipolar world** - "The architects of Bandung would expect nothing less."

2. 4. Is India Heading Towards Judicial Despotism?

Why in the News?

A series of judgments in recent times has had several parties questioning the powers and motives of the Supreme Court.

Introduction

- The Supreme Court of India, long seen as the **guardian of constitutional morality and citizen rights**, has lately found itself at the centre of a national debate.
- Concerns are growing over whether recent judicial decisions reflect an **era of "judicial despotism"** or are simply the judiciary fulfilling its role amidst increasingly complex socio-political conditions.

The Foundations of Judicial Review

- Although the Indian Constitution does not explicitly mention the term "judicial review," its spirit is embedded in **Article 13**. It empowers **constitutional courts to invalidate laws that contradict fundamental rights**.
- **Articles 32 and 226** further cement the judiciary's role in safeguarding rights, reinforcing that judicial review is an essential component of the basic structure of the Constitution.
- The concept has evolved with doctrines like **Public Interest Litigation** and **locus standi**, once meant to extend access to justice, now often accused of expanding judicial reach into legislative and executive domains.

Article 142 and the "Complete Justice" Debate

- **Article 142** grants the Supreme Court powers to **deliver "complete justice,"** used in landmark cases such as **Babri Masjid, mob lynching guidelines, and irretrievable marriage breakdowns**.
- Critics argue this **provision allows excessive discretion**, while defenders see it as a necessary instrument for justice in exceptional circumstances.
- The Vice President's comparison of **Article 142 to a "nuclear missile"** sparked backlash, with legal scholars asserting that this provision, when judiciously applied, upholds the spirit of the Constitution.



Landmark Judgments and Public Perception

- Several Supreme Court rulings have drawn mixed reactions, such as:
 - Upholding **demonetization**,
 - Refusing to recognize **same-sex marriages**,
 - Approving the **Rafale deal**,
 - Validating **NRC in Assam**,
 - Not intervening in the **Pegasus surveillance case**, and
 - Delay in hearing petitions on **CAA** and **EVMS**.
- The court has occasionally countered the government's stance, notably by striking down the **Electoral Bond Scheme** and the **NJAC Act**.
- The recent Tamil Nadu Governor case illustrated how the court can uphold federalism and democratic accountability.

Democracy, Separation of Powers, and Judicial Boundaries

- **Elected leaders often oppose judicial review while in power but embrace it in opposition.**
- This contradiction underscores an enduring tension between **Parliamentary supremacy** and **constitutional supremacy**.
- Jawaharlal Nehru once warned against the judiciary acting as a "third chamber," while simultaneously acknowledging its role in correcting legislative missteps.
- Critics argue that unelected judges overturning laws passed by elected representatives is anti-democratic, but scholars maintain that judicial review is indispensable for protecting **federal structure**, **minority rights**, and **constitutional values**.

Counter-arguments to the "Despotism" Charge

- The charge of judicial despotism **lacks robust backing** when measured against the court's restrained use of its powers.
- The judiciary has often leaned towards the executive, not against it. Its **interventions have been issue-based and grounded in constitutional mandates**.
- Instances where the court has pushed boundaries, such as in the Governor's case, were aimed at correcting **executive inaction**, not seizing power.

Conclusion

The Indian judiciary remains a crucial bulwark against democratic erosion and executive excesses. While concerns about judicial overreach are valid and necessary in a democracy, the **current discourse must differentiate between despotism and judicial duty**.

The judiciary must stay within its constitutional bounds, but it must also not shy away from upholding justice and accountability.

2. 5. Exploring India's Potential in the Arctic Region

Context

- As climate change accelerates ice melt, the **Arctic region is redrawing global trade routes and reshaping the balance of power**.
- Against this backdrop, **India's Arctic ambitions** present a compelling case for proactive engagement.
- Therefore, **it is crucial to examine the multifaceted dimensions of India's Arctic policy, the promise and peril of the Northern Sea Route (NSR)**, and the diplomatic tightrope India must walk between the West and Russia to safeguard its strategic and commercial interests.



Climate Change and the Arctic Opportunity

- **Climate Change**

- The Arctic, once dismissed as an impenetrable frozen frontier, is **now emerging as both a canary in the climate coal mine and a crucible of geopolitical contestation**.
- According to NASA, the Arctic's September sea ice has been **shrinking by 12.2% per decade since 1981**—a harbinger of global warming's relentless advance.
- Yet, **this ecological concern paradoxically opens up a new commercial opportunity**: the Northern Sea Route.
- Stretching across the Russian Arctic coastline, **the NSR is poised to revolutionize trade by offering a significantly shorter path between Europe and Asia**, slashing cargo transit time and freight costs.

- **Arctic Opportunity**

- The strategic significance of this new corridor cannot be overstated.
- **India's long-term economic and geopolitical calculus** has begun to factor in the NSR.
- With shipping volumes on the route **surging from 41,000 tonnes in 2010 to nearly 38 million tonnes in 2024**, **the urgency for India to develop Arctic-ready infrastructure**, such as ice-class ships and mega ports, is apparent.
- **Recognising this, India's 2025-26 Budget includes a \$3 billion Maritime Development Fund**, a foundational step toward building the shipbuilding capacity necessary for Arctic navigation.

India's Early Engagement and Evolving Arctic Policy

- India's Arctic involvement is not new. **It dates back to its signing of the Svalbard Treaty in 1920.**
- More recently, India established its Arctic research base, **Himadri**, and became one of the few developing nations with a physical presence in the region.
- Furthermore, **Indian think tanks and research institutes have begun modelling the Arctic's impact on domestic phenomena**, such as monsoon patterns and agricultural productivity, underscoring the interconnectedness of climate change and national development.
- **The Arctic Policy released in 2022 sets a framework for India's engagement**, but its execution remains a work in progress.
- **It needs to pivot from abstract principles to actionable strategies, including forging partnerships, promoting technological development**, and enhancing India's diplomatic presence in Arctic governance structures such as the Arctic Council.
- The **upcoming Arctic Circle India Forum in New Delhi in May 2025 offers a timely opportunity to catalyse this policy transition.**

The Diplomatic Balancing Act: Russia, China, and the West

- India's navigation of Arctic geopolitics **must reconcile multiple, often conflicting interests**.
- On one hand, **Russia**, with its expansive Arctic coastline and established infrastructure, is a natural partner.
- **Bilateral discussions have already led to the formation of a working group on the NSR** and initiatives like the Chennai-Vladivostok Maritime Corridor.
- These developments align with **India's pragmatic approach to building alternate trade corridors**.
- However, **India's Arctic alignment with Russia also places it adjacent to China's interests**.
- **China's Polar Silk Road** is an extension of its Belt and Road Initiative aimed at circumventing traditional maritime chokepoints like the Malacca Strait.
- By strengthening NSR ties, **India could unintentionally legitimise China's polar ambitions—a move that may not sit well with India's strategic planners**, particularly given the adversarial bilateral dynamics between the two Asian giants.
- **Conversely, aligning too closely with the Western bloc**—particularly the U.S.—risks alienating Russia and forfeiting access to Arctic resources largely under Russian control.
- Thus, **India's optimal strategy lies in balancing both ends of this spectrum**. Collaborating with like-minded nations such as Japan and South Korea could offer a third path.



- **All three nations share mutual apprehensions regarding China's Arctic advances** and could collectively push for a more inclusive and equitable Arctic Council.

Conclusion

- **India's Arctic ambitions symbolise a critical juncture where commerce, climate, and diplomacy intersect.**
- **The NSR offers immense commercial promise**, but it also demands technological readiness and strategic foresight.
- With the planet breaching the 1.5°C warming threshold, **India's Arctic engagement must be guided by both caution and ambition.**
- To lead responsibly, India should establish multilateral dialogues, **invest in Arctic-ready infrastructure, and appoint a 'polar ambassador' to articulate its interests on the global stage.**

2. 6. India-Saudi Arabia Relations- Strategic Convergence and Parallel Transformations

Context:

- PM Narendra **Modi's upcoming visit to Saudi Arabia** reflects a maturing bilateral relationship.
- Under Crown Prince Mohammed bin Salman (MbS), **Saudi Arabia is undergoing profound** political, economic, and social transformation.
- The visit signifies a transformative bilateral engagement, **strategic recalibration in India's West Asia policy** and **Saudi Arabia's shift toward global multi-alignment.**

Historical Context - From Neglect to Strategic Priority:

- **Underperformance in earlier decades:**
 - Indian Prime Ministerial visits to Saudi Arabia between 1947–2014: Nehru (1955), Indira Gandhi (1982), Manmohan Singh (2010).
 - Reflects **past under-prioritisation** due to **ideological posturing, Pakistan-centric concerns, and low political investment.**
- **Shift since the 21st century - Turning points:**
 - Jaswant Singh's visit (**2000**) and King Abdullah's visit to India (**2006**).
 - Initiated **de-hyphenation** of Saudi Arabia from Pakistan in Indian foreign policy.
 - Manmohan Singh's **2010** visit **broadened strategic cooperation**, especially in counterterrorism.

India's Strategic Reorientation under Modi:

- **Modi's diplomatic outreach:**
 - Three **visits to Saudi Arabia** (2016, 2019, 2024).
 - Elevation of the Gulf region, particularly Saudi Arabia, in **India's Act West Policy.**
- **Key areas of cooperation:**
 - **Energy security:** Continued reliance on Saudi crude oil.
 - **Economic collaboration:** Investment, infrastructure, and digital economy.
 - **Technology and connectivity:** Collaboration in digital infrastructure and logistics.
 - **Security cooperation:** Counterterrorism, intelligence sharing, maritime security.

The MbS Era - Reform, Realignment, and Resurgence:

- **Consolidation of power:**
 - MbS appointed Crown Prince in 2017, Prime Minister in 2022.
 - Shift from **consensus-based governance to centralised authority.**
 - Increase in administrative efficiency but concerns over authoritarian tendencies.
- **Vision 2030 - Economic diversification:**
 - Launched in **2016** to reduce oil dependency.
 - **Focus on:**



- Tourism (e.g., NEOM project).
- Technology and innovation.
- Entertainment and renewable energy.
- Partial privatisation of Saudi Aramco to attract FDI.

Social Liberalisation in the Kingdom:

- **Progressive reforms:**
 - **Women's rights expanded:** Right to drive, increased workforce participation.
 - **Public entertainment normalised:** Cinemas, concerts, tourism initiatives.
- **Promotion of moderate Islam:**
 - Critical for global counter-extremism.
 - Realignment of Saudi religious identity to **promote tolerance and coexistence**.

Foreign Policy Shift - From Dependence to Multi-Alignment:

- **Assertiveness and pragmatism:**
 - Military intervention in Yemen, blockade on Qatar, opposition to Iran.
 - **Subsequent diplomatic recalibration:** Rapprochement with Qatar, Turkey, and Iran.
- **Expanding strategic horizons:**
 - **Move beyond US dependence:** Stronger ties with China, Russia, and Global South, and its decision to **join the expanded BRICS grouping**.
 - **Engagement in multipolar diplomacy:** Mediation in Ukraine crisis, dialogue facilitation between US-Russia.
- **Normalisation with Israel:**
 - Conditional support for Israel-Palestine peace process (**Two-State solution**).
 - Strategic balancing in regional geopolitics.

Convergence with India's Middle East Policy:

- **Parallel leadership trajectories:**
 - Modi (2014) and MbS (2015–17) symbolise assertive, pragmatic leadership.
 - Both leaders focus on **interest-based diplomacy, domestic modernisation, and global positioning**.
- **Strategic alignment:** India and Saudi Arabia share:
 - **Non-ideological pragmatism.**
 - **Focus on economic transformation.**
 - Drive toward regional leadership and global engagement.

Conclusion - The Road Ahead:

- Modi's visit reflects the **deepening Indo-Saudi partnership** grounded in **mutual strategic interests**.
- Saudi Arabia's domestic reforms and foreign policy **realignment under MbS present new avenues for India's** energy security, diaspora welfare, economic cooperation, and geopolitical influence in West Asia.

2. 7. A Restoration of Sanity to the Constitutional System

Context

- **On April 8, 2025**, the Supreme Court of India delivered a momentous verdict in **The State of Tamil Nadu vs The Governor of Tamil Nadu**.
- The **judgement fundamentally altered the legal and constitutional discourse** surrounding the Governor's role in granting assent to Bills.
- This **decision has been hailed as historic, not only for its immediate legal implications but also for its long-term impact on India's federal structure**, legislative autonomy, and constitutional interpretation.



Background: A Constitutional Crisis

- At the heart of the case was a **prolonged impasse created by the Governor of Tamil Nadu, R.N. Ravi**, who had withheld action on ten Bills passed by the State Assembly for several years.
- When the Assembly re-passed these Bills and submitted them again, **the Governor, rather than providing assent as mandated by Article 200 of the Constitution, forwarded them to the President of India.**
- This **action was taken only after the Tamil Nadu Government approached the Supreme Court** for relief.
- The **Court, comprising Justice J.B. Pardiwala and Justice R. Mahadevan, deemed this move unconstitutional.**
- It held that the **Governor's act of reserving the Bills for the President's consideration at that late stage violated the constitutional scheme.**
- In a decisive and unprecedented move, **the Court struck down both the Governor's and the President's actions, the latter having withheld assent, and invoked Article 142** to declare that all ten Bills shall be deemed to have received presidential assent.
- This **extraordinary step was warranted**, the Court noted, by an equally extraordinary constitutional logjam.

Major Aspects of Supreme Court's Judgement

- **Article 200 and the Myth of a Bill's Demise**
 - The **ruling significantly demystifies the provisions of Article 200**, which outlines the options available to a Governor upon receiving a Bill from the State legislature: assent, withholding of assent, or reservation for the President.
 - Historically, **the power to withhold assent has often been interpreted as a de facto veto.**
 - However, **the Court clarified this misinterpretation**, referencing its earlier decision in **State of Punjab vs Principal Secretary to the Governor of Punjab and Another (2023).**
 - There, it ruled that **withholding assent does not mark the end of a Bill's life.**
 - Instead, **such a decision obliges the Governor to return the Bill to the legislature for reconsideration**, a process that must culminate in assent if the Bill is passed again, regardless of whether amendments suggested by the Governor are incorporated.
 - **The Tamil Nadu verdict reaffirms this principle.** The Governor, as an unelected constitutional head, cannot override the democratic mandate of the elected legislature.
 - **The Court warned that failing to interpret Article 200 in this manner would allow Governors to effectively veto legislation indefinitely**, an affront to the core tenets of representative democracy.
- **Fixing a Time Frame: The Spirit of Reasonableness**
 - Another groundbreaking element of the judgment is the **Court's imposition of a time limit: a Governor or the President must act on a Bill within one to three months.**
 - **While Article 200 is silent on time constraints**, the Court relied on the principle of "reasonable time" and constitutional expediency to justify its position.
 - This **comes in response to the Governor's unexplained delay spanning years**, which the Court viewed as a serious threat to India's federal integrity.
 - Though **critics question the legality of judicially prescribing a time limit**, the Court argued that **where the Constitution is silent**, courts can fill the void by applying general legal principles to ensure governance is not paralysed.
 - By doing so, **the judgment emphasizes that constitutional offices must act in good faith and within a reasonable timeframe** to preserve the vitality of democratic governance.
- **Discretion and the Role of the Council of Ministers**
 - The **judgment also addresses the contentious issue of the Governor's discretion.**
 - It firmly states that the **Governor's actions, whether to withhold assent or to refer a Bill to the President, must be based on the advice of the State's Council of Ministers.**
 - However, **this clarity introduces a new complexity**: How can a government that commands a majority advise the Governor to propose amendments or return its own legislation?



- **This apparent paradox reveals a flaw in constitutional design**, which assumes harmonious functioning between the legislature and the Governor.
- The judgment exposes the limitations of that assumption.
- Moreover, **differing views from various Benches of the Supreme Court on the extent of gubernatorial discretion continue to add layers of complexity**, indicating a need for clearer legislative or constitutional reform.

Judicial Review of Constitutional Heads

- Perhaps the most constitutionally transformative aspect of the ruling is its **reaffirmation that the actions of constitutional heads, Governors and the President**, are not beyond the scope of judicial review.
- Citing a robust line of precedents, **the Court emphasised that no constitutional function is immune from scrutiny**.
- This **position dismantles the long-held notion that Articles 200 and 201 are areas of executive privilege** where judicial intervention is unwarranted.
- In response to criticism that this judgment constitutes judicial overreach, **the Court clarified its role: while Parliament may amend the Constitution, the judiciary's mandate is to interpret and enforce it**.
- **By amplifying the inherent meaning of Articles 200 and 201, the Court has not rewritten the law** but fortified it against exploitation and arbitrariness.

Conclusion

- The Supreme Court's verdict in this case is **not merely a judicial pronouncement, it is a restoration of constitutional order**.
- **The Court acted to uphold legislative primacy, curtail executive procrastination**, and reinforce federal principles.
- In doing so, **it set a precedent for handling similar deadlocks in states like Kerala, Telangana, and Punjab**, where Governors have also delayed assent to state legislation.
- The **judgment serves as both a judicial milestone and a democratic safeguard**, preserving the delicate equilibrium between elected governments and constitutional custodians.

2. 8. India's Prison Crisis: Overcrowding and Lack of Healthcare Services in Focus

Why in the News?

The **Tata Trusts** recently published the **India Justice Report 2025** according to which Indian jails face extreme overcrowding and are battling multiple health challenges.

About the India Justice Report

- The **India Justice Report (IJR)** is a collaborative effort by several civil society organizations and policy think tanks.
- It is a **data-driven assessment** that evaluates the justice delivery systems across **India's 36 States and UTs**, covering five key sectors:
 - **Police**
 - **Judiciary**
 - **Prisons**
 - **Legal Aid**
 - **Human Rights Commissions**
- The report employs **quantitative indicators** to highlight both progress and persistent gaps in structural capabilities and public service delivery.



India's Prison Healthcare Crisis Under Scrutiny

- The **India Justice Report 2025** reveals alarming findings about the condition of Indian prisons, placing the spotlight on **worsening overcrowding**, the **glaring lack of healthcare personnel**, and the urgent need for mental health support across prison facilities.
- With a rising inmate population and stagnant infrastructure development, the report flags a systemic failure that requires immediate policy attention.

Worsening Inmate Overcrowding

- The inmate population in India rose sharply from **3.8 lakh in 2012 to 5.7 lakh in 2022**, and is projected to **reach 6.8 lakh by 2030**.
- However, the **available prison capacity stands at only 4.3 lakh**, with a forecast of just **5.15 lakh** by 2030, falling significantly short of demand.
- The **national occupancy rate** stands at **131%**, a substantial jump from **112%** in 2012.
- States like **Maharashtra** saw an occupancy spike from **99% to 161%** over a decade.
- The report identifies overcrowding as a key contributor to **communicable disease outbreaks**, deteriorating living conditions, and **increased strain on administrative and health infrastructure**.

Acute Shortage of Medical Professionals

- The report highlights a **43% vacancy rate among prison medical officers**, and the existing doctor-to-prisoner ratio stands at a staggering **1:775**, far worse than the **Model Prison Manual 2016 benchmark** of **1:300**.
- This deficit in medical staff hinders not only day-to-day healthcare but also responses to outbreaks, injuries, chronic illness management, and even forensic documentation.

A Mental Health Emergency Behind Bars

- Perhaps the most serious revelation of the report is the near-collapse of India's prison mental healthcare system.
 - Only **25 psychologists** are available for the entire prison population, equating to **one psychologist for every 22,929 prisoners**.
 - In 2022, India had **69 sanctioned posts** for mental health professionals, but **less than half were filled**.
 - Not a single state or union territory meets the standard of **1 psychologist per 500 inmates**.
- Mental illness among prisoners doubled from **4,470 in 2012 to 9,084 in 2022**.
- Despite this surge, **25 States and Union Territories make no provision for a psychologist or psychiatrist within their correctional staff**.
- This gap poses immense risks, including increased suicides, unchecked behavioural issues, and relapse among those with substance use disorders.

Invisibility of Disability in Prisons

- The report also notes the **absence of national-level data regarding prisoners entering jails with a disability** or those who **acquire disabilities during incarceration**.
- This undermines efforts to implement inclusive prison reforms or offer legal protection and special care to these vulnerable groups.

Recommendations and Way Forward

- **The India Justice Report calls for:**
 - Urgent **recruitment of medical and mental health staff in jails**.
 - Strategic investment in **prison infrastructure expansion**.
 - **Regular publication of prison health and disability data**.
 - Policy incentives for States to **decongest prisons**, especially through alternatives to incarceration like bail reforms and community sentencing.



- India's prison system stands at a crossroads. As the country advances technologically and economically, **its correctional system needs equal attention** to ensure dignity, health, and safety for all inmates, aligning with international human rights standards.

2. 9. Strengthening Federalism- Supreme Court's Landmark Judgment in Tamil Nadu Governor Case

Context:

- The Supreme Court judgment delivered on **April 8** in **State of Tamil Nadu vs The Governor of Tamil Nadu and Another**, marks a **golden day in the history of India**.
- It marks a **watershed moment in reinforcing the federal structure** of the Constitution and limiting gubernatorial overreach.
- It upholds the principle that India is a **"Union of States"**, and that elected governments must not be subverted by unelected authorities.

Background - The Rise of Constitutional Ambiguities and Central Overreach:

- Vision vs operation of the Constitution:**
 - Constitution envisioned as a **visionary document**, not a mere operational manual.
 - Over time, required **interpretation and evolution** through over 100 amendments and landmark SC judgments.
- Centralization since 2014:**
 - Alleged centralization of power by the Union government, often **via obstructive gubernatorial appointments**.
 - States like **Kerala and Punjab** have taken governors to court over interference in Assembly proceedings.

The Tamil Nadu Case - Delay, Politics, and Legal Resolution:

- The Controversy:**
 - 10 Bills**, some dating back to 2020, were withheld indefinitely by the Tamil Nadu Governor.
 - Bills pertained to state universities, critical sectors post-COVID.
- Role of Current CM:**
 - Re-passed** all 10 bills verbatim, irrespective of the originating government (current or previous).
 - Strategic and principled move, recognizing the larger **battle for federal integrity**.

Legal Innovations and Doctrinal Advancements:

- Article 142 - Judicial innovation:**
 - SC used Article 142 to deem the bills assented** to from the date they were re-passed.
 - Asserted judicial intervention to **protect the legislative process from executive obstruction**.
- Exposing malafide conduct:**
 - Governor returned bills at the last moment, attempting procedural manipulation.
 - SC declared the Governor's conduct as **"lacking in bonafides"**.
- Landmark cases referenced:**
 - State of Punjab vs Principal Secretary to the Governor of Punjab (2023)** - Real power lies with elected representatives.
 - Kesavananda Bharati vs State of Kerala (1973)** - Basic structure doctrine.
 - S.R. Bommai vs Union of India (1994)** - Federalism and President's rule.

Defining Limits - No Absolute or Pocket Veto:

- Clarity on Articles 200 (Assent to Bills) and 201 (President's consideration of State Bills):**
 - First-time establishment of **clear time frames** for gubernatorial and presidential actions on state bills.



- **Eliminates ambiguity**, counters misuse of indefinite delays or silent rejection.
- **No one above the law:**
 - Neither President nor Governor has absolute veto or pocket veto.
 - Judicial review applicable to their actions—ensures **accountability in a parliamentary democracy**.

Conclusion:

Federalism as the Path Forward: The verdict is a victory for all states and citizens. It **reinforces cooperative federalism**, crucial in today's volatile global and economic climate, and calls for **collegiality** between States and Union for India's progress.

2. 10. Crisis of Confidence- Upholding Judicial Integrity in a Democratic Society

Context:

- Recent allegations concerning **Justice Yashwant Varma** have sparked public scrutiny and provoked sharp criticism.
- But in this case, **justice will be served by due process rather than a media trial**.

Eroding Public Trust in Judiciary:

- **Survey findings:** Only 30% fully trust the judiciary; 48% have no trust (C-Voter–India Today Survey). Indicates a **growing institutional crisis of confidence** in the Indian judiciary.
- **Judicial voices:** Public faith in the judiciary may not be as strong as believed, especially in rural areas (Justice Abhay S Oka).

Mechanisms of Judicial Accountability:

- **In-house inquiry for High Court judges:**
 - Initiated by the Chief Justice of India (CJI).
 - **Fact-finding committee:** 2 Chief Justices + 1 High Court judge.
 - Ensures **confidential and systematic handling** of complaints.
- **Separation of powers - Maintains judicial independence:**
 - Avoid handing allegations to police (executive) at early stages.
 - Essential due to the **government being the largest litigant** (~50% pending cases).
- **Presumption of innocence:**
 - Crucial to justice and democratic values.
 - Allegations should not lead to prejudgment by the media or public.
 - Echoes principle: **"Innocent until proven guilty"**.

Statutory and Constitutional Safeguards:

- **Protection for public servants and judges:**
 - **Section 17A, Prevention of Corruption Act (PC Act):** Bars investigation without prior sanction.
 - **Section 19, PC Act:** Requires sanction before court can take cognisance.
- **Judicial oversight mechanisms:**
 - **Lokayukta Act:**
 - **Preliminary inquiry** required before proceeding.
 - **Headed by retired SC judge;** judicial members ensure oversight.
 - **Judges (Inquiry) Act, 1968:**
 - **For impeachment:** Committee of SC judge, HC CJ, and distinguished jurist.
- **SC precedents (Lalita Kumari case):** Mandated preliminary inquiries before lodging FIRs in sensitive cases.

Media Trials and Judicial Ethics:

- **Dangers of public commentary:**



- Judges maintain **dignified silence** due to propriety.
- **Cannot publicly defend** themselves; media scrutiny poses risk.
- **“Trial by media” distorts due process.**
- **Restatement of values of judicial life:**
 - Mandates **impartiality**, avoidance of controversies.
 - Protects the **independence and credibility** of the judiciary.

Distinguishing Impropriety from Corruption:

- **Cash possession vs corruption:**
 - **India’s cash-based economy:** Legitimate reasons for cash holdings (agriculture, inheritance, property sale, etc.).
 - **Courts require concrete evidence** to establish disproportionate assets.
- **Legal standard of proof:**
 - Prosecution must prove beyond reasonable doubt.
 - **Mere possession or suspicion cannot be equated with corruption.**

Conclusion - Reaffirming Judicial Integrity and Due Process:

- Allegations against judges must be **examined through constitutional process**, not media judgment.
- **Presumption of innocence** and procedural **fairness** are **non-negotiable pillars of justice**.
- The judiciary’s credibility and independence must be safeguarded by the very laws it upholds.
- Upholding institutional mechanisms over perception ensures **democratic accountability and rule of law**.

2. 11. The Issue with Delimitation’s Population-Based Process

Context

- **Delimitation**, the redrawing of boundaries of electoral constituencies based on census data, **is a constitutional mandate in India, enshrined in Articles 82 and 170.**
- While the exercise is rooted in democratic principles, **it has sparked widespread debate, ranging from scholarly concerns about constitutional fidelity** to more sensational calls for demographic mobilisation.
- Amid these debates, **it is important to analyse historical trends, political challenges, and the need for a more nuanced approach to representation in a federal democracy.**

Historical Context and Electoral Trends

- An analysis of past data reveals a **dynamic yet non-linear approach to delimitation.**
- **Between 1951 and 2004**, Lok Sabha seats **increased from 489 to 543**, with significant redistribution among states based on changing demographics.
- Yet, **no standardised formula has ever determined the ideal population** per representative.
- **In 1951**, each MP represented about **7.32 lakh people**, which rose to 10.10 lakh in 1977. **By 2024, the figure stood at a staggering 27 lakh.**
- Similarly, **Vidhan Sabha seats increased from 3,283 to 4,123 over the same period**, meaning state legislators now serve triple the number of constituents as they did in 1951.
- Despite the overarching reliance on population as the criterion, **past delimitations have also considered geographical contiguity and administrative boundaries.**
- This **flexibility highlights that population-based representation, while foundational, is not inviolable** and can be tempered by other considerations to preserve the representative and federal character of the Indian polity.

Multifaceted Challenges of Delimitation

- **Constitutional Foundations and Contemporary Ironies**



- The Constitution mandates that **after every census, the number and boundaries of constituencies in both Parliament and State Assemblies must be readjusted** to reflect population changes.
- However, **through the 42nd Constitutional Amendment in 1976** and subsequent extensions, the **implementation of this provision has been deferred** until after the first census conducted post-2026.
- Ironically, **some of the strongest critics of the government's alleged disregard for constitutional norms** are now advocating for further postponement of delimitation, raising questions about the selective invocation of constitutional values.
- **Demographic Anxiety and Regional Disparities**
 - **Delimitation based strictly on population figures could advantage states with higher population growth**, predominantly in the north, while penalising states in the south that have successfully implemented population control policies.
 - **Although fears of marginalisation among southern states may lack empirical justification**, they cannot be dismissed outright.
 - The **debate thus centres on whether representation should be purely a function of population**, or if federal balance and performance in governance should also factor into electoral design.

Necessary Approach to Address these Challenges

- **Rethinking Representation and Governance**
 - The **current debate forces a re-examination of what it means to represent a constituency**.
 - In a first-past-the-post electoral system, **the numerical size of a constituency does not necessarily correlate with the effectiveness of its representation**.
 - There is **little evidence to suggest that smaller constituencies are better governed**.
 - Instead, **strengthening local self-governance and devolving more power to municipal and panchayati raj institutions may be more effective** in enhancing democratic accountability and governance.
- **Need for Deeper Structural Reforms**
 - The **burden on MPs and MLAs** as representatives in overpopulated constituencies **has increased disproportionately**.
 - Yet, **their core functions, law-making, committee participation, and oversight, are not inherently affected by constituency size**.
 - This **calls into question whether merely increasing the number of representatives will resolve governance challenges** or whether deeper structural reforms are needed.
- **Towards a More Equitable Framework**
 - The **primacy of population as the sole criterion for representation must be moderated**, especially since population control has been a deliberate policy goal of the central government.
 - Penalising states for succeeding in this objective creates a paradox.
 - **As a corrective, scholars have proposed the use of a deflator, akin to inflation adjustments in economic statistics**, that could neutralise the advantage gained by states with high population growth.
 - For instance, **adjusting seat allocation using Total Fertility Rate (TFR) data could offer a more equitable distribution**.
 - A hypothetical application of such a model suggests that instead of ballooning the Lok Sabha to 1,440 seats based on raw population, **using TFR as a divisor could limit the number to around 680**, striking a balance between democratic representation and federal equity.

Conclusion

- **Delimitation is not merely a technical exercise but a deeply political one**, with profound implications for national unity, federal balance, and democratic representation.
- While **population must remain a cornerstone** of representation, **it cannot be the sole determinant**.
- **A nuanced approach that incorporates demographic trends, governance performance, and regional equity is**



- India must engage in a robust, inclusive debate to ensure that the next round of delimitation strengthens the democratic fabric rather than frays it.

2. 12. Reimagining Data Governance in India- A Citizen-Centric Approach to Health Data

Context:

- India's population of **1.4 billion** generates data with immense potential economic value, possibly rivaling 38 OECD nations when adjusted for Purchasing Power Parity (PPP).
- As technology proliferates, **robust data governance policies** must enable citizens to benefit from the value of their data.

Understanding the Policy Gap:

- **Identity vs. property:** A fundamental confusion.
- Policymakers often conflate data as identity (linked to privacy and personal rights) with data as property (a tradable economic resource).
- This conceptual confusion **hinders value creation, innovation, and knowledge discovery.**

Healthcare Data - A Case Study in Missed Opportunities:

- **Current scenario - Public vs. private divide:**
 - Large private hospitals have digital systems.
 - Government hospitals have basic digital setups (aided by the **National Health Mission**).
 - **Small private clinics**, where most Indians seek care, **lack digital infrastructure** and incentives.
- **Consequences of poor digitisation:**
 - **No interoperable medical records** for citizens.
 - **Health insurers struggle** with pricing competitiveness.
 - **Researchers lack access** to large datasets for medical or AI-driven discoveries.

Ayushman Bharat Digital Mission (ABDM) - The Governance Response:

- **Framework and features:**
 - **Managed by:** The National Health Authority.
 - **Principles:**
 - **Citizens own their health data.**
 - **Interoperability** across health facilities.
 - **Components:**
 - **Registries** (doctors, drugs, health facilities).
 - **Middleware** for data exchange.
 - **Consent management system.**
- **Challenges in implementation:**
 - **Clinical data** is generated during doctor-patient interactions, where future data value is not perceived.
 - **Citizen engagement** is key to realising data value and driving innovation.

Towards a Free Market for Health Data:

- **Enabling citizen agency:** If patients can sell/share their anonymised data, it incentivises:
 - Clinics to comply with ABDM.
 - Patients to maintain complete digital records.
 - Emergence of data intermediaries and health information exchanges.



Global Models vs. Indian Reality:

- **United States** - Health Insurance Portability and Accountability Act (**HIPAA**) model:
 - Patients **can access, but not share**, their data with third parties.
 - Hospitals and insurers **monetise de-identified data** without compensating patients.
- **United Kingdom** - National Health Service (**NHS**) model:
 - Health data **owned by public institutions**.
 - ~90% of records created and controlled by the NHS.
- **Why don't these models fit India?**
 - India's healthcare system is highly privatised and decentralised.
 - Neither corporatist (US) nor statist (UK/EU) models are suitable.

A Citizen-Centric Data Governance Vision:

- **Principles for reform:**
 - **Empower citizens** to treat data as property, not just as identity.
 - **Build regulatory safeguards** for privacy, including:
 - **Anonymisation** tools as digital public goods
 - **Digital forensics** to ensure transparency and reduce information asymmetry
- **Way forward:**
 - Shift from Western models of data protection to a **locally relevant, innovation-friendly policy**.
 - Recognise and **harness the economic potential of citizen-owned data** in the healthcare sector.

Conclusion:

- India must **adopt a citizen-centric data governance framework** that promotes individual agency, incentivises data interoperability, and fosters innovation in health systems.
- **Recognising data as economic property** rather than merely a marker of identity is crucial to **unlocking the next wave of digital transformation** in India's healthcare ecosystem.

2. 13. Police Torture and Unaccountability in India

Context:

- A comprehensive study titled "**Status of Policing in India Report (SPIR) 2024**" was recently released by **Common Cause (NGO)**, in collaboration with the Lokniti Programme of the Centre for the Study of Developing Societies (CSDS).
- The report highlights **systemic issues of police violence, torture, and lack of accountability**, based on interactions with 8,276 police personnel across 17 states and Union Territories.

Understanding Torture - International and Indian Context:

- **Definition under UNCAT (1984):** Torture involves the **intentional infliction of severe physical or mental pain** by or at the behest of a public official, for purposes such as **punishment, coercion, or discrimination**.
- **India's position:** Signed the **UN Convention Against Torture (UNCAT)** in 1997, but not ratified, making it **non-binding legally**.

Key Findings of the Report:

- **Perception of 'tough methods' in policing:**
 - **55%** of police personnel support the use of tough methods to create fear among the public.
 - **Ambiguity** exists on what **constitutes "tough methods" vs. torture**.
- **Mob violence and encounters:**



- **25% justify mob justice** in cases like sexual harassment and child lifting.
- **22% believe in encounter killings** over legal trials.
- **74%**, however, **support legal procedures** even for dangerous criminals.
- **Compliance with arrest procedures:**
 - 41% of police claim procedures are “always” followed.
 - 24% admit procedures are “rarely or never” followed.
 - **Kerala reports highest compliance at 94%.**
- **Use of third-degree methods:**
 - **30% justify third-degree torture in serious cases.** 9% justify even in petty cases.
 - Victims mostly from **marginalised groups:** Dalits, Adivasis, Muslims, illiterates, and slum dwellers.
- **Custodial deaths:**
 - **Agency - custodial deaths reported (2020):** NCRB (76), NHRC (70), National Campaign Against Torture (NCAT, a civil society initiative) (111).
 - **Zero convictions for custodial deaths during 2018–2022.**
- **Judicial, medical apathy:**
 - **Judiciary:**
 - There was consensus among lawyers and judges that **confessions to the police** should never be made inadmissible.
 - Magistrates often act as “**silent spectators**”, rarely interacting with the accused or recording arrest details.
 - **Medical examination:** Conducted by doctors without forensic expertise. Sometimes done by eye specialists or anesthesiologists.
 - **National Human Rights Commission (NHRC):** It has been criticised for **not defining torture** and for its “**coloured attitude**” towards the victims of torture.
- **Encouraging insights from the report:**
 - **79% of police favour human rights training.**
 - 71% support prevention of torture.
 - 79% favour evidence-based interrogation techniques.

Structural Causes Behind Police Torture in India:

- **Colonial legacy** of policing.
- **Lack of accountability**
- **Political and bureaucratic pressure** for quick results.
- **Inadequate training and legal literacy.**
- **Public tolerance of extra-legal methods** due to delays in the criminal justice system.

Global Practices - A Comparative Perspective:

- **United States:** Brutal interrogation at Guantanamo Bay.
- **Iraq:** Torture at **Abu Ghraib prison.**
- **Russia, China, Pakistan:** Poor human rights records in custodial practices.

Recommendations and Way Forward:

- Enact a comprehensive **anti-torture law.**
- **Malimath Committee:** Suggested that confessions made before a senior police officer of the rank of Superintendent or above should be admissible in evidence with safeguards to prevent coercion.
- **The Law Commission of India (in its 69th Report (1977)):** Proposed introducing Section 26A in the Indian Evidence Act to make confessions before senior police officers admissible.
- **Ratify UNCAT.**
- **Implement Supreme Court directives** for insulating police from external pressures.
- Promote **professionalism, accountability, and human rights sensitivity** in policing.



Conclusion:

- The Common Cause-CSDS report **paints a sobering picture of the persistence of police torture** and the lack of institutional accountability in India.
- The findings reveal deep-rooted **structural and attitudinal issues** within the police force.
- Therefore, a **humane, rights-based, and professional police force** is not only essential for upholding the rule of law but also for rebuilding public trust in the criminal justice system.
- Addressing police torture is not just a legal or administrative imperative - it is a **moral and constitutional duty**.

2. 14. A People Still Waiting to Move Out of the Margins

Context

- The **International Transgender Day of Visibility, observed on March 31, is more than a celebration of identity**, it is a reminder of the urgent need to address the persistent challenges faced by transgender individuals in India.
- Despite legal advancements such as the Transgender Persons (Protection of Rights) Act, 2019, **the reality on the ground reflects a stark contrast**.
- Transgender persons continue to grapple with **systemic discrimination, social stigma, and economic exclusion**.
- The **gap between legal recognition and lived experience** underscores the **pressing need for not only policy reform but also a shift in societal mindset**.

Legal Recognition Versus Ground Reality

- While the enactment of the 2019 Act marks a significant milestone in recognising transgender rights, **its implementation remains weak and inconsistent**.
- The **cumbersome bureaucratic process** to obtain identity documents deters many from accessing entitlements.
- As of December 2023, out of 24,115 applications received by the National Portal for Transgender Persons, **only 15,800 identity certificates had been issued**, with thousands pending beyond the mandated timeline.
- In Delhi alone, **a mere 23 identity cards had been issued by 2022**, despite a known transgender population of over 4,000.

Major Challenges Faced by the Transgender Community

- **Economic Exclusion**
 - **Economic empowerment is a key pillar of social inclusion**, but transgender individuals in India face formidable barriers in accessing employment and entrepreneurship opportunities.
 - A 2018 NHRC report revealed that **92% of transgender persons were excluded from the formal economy**, often pushing them into precarious livelihoods like sex work.
 - More alarmingly, **a 2022 study reported an unemployment rate of 48% among transgender individuals**, compared to the national average of 7-8%.
- **Workplace Discrimination**
 - Discrimination begins at the hiring stage where **biases and lack of awareness result in exclusion**.
 - Even those who gain employment **frequently encounter hostile work environments**, absence of gender-neutral facilities, and resistance from colleagues.
 - While some progressive companies like Tata Steel have initiated inclusive hiring, **such practices are exceptions rather than the norm**.
 - **Financial inclusion remains a challenge**, too, despite recent steps like allowing LGBTQ+ individuals to open joint bank accounts.

Steps Needed to Create the Foundation of Inclusion



- **Education and Awareness**

- Education plays a critical role in enabling long-term social mobility, yet **transgender students face bullying, harassment, and lack of institutional support.**
- The **2011 Census pegged the transgender literacy rate at 56.1%**, well below the national average of 74.04%.
- **In Kerala, 58% of transgender students reported dropping out** due to discriminatory school environments.
- While some states have introduced initiatives, such as reserved seats and hostel accommodations, **the absence of a national policy leads to inconsistent outcomes.**
- **Gender-sensitive curricula, inclusive campuses,** financial support, and vocational training are essential steps toward educational equity.

- **Access to Health-Care**

- Access to health care is another major hurdle. **Transgender persons often face denial of treatment, lack of competent providers,** and prohibitive costs for gender-affirming care.
- A National Legal Services Authority survey found that **27% of transgender individuals were refused health care based on their identity.**
- Although schemes like the **Ayushman Bharat TG Plus card provide annual coverage up to ₹5 lakh,** implementation remains patchy.
- **Gender-affirming surgeries,** which cost between ₹2 lakh and ₹5 lakh, are often not fully covered.
- **The lack of trained professionals,** combined with limited mental health services, leaves the community vulnerable.
- **Solutions include mandating transgender health training for providers,** expanding insurance to cover essential procedures, and setting up dedicated clinics.

- **Changing Perceptions and Building an Inclusive Society**

- Legal and economic reforms must be accompanied by **societal transformation.**
- Despite growing visibility, **transgender representation in the media often reinforces harmful stereotypes rather than challenging them.**
- Campaigns like the **'I Am Also Human' initiative by the Humsafar Trust are steps in the right direction,** but broader media portrayals must reflect the diversity and dignity of transgender lives.
- Cultural events, **such as Tamil Nadu's Koovagam Festival, provide platforms for visibility and celebration,** but these must be complemented by systemic efforts to dismantle prejudice.

The Path Forward: From Visibility to Empowerment

- Real change requires **sustained, collaborative, and intersectional efforts** across all sectors of society.
- First and foremost, **laws such as the Transgender Persons (Protection of Rights) Act must not only exist but be implemented with accountability.**
- Central and state **governments must allocate adequate funds to welfare schemes** and track their impact transparently.
- In education, **national-level policy reforms are essential** to ensure inclusive curricula and support systems that reduce dropout rates.
- **Health care must be made inclusive by integrating transgender needs into medical curricula,** expanding Ayushman Bharat TG Plus coverage, and setting up gender-inclusive clinics with mental health professionals trained in trauma-informed care.
- For economic inclusion, **public-private partnerships can lead the way in creating safe workplaces,** offering skills training, and financing small business ventures led by transgender individuals.
- Finally, **the media and entertainment industry must actively promote nuanced, diverse, and authentic representations of transgender individuals** to challenge societal norms and stereotypes.
- **Civil society** must also play a role in community-building, legal literacy, and advocacy.



Conclusion

- **True inclusion requires more than symbolic gestures**; it demands the enforcement of anti-discrimination laws, inclusive hiring practices, and financial empowerment through targeted government and private sector initiatives.
- **Only through collective action, by governments, businesses, educators, and communities, can India move towards a future where transgender persons are not merely seen but are fully accepted**, empowered, and integrated into the social and economic fabric of the nation.





General Studies III

3. 1. Kashmir, Terrorism, and India's Long-Term Security Strategy

Context:

- Recent terrorist attacks on tourists in **Pahalgam**, Jammu and Kashmir, highlight the **persistent threat from Pakistan's deep state**.
- The attack is part of Pakistan's attempts to **derail democratic normalcy and development** in the region.

Lessons for India:

- Historical parallels:**
 - America's strategic myopia:** America evacuated its personnel from the roof of its **Saigon embassy** via helicopter (on 30 April, 1975) and **lost a proxy war in Vietnam**.
 - End of soft separatism in J&K:** Same year, Sheikh Abdullah returned to democratic politics in J&K (as the elected CM of J&K), **ending 22 years of soft separatism**.
- Modern misjudgments - Trump and Munir:**
 - Trump's proposal to **"empty Gaza"** (to make it a Mediterranean Florida) ignores historical lessons.
 - Pakistan Army Chief Asif Munir echoed outdated ideas - Jinnah's **two-nation theory** and Z.A. Bhutto's **"jugular vein"** rhetoric on Kashmir. Both ignore **India's institutional strength, strategic autonomy, and economic rise**.

Three Pillars of India's Long-Term Kashmir Strategy:

- Specialisation - Targeted security operations:**
 - Intelligence-driven operations led to the formation of **Rashtriya Rifles (1990)** and **Special Operations Groups (1993)**.
 - Replacement of BSF with CRPF (1995)** and **CBI with NIA** for counter-terror financing shows institutional adaptability.
- Moderation - Minimum use of force:**
 - India followed a path **opposite to the US's "search and destroy"** in Vietnam.
 - Strategy rooted in public order with minimal resistance, echoing Subrata Mitra's **"Governance by Stealth"**.
 - Symbols of legitimacy:** Surrender of **terrorists at Hazratbal (1993)**, **state election voting lines (2024)**.
- Democracy - Civil participation in conflict zones:**
 - Frequent elections**, civil service involvement, and respecting political diversity, even those who espoused soft separatism.
 - Reflects a **deeper commitment to democratic processes** versus Pakistan's unstable governance (no PM completing a full term since 1947).

Killings Signal Pakistan's Desperation:

- India's evolving strategy - **abrogation of Article 370**, cross-border strikes, strategic autonomy, and infrastructure development (e.g., railways) - is yielding results.
- Terrorist attacks are a reaction to **India's success in integrating J&K**, not a sign of weakness.

Message from Kashmir:

- Kashmiris:** After the murders at Baisaran (Pahalgam, J&K), Kashmiris are on streets blaming Pakistan for the attack.
- Security forces of India:**



- 1,608 J&K police, 511 CRPF, and hundreds of army personnel's **supreme sacrifice** in protecting J&K depicts that **"The flag does not flutter in the wind, but with the last breath of martyrs."**
- So, **"Veer Bhogya Vasundhara"** (The brave shall inherit the earth) is the symbolic message from the forces.

Conclusion - Strategic Resolve over Reaction:

- India's response must be seen not as war-mongering but as **measured, courageous defence of peace**.
- The **world must draw lessons** from India's experience: **institutional resilience, democratic depth, and calibrated security actions**.

3. 2. Protecting Our Oceans- Towards a Sustainable Blue Economy

Context:

- The growing environmental, economic, and governance challenges facing the world's oceans, emphasizing the **urgent need for multilateral action** to protect marine ecosystems.
- **India's blue economy** aspirations, the upcoming UN Ocean Conference (**UNOC3**), and global efforts like the **BBNJ agreement** (also known as the High Seas Treaty under the UN Convention) aims to ensure **sustainable use and conservation of ocean resources**.

Significance of the Oceans:

- **Ocean - A global commons: Oceans feed, protect, and sustain human life.** They are crucial for trade, sustainable energy, scientific knowledge, and livelihoods.
- **India's oceanic legacy:**
 - India has a **7,517 km long coastline**, impacting daily life, economy, and environment.
 - The Indian government's **Vision 2030** highlights the **blue economy** as one of the 10 core dimensions of growth.

Challenges Facing the Oceans:

- **Environmental and economic threats:**
 - **Pollution:** Over 8 million tons of plastic enter oceans annually (Science journal).
 - **Overfishing:** Over one-third of fish stocks are overfished.
 - **Climate change effects:** Ocean acidification, rising sea levels, marine ecosystem destruction.
- **Governance and funding gaps:**
 - **Lack of global governance:** No binding international law for vast areas, particularly the high seas.
 - **Inadequate funding:** Insufficient financial support for ocean preservation and sustainable use.

UNOC3 - A Historic Opportunity 10 Years After Paris Agreement (COP21):

- **Third United Nations Ocean Conference (UNOC3):**
 - **Host:** To be held from **June 9–13, 2025, in Nice (France)**, and will be co-hosted by **France and Costa Rica**.
 - **Participants:** Around 100 heads of states, thousands of scientists, researchers, activists.
- **Objectives:** Operational and action-oriented discussions on **focus areas:**
 - **Governance**
 - **Financing**
 - **Knowledge enhancement**
- **Nice ocean agreements:** Like the Paris agreement (which established a binding global framework to limit climate change), it can form an **International Pact** aligned with UN Sustainable Development Goals (SDGs), especially SDG 14 (Life Below Water).

BBNJ Agreement - Marine Biodiversity Protection:

- **Full form:** Agreement on Marine **Biodiversity of Areas Beyond National Jurisdiction**.



- **Need for ratification:** Requires 60 countries to ratify for enforcement.
- **Purpose:**
 - Governance of high seas (>60% of ocean).
 - Combat hydrocarbon pollution, illegal fishing, endangered species capture.

Critical Actions for Ocean Protection:

- **Financing the sustainable blue economy:**
 - Public-private partnership (PPP) investments required.
 - Ensure marine resource regeneration for continued economic benefits.
- **Enhancing ocean knowledge:**
 - **Current gap:** We know more about the Moon and Mars than our own oceans.
 - **Need:**
 - Mobilizing **science, innovation, education**.
 - Greater **public awareness and scientific exploration**.

India's Role and Initiatives:

- **Festival of ideas - "Not in My Ocean":**
 - **Organised by:** It will be organised by France across India (Delhi, Chennai, Puducherry, Goa).
 - **Activities:** Exhibitions, film screenings, workshops, expert discussions.
- **Blue talks:**
 - **Collaboration:** Ministry of Earth Sciences, Embassy of Costa Rica, Indian institutions will hold "Blue Talks" in Delhi.
 - **Purpose:** Develop India's recommendations for UNOC3.

Conclusion - Oceans, A Universal Bond:

- Oceans are essential for climate resilience, food security, economic prosperity, and biodiversity.
- **Collective multilateral action** is crucial amidst challenges to multilateralism.
- UNOC3 represents a **watershed moment** for securing the future of oceans and humanity.

3. 3. A Chance for India's Creative Ecosystem to Make Waves

Context

- **In a world marked by economic uncertainty**, global trade tensions, and volatile stock markets, **India has emerged as a beacon of resilience**.
- Fuelled by its demographic dividend, technological advancements, and rich cultural heritage, **the country stands poised to reimagine its global role**, not just as an economic force, but as a creative powerhouse.
- Central to this vision is **India's rapidly evolving Media & Entertainment (M&E) sector**, which seeks to inspire and connect creators across the world through the motto: "**Create in India, Create for the World.**"

The Rise of India's Creative Influence

- **India's global influence in creative industries is rapidly growing**, supported by a youthful, talented population engaged in diverse fields such as cinema, art, music, gaming, and technology.
- A shining example is **Namit Malhotra's visual effects company, DNEG**, which played a pivotal role in the Oscar-winning film Dune 2, contributing to India's seventh Oscar victory.
- **Such milestones underscore India's shift from traditional filmmaking to world-class digital production and storytelling innovation.**



WAVES 2025: Nurturing the Ecosystem

- To further cement its status in the global M&E arena, the Government of India has launched the **World Audio-Visual Entertainment Summit (WAVES)**.
- Scheduled for May 2025 in Mumbai, the summit will feature the **WAVES Xcelerator (WAVEX)**, a dynamic platform to support creative startups.
- This **initiative aims to connect young Indian creators with global industry leaders**, investors, and mentors, addressing key challenges such as funding, visibility, and mentorship.
- India's M&E sector, valued at ₹2,422 billion in 2023, is **projected to reach ₹3,067 billion by 2027**.
- **WAVEX is designed to catalyse this growth**, particularly in frontier areas like Artificial Intelligence (AI), gaming, the metaverse, and immersive media technologies.

Key Features of WAVES

- **Inclusivity and Innovation at the Forefront**
 - WAVEX **also champions diversity and inclusivity** by supporting women-led startups like Lapwing Studios and Vygr Media.
 - The **program creates a launchpad for entrepreneurs** who might otherwise struggle for recognition on the global stage. It offers not just financial backing but a structured environment fostering long-term innovation and impact.
 - Innovative companies such as **Erucanavis Technologies**, known for their AI-driven playable ads, and **Offline Human Studios**, pushing the boundaries of VR storytelling, demonstrate the breadth and creativity within India's startup ecosystem.
 - Ed-tech innovators like **InscapeXR** and **Vision Impact** **are redefining learning using immersive technologies**, reflecting the sector's interdisciplinary strength and cultural relevance.
- **A Synergy of Art, Science, and Imagination**
 - India's creative revolution is **not confined to the arts**. It reflects a deeper synergy between culture and science, where experimentation thrives in both laboratories and art studios.
 - Institutions like the **Museum of Art and Photography (MAP)** and **Science Gallery Bengaluru** celebrate this convergence, illustrating how creativity transcends disciplines.
 - **India's storytelling tradition, spanning classical dance, cinema, comics, and now digital and immersive media, forms the cultural bedrock of this new creative economy.**
 - The essence of India's artistic spirit is not just about preserving heritage, but about **transforming it into futuristic**, globally relevant expressions.

Significance of WAVEX: A Vision for Tomorrow

- The **spirit of creativity is most palpable among India's youth**, who are not only shaping today's narratives but envisioning the future of global entertainment and culture.
- **WAVES 2025 is more than an event**; it's an **ambitious movement to fuel this energy** and turn ideas into enterprises that can influence the world.
- As a catalyst for creative startups, **WAVES represents the future of India's soft power**.
- **Its impact goes beyond economic metrics**, it develops self-expression, cultural exchange, and identity formation in an interconnected world.
- The **government's support, paired with the visionary drive of creators and entrepreneurs**, ensures that India is **not just participating in the global creative economy, it is leading it**.

Conclusion

- With initiatives like WAVES and the unrelenting spirit of its creators, **the country is ready to inspire the world through its stories, innovations, and imagination.**
- The vision of **"Create in India, Create for the World"** is not just a slogan; it is a declaration of intent, one that seeks to place Indian creativity at the heart of global culture and innovation.



- India stands on the cusp of a creative revolution and now is India's moment, to lead, to inspire, and to create.

3. 4. Beat the Heat with People-Centric Responses

Context

- India is increasingly grappling with the **early onset and escalating intensity of heatwaves**, a phenomenon that has become more pronounced over the past two decades.
- In 2025, **several Indian states and cities experienced their first severe heatwave in March, 15-20 days earlier than in 2024**, highlighting the growing immediacy of this environmental crisis.
- With 2024 recorded as the hottest year globally since the pre-industrial era, **India stands at a critical juncture, facing both the direct health impacts of extreme heat and its wider socio-economic repercussions.**

The Health Impact of Rising Temperatures

- As temperatures inch closer to the human body's average of 37°C, **the body's ability to regulate heat diminishes, leading to heat stress.**
- This condition is not just about discomfort; **it affects major organs including the kidneys, liver, and brain**, and can result in severe illness or death.
- **Humidity and wind speed further exacerbate this impact.** While the health consequences are grave, they only scratch the surface of the heatwave crisis in India.

Socio-Economic Ramifications and Inequity

- India's heatwaves **affect the nation's socio-economic structure deeply.**
- **Agriculture**, one of the most heat-exposed sectors, **suffers due to reduced productivity, crop failures, and livestock deaths.**
- This disproportionately affects farmers and the rural poor, who are heavily reliant on daily physical labour.
- **With 75% of India's workforce**, about 380 million people, **engaged in heat-exposed labour, heat stress leads to significant job and income losses.**
- Estimates suggest **India loses between 3% to 5% of its GDP due to this**, and in 2023 alone, about 6% of total work hours were lost because of heat stress.
- Furthermore, the **most marginalised communities**, women, migrants, elderly people, and subsistence workers, **bear the brunt of this crisis.**
- **Gender norms exacerbate the burden on women**, who are expected to work in poorly ventilated kitchens and wear culturally appropriate, often heat-retaining clothing.
- The spatial and social layout of **urban slums often traps heat**, making indoor conditions worse than outside.
- Thus, **heatwaves are not just a meteorological issue but a profound matter of social inequity.**

Policy Response and the Evolution of Heat Action Plans (HAPs)

- The recognition of heat as a serious public health threat began relatively late.
- Although scientists observed urban heat phenomena as early as the 19th century, **it wasn't until the early 2000s that European nations began implementing Heat and Health Action Plans (HHAPs).**
- **India joined this movement in 2013**, when Ahmedabad became the first city in Asia to launch a heat action plan.
- Since then, **over 140 Indian cities and more than 23 states have developed HAPs.**
- These plans generally include five components: **early warning systems, public awareness campaigns, preparation of health systems, long-term heat reduction strategies** such as urban greening and cool roofs, and data-driven monitoring of health impacts.
- However, **the implementation of these HAPs has been uneven**, and often only partially effective.



- **Success stories emerge** mainly when local **governments collaborate actively with public health experts, NGOs, and community-based organizations.**

The Need for Improved and Inclusive Heat Action Planning

- **Localized and Data-Driven Planning**
 - HAPs must incorporate **local vulnerability assessments**, accounting for both temperature and humidity.
 - **Comprehensive data collection** on heat-related mortality and morbidity **is essential for targeted interventions.**
 - **Sophisticated Alert Systems:** Inspired by countries like the UK, **Indian cities should adopt Heat Health Alert systems** that consider both daytime and nighttime temperatures and provide detailed guidance on thermal comfort levels and safer activity windows.
- **Infrastructure and Urban Design**
 - Building codes must promote **heat-resilient infrastructure using reflective materials** and designs that enhance ventilation.
 - Public spaces should be adapted with more **shaded areas, parks, and accessible water points.**
- **Support for Informal Workers**
 - Governments must consider **financial aid for informal sector workers** during extreme heat events.
 - **Universal advisories to stay indoors may not be effective** for the urban poor living in crowded, heat-trapping environments. **Policies must be context-specific.**
- **Public Health and Workplace Adaptations**
 - Municipalities should ensure the **availability of drinking water and oral rehydration solutions.**
 - Workplaces should implement **staggered shifts and provide flexibility for early morning or late evening work** to avoid peak heat hours.
- **Cooling Infrastructure and Innovation**
 - More cities should introduce **summer shelters**, akin to winter shelters, especially for the homeless and outdoor workers.
 - Initiatives like the **cool roof policy** being developed by some states should be scaled up nationwide.

The Way Forward: A Call for People-Centric and Equitable Approaches

- The evidence is clear, **investments in heat adaptation are not only life-saving but also economically sound.**
- To mitigate the impacts of rising temperatures, **Indian policy must pivot towards a holistic, long-term strategy that integrates inter-agency coordination**, insurance coverage for lost wages, and innovations rooted in scientific evidence.
- Above all, **these efforts must be people-centric**, acknowledging the disproportionate burdens on vulnerable populations and working toward equitable solutions.

Conclusion

- **Heatwaves in India are not merely a seasonal inconvenience** but a growing humanitarian and economic emergency.
- With average global temperatures continuing to climb, **the urgency for adaptive action is greater than ever.**
- **Recognising the issue as one of equity and resilience will be key to protecting lives and livelihoods** in the years to come.

3. 5. India's Multidimensional Employment Crisis in the Age of AI- Challenges and the Way Forward

Context:

- In the past, **waves of innovation**, such as **assembly lines or steam engines**, have mostly affected low-skilled, blue-collar jobs.



- Later, the **digital revolution** affected white-collar jobs through **software and outsourcing**.
- The **AI era**, however, is distinct. India is facing a **multidimensional employment crisis** - one that is both **visible and invisible**.

A Dual Employment Crisis:

- **Visible crisis:**
 - **Youth unemployment:** Over **80%** of unemployed Indians are youth, many with secondary or higher education.
 - **Disengagement:** 1 in 3 young Indians is disengaged from both work and learning.
 - **Job creation needs:** India must create **over 90 million new jobs by 2030**, many in yet-to-emerge fields.
- **Invisible crisis:**
 - **Changing nature of work:** Rise of **AI, automation, and data-driven systems** is reshaping work across sectors.
 - **Key concern:** Every worker must ask - **"How replaceable is my job with technology?"**

AI Era - A Paradigm Shift in Job Disruption:

- The AI age **disrupts all levels** - from low-wage laborers to high-skill professionals (e.g., programmers, designers, artists).
- **Creative and analytical jobs** are increasingly at risk due to generative AI.

The Core Competency - Adaptability through Learning:

- **Job security matrix:**
 - Low-skill, low-replaceability jobs may **survive**
 - High-skill or low-skill but high-replaceability roles are **most vulnerable**.
 - Reskilling and lifelong learning emerge as the only **durable edge**.
- **Essential skills:**
 - **Tech literacy:** Understanding digital systems, AI, automation.
 - **Data literacy:** Ability to interpret and act on large volumes of information.

Education for the Future - A Humanistic Approach:

- **Joseph Aoun's "Humanics" framework:**
 - **Technical ability:** Skills to work with machines and augment productivity.
 - **Data discipline:** Strategic thinking using algorithmic and analytical tools.
 - **Human discipline:** Creativity, empathy, contextual reasoning — uniquely human capabilities.
- **Shift required:** Move from **rote learning to experiential, interdisciplinary, and lifelong** learning models.

Micro-Credentials - Modular Learning for a Modular Future:

- **Definition and importance:**
 - Micro-credentials are **short, focused certifications** offering stackable learning experiences.
 - Already being embedded in global universities across disciplines.
- **Application in India:**
 - **Could reform India's rigid, degree-centric higher education system.**
 - Encourage interdisciplinary learning - e.g., data visualisation for political science or AI tools in historical research.

Strategic Imperatives for India:

- **Embed literacy in education:**
 - Integrate tech and data literacy from school to college.
 - **Train educators** to become facilitators of future-ready skills.
- **Promote lifelong learning:**
 - Encourage **accessible, modular upskilling** over traditional degree paths.



- Support **micro-credential ecosystems** aligned with evolving job markets.
- **Foster cross-sectoral tech integration:**
 - Apply AI and data tools across arts, agriculture, healthcare, and policy-making.
 - **Enable personalised learning** pathways to prepare for jobs that don't yet exist.

Conclusion - Shaping the Future of Work:

- The future of work is uncertain but within control.
- **India must cultivate problem-solvers, creators, and adaptive thinkers.**
- Focus should not just be on AI engineers, but on **empowered individuals** across sectors who can **lead in a tech-driven global economy.**

3. 6. Steering the Decarbonisation of India's Logistics Sector

Context

- **India's vision of becoming a Viksit Bharat**, a developed nation by 2047, is rooted not only in economic ambition but in the inclusive and sustainable upliftment of its people, businesses, and regions.
- **Realising this vision necessitates a robust, efficient, and future-ready logistics sector** that can fuel equitable development across the country.
- However, **this sector, while critical, also stands among the most carbon-intensive in the world**, posing a significant challenge to India's broader sustainability goals.
- **If India is to stay on course toward its net-zero carbon emissions target by 2070, decarbonising its logistics sector must become a central strategy.**

The Environmental Cost of Logistics

- **India's logistics sector**, which includes road, rail, air, and maritime transport, along with warehousing infrastructure, **is a significant contributor to greenhouse gas emissions.**
- Accounting for **approximately 13.5% of the nation's total emissions**, the sector's environmental footprint is both vast and growing.
- **Road transport alone**, on which the country heavily relies, **facilitating nearly 90% of passenger movement and 70% of freight, is responsible for over 88% of the sector's emissions.**
- **Trucks alone account for nearly 38% of CO₂ emissions**, highlighting an urgent need for structural changes.
- While maritime and inland waterways currently contribute less to the emissions tally, **their role is expected to grow significantly.**
- **Government projections aim to triple cargo and passenger movements on inland waterways** and boost coastal shipping cargo by 1.2 times by 2030.
- **While these expansions promise economic and logistical benefits, they must be guided by environmentally responsible policies** to ensure long-term sustainability.

The Need for a Green Transformation

- **India's logistics sector is at a crossroads**, and the path ahead demands a delicate balance between growth and sustainability.
- Decarbonising logistics is **not just an environmental imperative, it is essential to building a resilient and globally competitive economy.**
- To achieve this, **India must look to both international benchmarks and homegrown innovation for solutions.**
- **Countries like China and the United States offer valuable insights** into the benefits of shifting freight from road to rail.
- **Rail freight**, significantly less polluting than road transport, **already enjoys considerable adoption in these nations.**
- **China**, for example, has expanded its rail network to the point where it handles nearly half of all freight.



- India, which has already made strides in electrifying its railways, can build on this progress to increase rail freight's share and lower its logistics-related emissions.

Steps Required Towards Green Transformation in Logistics Sector

- **Innovations in Road, Maritime, and Air Logistics**
 - Despite the environmental drawbacks, **road freight will remain an integral part of India's logistics network.**
 - Therefore, **it is imperative to make road transport cleaner.**
 - A noteworthy initiative in this area is the **pilot project on the Delhi-Jaipur corridor, which features overhead electric wires to power electric trucks.**
 - If successful, **this could revolutionise road freight by drastically cutting down emissions while maintaining economic feasibility.**
- **Coastal Shipping and Inland Waterways**
 - Coastal shipping and inland **waterways offer further potential for green transformation.**
 - The International Maritime Organization's goal of **cutting shipping emissions by 50% by 2050** has catalysed global momentum toward adopting cleaner fuels.
 - **India, too, can lead by investing in LNG-powered vessels, solar-electric boats, and biofuel-run barges, steps that will not only decarbonise transport but also stimulate innovation in green maritime technologies.**
 - **In contrast, air transport poses a particularly complex challenge** due to its dependence on refined fuels.
 - Although technological advancements in sustainable aviation fuels and efficiency improvements offer hope, **significant emissions reductions in this sector are likely to come through offsets and systemic improvements in other logistics modes.**

The Way Forward

- **Adoption of Renewable Energy**
 - **Warehousing, often overshadowed by transport in emissions discussions, is another major source of carbon emissions due to its heavy energy usage.**
 - To reduce its carbon footprint, **India must prioritise the adoption of renewable energy sources such as solar, wind, and geothermal power within warehouse operations.**
 - **Doing so would significantly contribute to a greener logistics ecosystem** while offering cost savings and energy security.
- **Toward a Future-Ready, Sustainable Logistics Network**
 - **The decarbonisation of India's logistics sector is not merely a necessity, it is an opportunity.**
 - It **offers the country a chance to redefine its logistics landscape** by making it more competitive, resilient, and aligned with global sustainability standards.
 - **By investing in electrified rail and road networks, cleaner fuels for shipping, and energy-efficient warehousing, India can build a logistics infrastructure that supports both economic growth and environmental stewardship.**

Conclusion

- The road to a **greener logistics future is already under construction.**
- **What remains is the political will, strategic investment, and collaborative action to accelerate this transition.**
- As India charts its path toward Viksit Bharat, **the logistics sector must not lag behind but lead the charge, efficiently, inclusively, and sustainably.**



3. 7. Trumponomics Deserves to Be Taken Seriously

Context

- The **economic doctrine adopted by the U.S. President Donald Trump**, popularly known as Trumponomics, **marks a sharp departure from decades of American economic orthodoxy** centred on free trade, deregulation, and global integration.
- Trump's assertion that **'tariff is the most beautiful word in the dictionary'** encapsulates the underlying spirit of his economic strategy.
- Amid this development, **it is crucial to understand the fundamental propositions of Trumponomics, its rationale, the mechanics of its implementation**, and its broader implications for the United States and the global economic order.

The Foundations of Trumponomics

- **Reindustrialising America**
 - The **loss of manufacturing jobs to globalisation**, particularly to China and other low-cost economies, **is viewed as a central failure of the post-Cold War economic order**.
 - The **offshoring of industries has led not only to job losses but also to the disintegration of communities**, rising crime, substance abuse, and a general decline in social cohesion in former industrial heartlands.
 - **While estimates vary, ranging from two to five million lost jobs in the early 2000s, the broader consensus is clear:** manufacturing is integral to middle-class prosperity and national resilience.
- **National Security Concerns**
 - Beyond economics, **Trumponomics argues that industrial self-sufficiency is a matter of national security**.
 - The **United States, it contends, cannot afford to be dependent on imports for critical materials such as steel, aluminium, and semiconductors**, especially in times of geopolitical crisis.
 - Trump's oft-quoted phrase, **'If you don't have steel, you don't have a country,'** underscores the **strategic dimension of economic policy**.
- **Critique of Free Trade**
 - Trumponomics challenges the idea that free trade is inherently fair.
 - **It charges that countries like China distort global markets** by subsidising industries, exploiting cheap labour, often through coercive means, and engaging in intellectual property theft.
 - In such a context, **adherence to conventional free market rules only disadvantages American businesses**.
 - Moreover, **persistent trade deficits, which have ranged between \$500 billion to \$1 trillion annually, are seen as weakening U.S. economic sovereignty** and transferring wealth abroad.

The Purpose and Implications of Tariffs

- **The Purpose of Tariffs**
 - **Reducing the Trade Deficit:** By making imports more expensive, tariffs are intended to reduce reliance on foreign goods, thus narrowing the trade gap.
 - **Reviving Domestic Industry:** Protection from foreign competition allows U.S. manufacturers to rebuild capacity and invest in innovation and labour.
 - **Correcting Currency Distortions:** Since the U.S. dollar functions as the world's reserve currency, it remains overvalued, preventing the trade deficit from correcting naturally through currency depreciation. Tariffs, in this context, act as a corrective mechanism.
- **Implications of Tariffs**
 - Economists warn that **tariffs may raise consumer prices and reduce efficiency**. However, Trumponomics rebuts this by emphasizing second-round effects.
 - **A currency appreciation resulting from decreased imports could neutralize price hikes**, leaving consumers unaffected while diminishing exporters' earnings in their home currencies.



- Moreover, the inflationary impact, estimated between 0.3 to 0.6 percentage points, is deemed manageable.

The Other Trump Cards: Strategic Effects and Long-Term Vision

- Trumponomics anticipates that **rising input costs will pressure American firms to innovate and cut costs.**
- In addition, **the promise of a protected and profitable domestic market is expected to lure both American and foreign firms** into relocating production back to the U.S. Early indications suggest this 'reshoring' trend may already be underway.
- Beyond tariffs, **Trumponomics includes three complementary pillars:**
 - **Tax Cuts:** These offset increased costs due to tariffs and provide businesses with capital to invest and expand.
 - **Deregulation:** Simplifying rules reduces compliance burdens, lowers costs, and enhances business competitiveness.
 - **Energy Independence:** Increased domestic oil production aims to reduce energy costs and mitigate inflationary pressures triggered by tariffs.
- Together, **these policies present a coherent, if unconventional, economic model that prioritises strategic autonomy, job creation, and national pride** over global integration and economic efficiency.

Trumponomics: Towards a New Economic Paradigm

- **Trumponomics challenges** the prevailing consensus **that economic efficiency should dominate policymaking.**
- Its **approach mirrors that of developing nations, like India**, which have historically balanced efficiency with social and strategic priorities.
- Critics argue that **Trump's vision is insular and potentially destabilising.**
- Yet, **for Trump and his supporters, the goal of 'Making America Great Again' justifies temporary disruptions**, both domestically and globally.
- Whether or not Trumponomics succeeds in the long term, **it has already altered the terms of economic debate.**
- **It has spotlighted the trade-offs of globalisation, questioned the sustainability of free trade orthodoxy**, and introduced a new language of economic nationalism that has since been echoed across political divides and borders.

Conclusion

- **Trumponomics is more than a set of policy prescriptions;** it is an economic philosophy rooted in nationalism, self-sufficiency, and strategic pragmatism.
- By deploying tariffs, reimagining trade relations, and reviving domestic industry, **Trump seeks to rewrite the rules of the global economic order in America's favour.**
- Whether this vision is sustainable or even desirable remains contentious.
- What is certain, however, is that the **Trumpian economic doctrine has reignited critical conversations about fairness, resilience, and the true costs of globalisation, conversations that will shape economic policymaking for years to come.**

3. 8. Reimagining India's Bilateral Investment Treaty (BIT) Framework

Context:

- The **Union Budget 2024-25** proposes **revamping the 2015 Model BIT** to attract more foreign investment.
- Experts suggest **a dual-model BIT strategy** tailored to India's varying relationships with capital-exporting and capital-importing countries.

The 2015 Model BIT - A Decade of Defensiveness:

- India's 2015 Model BIT emphasized **sovereignty and regulatory autonomy.**
- Included clauses such as:



- **Mandatory exhaustion of local remedies** (for at least 5 years) before invoking international arbitration.
- **Narrow definition of investment.**
- **Result:** Failed to gain traction globally and deterred potential investors.

Dual BIT Models - “Horses for Courses” Approach:

- **Proposal:**
 - **Defensive BIT** for capital-importing relationships (e.g., with African nations).
 - **Investor-friendly BIT** for capital-exporting ties (e.g., with countries where Indian companies invest heavily).
- **Objective:** Maximize benefits by aligning treaty terms with economic roles.

Flaws in the Dual BIT Approach:

- **Dynamic economic relations:**
 - **Countries’ capital relationships evolve**—India was a capital importer in 1994 with the UK, but now is a capital exporter.
 - **Challenge:** Difficult to permanently categorize countries as capital importers/exporters.
- **Legal inconsistency:**
 - Different BIT models imply **divergent stances** on legal norms (e.g., investor-state dispute settlement [ISDS] mechanism).
 - **Undermines India’s credibility** in international negotiations and multilateral forums such as the UN Commission on International Trade Law (**UNCITRAL**), currently discussing ISDS reforms.

Most Favoured Nation (MFN) Clause - Misunderstood Origins and Role:

- **Clarifying MFN history:**
 - **Experts claim:** MFN is rooted in multilateral treaties.
 - **Historical fact:** MFN clauses existed in bilateral commercial treaties since the 17th century.
- **Importance in BITs:**
 - The MFN clause ensures **non-discriminatory treatment** among treaty partners.
 - Contrary to claims, MFN clauses **enhance treaty fairness** and uphold the principle of equality.

Towards a Balanced BIT Framework:

- **One model, better design:** The key lies not in multiple models, but in creating a single, balanced BIT that:
 - Ensures investment protection.
 - Retains sovereign regulatory space.
 - Projects a principled and predictable stance in international law.

Conclusion:

- India must craft **a BIT model that adapts** to changing global investment patterns while maintaining consistency and legal credibility.
- A **strategic, balanced, and investor-conscious model** is vital for securing both foreign investments and the interests of Indian investors abroad.

3. 9. India, Rising Power Demand and the ‘Hydrogen Factor’

Context

- Achieving a **net-zero economy is one of the most pressing challenges of the 21st century.**
- As nations around the world transition toward **sustainable energy systems, electrification of energy end-uses emerges** as a foundational pillar in this shift.
- However, this transformation **extends beyond simply replacing fossil fuels with renewable electricity.**



- It requires a **comprehensive reimagining of industrial processes**, energy generation, and storage, placing nuclear power and hydrogen at the forefront of the strategy.

The Necessity of Electrification and Hydrogen Integration

- The bulk of current fossil fuel usage is for purposes beyond electricity generation, notably in **providing heat and essential molecules in industrial processes**.
- For instance, **carbon from coal is a critical component in steel production**, while hydrogen derived from natural gas is vital in manufacturing ammonia, a key input in fertiliser production.
- **Transitioning to a net-zero economy mandates replacing these fossil-derived molecules with cleaner alternatives**.
- In this context, **hydrogen becomes indispensable**, not just as an energy carrier but also as a feedstock substitute in industrial operations.
- In steel manufacturing, for example, **hydrogen can substitute carbon**, enabling a cleaner reduction of iron ore.
- Similarly, widespread electrification must be complemented by strategic deployment of hydrogen, especially where direct electrification is impractical or inefficient.

Rising Power Demand and the Role of Nuclear Energy

- Forecasts by energy researchers indicate a significant increase in power demand as **India progresses toward a developed, net-zero economy**.
- While **solar, wind, and hydroelectric power are critical components of the energy mix**, they alone cannot meet the growing electricity requirements.
- **Nuclear energy, with its capability to provide stable and continuous power, becomes an essential complement**.
- Recognising this, the Indian government has set an ambitious goal of achieving **100 GW of installed nuclear capacity by 2047**.
- The **Nuclear Power Corporation of India Limited (NPCIL)** is actively working to realise this vision through the deployment of **Pressurised Heavy Water Reactors (PHWRs)**.
- Several projects are already underway across **Gujarat, Rajasthan, and Haryana**, with a planned fleet of 26 PHWRs rated at 700 MW.
- Furthermore, **NPCIL is promoting the development of 220 MW Bharat Small Reactors (BSRs)** for captive industrial use, leveraging indigenous capabilities and manufacturing infrastructure.

Challenges in Balancing Low-Carbon Energy Sources

- **The Challenge of Grid Stability in a Low-Carbon Future**
 - As nations transition toward low-carbon energy systems, one of **the most pressing operational challenges is balancing electricity supply and demand in real time**.
 - In a fossil fuel-dominated system, this balancing act is relatively straightforward, **conventional coal or gas-fired plants can be ramped up or down as needed to match demand**.
 - However, in a system dominated by **low-carbon sources like solar, wind, hydro, and nuclear, maintaining grid stability becomes far more complex**.
- **Intermittency and Operational Constraints of Renewables**
 - **Solar and wind energy, while environmentally sustainable, are inherently intermittent and variable**.
 - Solar generation peaks during the day and drops to zero at night, while **wind patterns are less predictable and can vary by region and season**.
 - **Hydroelectric power is more consistent but is constrained by geography and seasonality**.
 - **Nuclear energy, on the other hand, provides a stable and continuous source of power** but is typically designed to operate best at a constant, "base load" output rather than being flexed to follow demand fluctuations.
- **Limitations of Flexing Nuclear Power for Load Balancing**
 - As the share of renewable energy increases and fossil generation is phased out, a **new paradigm for grid balancing must emerge, one that does not rely on carbon-intensive methods**.



- While some experts suggest the possibility of flexing nuclear power plants to match grid demand, this approach faces significant limitations.
- Technically, **altering the output of nuclear reactors is challenging due to the complexity of their operation** and the long-term planning required for fuel cycles.
- Economically, it is also inefficient: **nuclear plants are capital-intensive assets** designed for constant operation to maximize their return on investment.
- Operating them at partial load levels **reduces their cost-effectiveness**, especially since variable costs do not decrease proportionally with reduced output.

The Way Forward

- **Hydrogen Electrolysis as a Grid Balancing Solution**
 - Given these constraints, the need **for innovative, non-fossil solutions to balance low-carbon electricity becomes paramount.**
 - One such promising solution is the **integration of hydrogen production through electrolysis.**
 - Electrolysers can serve as dynamic and flexible loads on the grid, absorbing excess power when supply exceeds demand, such as during peak solar or wind generation hours.
 - This not only prevents the wastage of renewable electricity but also **helps stabilise the grid without compromising the continuous operation of nuclear plants.**
- **Decoupling Supply and Demand Through Hydrogen Production**
 - The **use of grid-connected electrolysers introduces an elegant solution:** instead of curtailing solar or wind energy or flexing nuclear reactors, surplus electricity can be redirected to produce hydrogen, a versatile energy carrier and industrial feedstock.
 - This approach effectively decouples electricity supply from immediate demand, creating a buffer that supports grid reliability and emissions reductions.

Conclusion

- The **road to a net-zero economy is complex and multifaceted**, requiring a coordinated transformation of energy generation, industrial practices, and policy frameworks.
- **Electrification, coupled with the strategic use of hydrogen, holds the key to decarbonizing end-use sectors.**
- Nuclear power, with its base-load stability, must be integrated into the energy mix to meet growing demand.
- Forward-looking policy changes, such as **redefining hydrogen categories and promoting integrated energy solutions, can unlock synergies and accelerate the transition.**

3. 10. Benefits of Genetic Mapping for the Indian Population

Why in News?

The preliminary findings of the **Genome India project**, which aimed to sequence the whole genomes of 10,000 healthy and unrelated Indians from 83 population groups, were published in **Nature Genetics**.

After excluding two population groups, the study analyzed data from 9,772 individuals, including 4,696 men and 5,076 women.

Launch of Genome India project

- It was launched in **January 2020**, with funding from the **Department of Biotechnology**.
- **Scope and Sample Collection**
 - The study aimed to collect **blood samples and phenotype data** (e.g., weight, height, hip & waist circumference, blood pressure).
 - **Participants represented 83 population groups: 30 tribal; 53 non-tribal.**
 - These groups were spread across India.



- **Genome Sequencing**

- Whole genome sequencing was performed on DNA samples from 10,074 individuals.
- After **excluding two populations, data from 9,772 individuals was analyzed.**

- **Collaborating Institutions**

- The project is a collaborative effort involving 20 institutions. Genome sequencing was carried out by:
 - **Centre for Brain Research, IISc Bengaluru**
 - **Centre for Cellular and Molecular Biology, Hyderabad**
 - **Institute of Genomics & Integrative Biology, Delhi**
 - **National Institute of Biomedical Genomics, Kolkata**
 - **Gujarat Biotechnology Research Centre, Gandhinagar**

Sampling Strategy

- Samples were collected from **83 population groups** across **100+ distinct geographical locations.**
- **Median samples collected:** 159 individuals per non-tribal group; 75 individuals per tribal group.
- Participants were unrelated to ensure accurate estimation of mutation frequencies.
- **Parent-Child Pairs**
 - 3 to 6 parent-child pairs were included in each group.
 - **Purpose:** To detect **de novo mutations** (mutations present in a child but absent in parents).
- **Tribal and Non-Tribal Genome Coverage**
 - **Tribal groups sequenced:**
 - Tibeto-Burman tribe
 - Indo-European tribe
 - Dravidian tribe
 - Austro-Asiatic tribe
 - Continentally admixed outgroup
 - **Non-tribal groups sequenced:**
 - Tibeto-Burman non-tribe
 - Indo-European non-tribe
 - Dravidian non-tribe
 - **Linguistic Representation**

Sampling aligned with India's major language families, which correlate with genetic diversity:

- Indo-European
- Dravidian
- Austro-Asiatic
- Tibeto-Burman
- **Excluded Populations**
 - Four ancient Andamanese populations (dating back ~65,000 years) &
 - Two relatively modern populations (from ~5,500 years ago)

Key Genetic Findings

- 180 million mutations identified in total:
 - **130 million in autosomes (non-sex chromosomes)**
 - 50 million in sex chromosomes (X and Y)
- The large number is expected, given the 3 billion DNA base pairs and sequencing of 9,772 individuals from 83 distinct endogamous groups.
- **98% of the human genome consists of non-coding regions, and most variants are likely found here.**
 - Non-coding region mutations, especially evolutionarily conserved polymorphisms, help in tracing human evolutionary history.



- This is especially important in India, where many **contemporary populations stem from a few founding groups and have remained genetically distinct due to endogamy.**
- **Impact of Endogamy**
 - **All 83 groups studied practice endogamy**, though to varying degrees.
 - Long-term endogamy has led to **population-specific unique mutations, including disease-causing genetic variants with amplified frequencies.**
 - India's genetic diversity has been underrepresented in global (largely Eurocentric) genome studies.
 - This project addresses that gap by capturing the genetic landscape of one of the most diverse populations globally.
- **Medical Implications**
 - The findings will encourage studies on **genetic links to diseases specific to Indian populations.**
 - It promotes **precision medicine**, allowing for personalized treatment strategies tailored to Indian genetic make-up.
 - Enables development of affordable diagnostic tools for early disease detection, prevention, and management in India.
 - Findings can support targeted public health policies to address population-specific genetic disorders.

3. 11. Tensions Rise Over MSME Reclassification in Budget 2025

Why in the News?

- The Union Budget 2025 introduced a significant revision in the classification criteria for micro, small, and medium enterprises (MSMEs), triggering strong reactions from various industry stakeholders.

Overview of the Classification Changes

- Effective April 1, 2025, the **investment and turnover limits for all MSME categories have been increased substantially.**
- Specifically, the investment cap has been raised by 2.5 times, while turnover thresholds have been doubled. This means:
 - **Micro enterprises:** now include firms with investment up to ₹2.5 crore (from ₹1 crore) and turnover up to ₹10 crore (from ₹5 crore)
 - **Small enterprises:** ₹25 crore investment (up from ₹10 crore), ₹100 crore turnover
 - **Medium enterprises:** ₹125 crore investment (up from ₹50 crore), ₹500 crore turnover
- The government believes these changes will help businesses scale operations, access capital more easily, and contribute to employment generation.

Support for the Revised Norms

- Industry groups such as the **Federation of Indian Micro and Small & Medium Enterprises (FISME)** have welcomed the revised limits.
- They argued that the revision was necessary to:
 - **Reflect inflationary pressures and rising input costs**
 - Allow medium enterprises to grow vertically rather than duplicating operations horizontally
 - Attract greater foreign investment in MSMEs without losing access to government benefits
- Indian businesses often avoid growth beyond small-scale classification due to fear of losing incentives.
- The revised norms aim to counter this trend by making the classification more inclusive.

Concerns Raised by Micro and Small Enterprise Bodies

- On the other hand, various organisations representing micro and small enterprises, has voiced strong opposition to the move.



- **The organization warned that:**

- Medium enterprises, which constitute **less than 0.01% of the MSME base**, might monopolize benefits meant for the 99.99% micro and small units.
 - Public procurement quotas (25% for micro and small units) and credit access under priority sector lending will disproportionately favour larger players.
 - **Micro units already struggle to access credit, as banks often prefer lending to medium units to meet their targets with fewer clients.**
- These organisations demanded that the earlier classification be restored or a separate department be created for micro and small enterprises to safeguard their interests.

Broader Implications for the MSME Sector

- The revised classification is expected to significantly affect the structure and support systems within the MSME ecosystem. Key issues at stake include:
- **Public Procurement Access**
 - With medium enterprises now falling into the "small" bracket, competition for public contracts under the mandated 25% procurement quota may become more intense, potentially side-lining micro units.
- **Credit Distribution**
 - Despite formal provisions for microenterprise credit (8% of total priority sector lending), practical access remains limited. **Larger units are more attractive to banks due to lower risk and higher ticket sizes.**
- **Post-Pandemic Recovery Challenges**
 - Recovery from the COVID-19 impact remains uneven, and the timing of the revision is premature.
 - The last National Sample Survey data on MSMEs dates back to 2015-16, **raising concerns about policy decisions being made without updated evidence.**
- **Missing Middle Problem**
 - The policy aims to bridge the **"missing middle" by encouraging small firms to scale up.**
 - Many firms have historically stayed small to retain government benefits, leading to **inefficient horizontal expansion.** The new limits intend to reverse that trend.

Future Considerations

As India pushes for a robust and **globally competitive MSME sector, periodic policy recalibrations are inevitable.**

However, it remains crucial that the voices of micro and small businesses, the backbone of India's industrial landscape, are not drowned out by the louder voices of larger firms.

The success of the reclassification will depend on **how equitably the benefits are distributed and whether genuine efforts are made to address access to credit, market linkages, and ease of doing business at the grassroots level.**

3. 12. Poverty Reduction and Inclusive Growth in India- An Assessment (2011-12 to 2023-24)

Context:

- **Democracy** is not just about elections but also about **addressing the needs of vulnerable sections.**
- The article evaluates **poverty reduction in India** under the current government.
- The focus is on **poverty alleviation across social and religious groups** between 2011-12 and 2023-24.

Measuring Poverty - The Rangarajan Poverty Line:

- The study uses the **2011-12 poverty line** recommended by the C Rangarajan Committee.
- **Key features:**
 - Based on the **Modified Mixed Recall Period (MMRP)** for accurate **household expenditure data.**
 - Calibrated to Indian Council of Medical Research (ICMR) norms for **calorie-based food requirements.**
 - Assigns higher weightage to **non-food essentials in urban areas.**



- Poverty estimates for 2023-24 are updated using the **Consumer Price Index (CPI)**.

Data Sources and Methodology:

- Based on unit-level data from Household Consumption Expenditure Surveys (HCES):
 - **2011-12 survey:** Over 1 lakh households.
 - **2023-24 survey:** Over 2.5 lakh households.
- Conducted by the **Ministry of Statistics and Programme Implementation (MoSPI)**, Government of India.

Findings of the Study:

- **Overall decline in poverty (2011-12 to 2023-24):**
 - Rural poverty fell from 30.4% to 3.9%.
 - Urban poverty declined from 26.4% to 3.9%.
- **Poverty reduction among religious groups:**
 - **Muslims:**
 - **Rural areas:** 31.7% (2011-12) → 2.4% (2023-24).
 - **Urban areas:** 39.4% (2011-12) → 5.7% (2023-24).
 - **Hindus:**
 - **Rural areas:** 30.9% (2011-12) → 4% (2023-24).
 - **Urban areas:** 24.4% (2011-12) → 3.7% (2023-24).
 - **Convergence:** The Muslim-Hindu **gap in urban poverty reduced** from 15 percentage points to 2 percentage points.
- **Poverty reduction across social groups:**
 - **Scheduled Tribes (STs):**
 - **Rural:** 49.5% → 12.2%.
 - **Urban:** 38.2% → 9.9%.
 - **Poverty gap** with the General category narrowed from 29.5 to 10.6 percentage points (rural) and from 21.5 to 7.4 percentage points (urban).
 - **Scheduled Castes (SCs):**
 - **Rural:** Gap with General category reduced from 17.4 to 2.6 percentage points.
 - **Urban:** Poverty fell from 39.6% to 6.6%, and the gap narrowed from 20 to 4.1 percentage points.
 - **Other Backward Classes (OBCs):** Poverty rate dropped from 30.4% to 3.6%.

Poverty Alleviation Schemes/Programmes:

- **In rural India:**
 - Mahatma Gandhi National Rural Employment Guarantee Scheme (**MGNREGS**)
 - Pradhan Mantri Awas Yojana-Gramin (**PMAY-G**)
 - Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (**DAY NRLM**)
 - Deendayal Upadhyaya Grameen Kaushalya Yojana (**DDU-GKY**)
 - National Social Assistance Programme (**NSAP**)
 - Watershed Development Component (WDC) of the Pradhan Mantri Krishi Sinchayee Yojana (**WDC-PMKSY**)
- **In urban India:**
 - Deendayal Antyodaya Yojana (**National Urban Livelihoods Mission**)
 - **Jal Jeevan Mission (Urban)**
 - Scheme to Augment City Buses & Urban Green Mobility
 - Pradhan Mantri Awas Yojana (**Housing for All - Urban**)
 - Atal Mission for Rejuvenation and Urban Transformation (**AMRUT**)

Conclusion - Inclusive Growth and Democratic Governance:

- The above study shows that **poverty has come down among all communities**.



- **India's economic growth** as well as **government welfare programmes** (including direct benefit transfers, rural employment programs, and food security initiatives) have been widely **inclusive**, and their **impact on minorities and vulnerable groups has been substantial**.
- The Modi government's initiatives have **reinforced democratic governance through social upliftment**.

3. 13. Mechanisation Beyond Tractors

Why in News?

Farm mechanization in India is closely associated with tractors, which replaced bullocks for tasks like ploughing, cultivating, and transportation.

Tractors offer significantly more power, with models in India delivering 41-50 horsepower, compared to the 1 horsepower of bullocks.

The Indian tractor market sells around 9 lakh units annually, with each tractor priced at approximately Rs 7 lakh for a 45 hp model, resulting in a market size of Rs 60,000 crore.

Beyond Tractors: The Expanding Role of Farm Mechanization

- Farm mechanization isn't limited to tractors. While tractors provide the motive power, the effectiveness of farm operations depends on the **attachments used, such as rotavators**.
- **Advantages of Tractor-Powered Equipment**
 - Bullock-drawn ploughs are limited to primary tillage, working at depths of 4-6 inches.
 - In contrast, a **tractor-powered rotavator can perform both primary and secondary tillage in a single pass, reaching depths of 8-12 inches**.
 - This improves **soil aeration, water infiltration, and root penetration**.
- **Growing Market for Farm Machinery**
 - The market for farm machinery like **rotavators is expanding, though not at the same volume as tractors**.
 - Rotavators alone represent a market of 200,000 units, worth Rs 2,000 crore annually.
- **Key Players in the Market**
 - Leading brands in the farm machinery sector include **Tirth Agro Technology, Shaktiman, Mahindra & Mahindra, and International Tractors/Sonalika**.

Fast Growing Market for Farm Machinery

- India's farm machinery market, excluding tractors, is valued at over Rs 10,000 crore, with 60% controlled by organised players and 40% by the unorganised sector.
- **Globally, farm machinery (\$100 billion) surpasses tractor sales (\$60 billion), but in India, tractors (Rs 60,000 crore) dominate over farm machinery, indicating significant growth potential**.
- **Diverse Farm Machinery Segments**
 - Farm machinery includes tractor-mounted implements (tillage tools, sprayers, balers, loaders, trolleys, laser land levellers) and self-propelled machines like harvesters, rice transplanters, and cane harvesters.
- **Mechanization to Address Labour Shortages**
 - **Rotavators and subsoilers** enhance soil fertility by deep tilling, while harvesters and **transplanters help combat labour shortages in agriculture**.
- **Market for Harvester Combines**
 - **Wheel-Type Harvester Combines**: Annual sales of 8,000 units, worth Rs 2,000 crore (Rs 25 lakh per machine).
 - **Crawler Track Combines**: Used for paddy harvesting in wetlands, with a market of 7,000 units (Rs 1,750 crore).
 - **Tractor-Mounted Combine Harvesters**: Annual sales of 3,000-3,500 units (Rs 300-350 crore, priced at Rs 10 lakh each).



- **Future Growth Potential**

- With farm mechanization still lagging behind global standards, the Indian market has significant room for expansion, particularly in modernizing harvesting and tillage equipment.

From Tractors to Machines: The Shift in Farm Mechanization

- Farm operations that once relied on manual labour are increasingly being replaced by machines, **improving efficiency and reducing costs.**
- **Mechanized Harvesting: Faster and More Cost-Effective**
 - Harvesting an acre of wheat manually takes 5-7 labourers a full day, plus additional time and labour for threshing, costing Rs 5,000 or more.
 - A combine harvester can complete the same job in 25-30 minutes at a cost of Rs 2,000-3,000 per acre, making mechanical harvesting increasingly popular.
- **Paddy Transplanting: A Growing Market for Machines**
 - **Machines are replacing manual paddy seedling transplanting, especially in southern India.**
 - The rice transplanter market is around 3,000 units annually, with walk-behind models (2,750 units at Rs 3 lakh each) and ride-on models (250 units at Rs 10 lakh each).
- **Big Players Expanding in Farm Machinery**
 - With rising mechanization demand, major tractor manufacturers are entering the farm equipment market.
 - **Mahindra & Mahindra (M&M) has a dedicated farm equipment plant in Pithampur, Madhya Pradesh, spanning 23.7 acres, with a Rs 100-crore investment.**
 - **Capacity:** 1,200 harvesters and 3,300 rice transplanters per year.
 - **Facilities:** Chassis fabrication, in-house painting, and assembly.
 - M&M also operates a rotavator factory in Nabha, Punjab, further strengthening its presence in farm mechanization. Top of Form

A Different Model: Custom Hiring in Farm Mechanization

- While tractors are versatile and used for multiple farm operations, **specialized machines like sugarcane harvesters, combines, and Super Seeders have crop-specific applications**, making them expensive for individual farmers to own.
- **Custom Hiring: A Solution to High Costs**
 - Many farmers demand advanced machinery, but **affordability remains a challenge.**
 - Custom hiring, where individual owners offer machine services to multiple farmers, is emerging as a viable alternative.
- **A Sustainable Future for Farm Mechanization**
 - The **owner-operator model**, where individuals invest in machinery and provide services to multiple farmers, is proving to be a sustainable and profitable approach to increasing mechanization in Indian agriculture.

3. 14. Job Creation in India- Challenges and Policy Imperatives

Context:

- **India's working-age population has increased** significantly since 2017-18 (by about 9 crore), yet **formal sector job creation has not kept pace** (rose by 6 crore), leading to a **deficit of 50 lakh jobs annually.**
- Most new employment has emerged from informal and self-employment sectors, highlighting both **quantitative and qualitative challenges in job opportunities.**

The Rising Capital Intensity of Production:

- **Technological progress and declining labour intensity:**
 - Labour-intensive industries are increasingly adopting capital-intensive production processes.



- **AI and automation** are accelerating this trend, reducing labour demand across sectors.
- **Why is capital intensity increasing in a labour-abundant economy?** Two key factors contribute to this shift:
 - **Demand-side factors:** Need for **higher productivity and value addition at lower costs**.
 - **Supply-side factors:** Shortage of skilled labour forces employers to opt for automation.
- **Impact on employment and economic sectors:**
 - **Services sector:** Highest value addition, increasing contribution to GDP.
 - **Manufacturing sector:** Stagnant contribution despite industrial policies.
 - **Agriculture sector:** Declining share in GDP, **pushing surplus labour into informal jobs**.

Skills Deficit and the Challenge of Employment Readiness:

- **Less than 10%** of India's workforce has formal technical or vocational training.
- Many educated youths **lack job-ready skills**, widening the skill gap in the labour market.
- The rise of "**skill-biased technological change**" is making certain job roles redundant, reducing labour demand further.
- **Key policy requirement:** Continuous skilling and upskilling to **ensure workforce adaptability to new technologies**.

Government Strategies for Job Creation:

- **PLI scheme:**
 - The production-linked incentive (PLI) scheme aims to **boost high-value production and attract investments**.
 - Over 50% of the PLI budget is allocated to **electronics, IT hardware, and drone manufacturing**.
 - **Employment mismatch:**
 - High job creation in **food processing & pharmaceuticals**, but these sectors receive less financial support.
 - **Labour-intensive industries remain underfunded** despite high employment potential.
- **ELI scheme:**
 - The employment-linked incentive (ELI) scheme **provides government cash transfers via EPFO to encourage private sector hiring**.
 - Supports labour-intensive sectors by reducing initial hiring risks for employers.
- **Challenges:**
 - **Short subsidy period** (2-3 years), raising concerns about long-term employment sustainability.
 - **Requires tracking of employment outcomes** to assess its effectiveness in skill development.

Policy Recommendations for Employment Generation:

- **Integration of production and skilling policies:**
 - **Align PLI incentives with labour supply and skilling strategies** to ensure job creation in relevant sectors.
 - **Improve coordination** between Ministries of Labour, Skill Development, and Industry.
- **Reforming the ELI scheme for sustainable employment:**
 - **Shift from a flat incentive model** to a graded structure linked to skill levels.
 - **Extend ELI benefits to training institutes** (e.g., ITIs) based on employment and earnings outcomes.
- **Labour market reforms:**
 - State governments need to **ease restrictive labour laws** that artificially inflate labour costs.
 - **More flexible labour regulations** can encourage firms to hire more workers rather than opting for capital-intensive solutions.

Conclusion:

- To realize the vision of **Viksit Bharat**, India must adopt a **dynamic and comprehensive employment policy** that simultaneously **expands production capacity and enhances workforce quality**.
- A **future-ready workforce**, backed by robust skilling and labour market reforms, is critical for sustainable job creation and economic growth.



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

1ST APRIL

1. Ulhas River:



It is one of the **west flowing Rivers in Maharashtra** falling into the **Arabian Sea**. It rises from the **Sahyadri hill ranges** in the **Raigad district of Maharashtra** at an elevation of 600 meters above M.S.L. The Ulhas drains an area of 4,637 sq km, which lies completely in Maharashtra.

Tributaries: The important tributaries of the Ulhas River are **Pej, Barvi, Bhivapuri, Murbari, Kalu, Shari, Bhasta, Salpe, Poshir and Shilar**.

The **Kalu and Bhasta** are the major right bank tributaries, which together account for 7% of the total catchment area of Ulhas.

2. Chicken's Neck Corridor



Bangladesh has invited China to invest in a **river conservation project close to the 'Chicken's Neck' corridor** – the link between India's mainland and its seven northeastern States. '**Chicken's Neck**', also known as the **Siliguri Corridor**, a narrow strip of land in **West Bengal that connects India's northeastern states to the rest of the country**. It is flanked by **Nepal to the west, Bhutan to the north, and Bangladesh to the south**. The region is close to the India-China border,

particularly the Chumbi Valley in Tibet, where China has built significant military infrastructure.

3. Operation Brahma:



It is India's humanitarian mission launched in response to the devastating **7.7-magnitude earthquake that struck Myanmar on March 28, 2025**. The large-scale humanitarian mission includes rescue teams, medical aid, and relief supplies. The **National Disaster Response Force (NDRF)** deployed an **80-member team** equipped with concrete cutters, drill machines, plasma cutters, and other rescue tools. The Indian Army has mobilised a specialised medical task force to provide urgent humanitarian assistance. Two Indian naval ships, **INS Satpura and INS Savitri**, were dispatched carrying 40 tonnes of humanitarian aid to the port of Yangon.

4. Kasampatty Sacred Grove:



The Kasampatty Sacred Grove, also known as **Veera Kovil Sacred Grove**, is a revered ecological and cultural site located in **Kasampatty village, Dindigul District, Tamil Nadu**. Spanning 4.97 hectares near the Alagarmalai Reserve Forest, this grove is enveloped by lush mango plantations, enhancing its natural beauty and fertility. **The Tamil Nadu government has notified Kasampatty Sacred Grove as the state's second**



Biodiversity Heritage Site under the Biological Diversity Act, 2002.

5. Amur Tigers



Scientific name: Panthera tigris altaica

Common name: Amur Tiger / Siberian Tiger

IUCN red list status: Endangered

Population: Estimated 265–486 (2022) in Russia, with a small number in China & possibly North Korea

Habitat: Primarily in eastern Russia's birch forests, with some presence in China and North Korea

Lifespan: 10-15 years in the wild, up to 20 years in captivity

Unique adaptations: Thick fur, large size and a lighter coat color for cold climates

6. Summary of Energy statistics India 2025

Primary Energy Supply rose by 7.8%, reaching 9,03,158 KToE, showcasing resilience and recovery. **Coal remains dominant, with 79%** of total domestic energy supplied and 60.21% share in TPES.

Renewable Energy potential reached 21,09,655 MW, with wind and solar leading. Electricity from renewables rose from 2,05,608 GWh (2014-15) to 3,70,320 GWh (2023-24) at a 6.76% CAGR. Per capita energy consumption increased to 18,410 MJ/person, a 25% rise in 10 years.

7. What is Deep Sea Mining?

Definition: Extraction of mineral-rich nodules, sulphides, and crusts from the ocean floor at depths of over 200 meters.

Methods:

- Using **robotic vehicles** to collect polymetallic nodules like a plough.
- Employing **AI-controlled machines and vacuum pumps** to extract minerals.
- Processing is done on surface vessels; waste discharge is often returned to the sea.

8. What is P4?

P4 stands for **Public-Private-People Partnership**, a mission mode initiative for **social and economic transformation**.

Aim: To **eradicate poverty** and elevate the economic and social status of marginalised families. Create model families ("**Bangaru Kutumbam**") as symbols of transformation.

9. About Malaria:

Malaria is a life threatening disease primarily found in tropical countries. It is both preventable and curable. Malaria is not contagious and cannot spread from one person to another; the **disease is transmitted through the bites of female Anopheles mosquitoes**. Five species of parasites can cause malaria in humans and 2 of these species – **Plasmodium falciparum** and **Plasmodium vivax** – pose the greatest threat.

2ND APRIL

1. Arctic Council



The Arctic is governed by the Arctic Council, an **intergovernmental body formed in 1996 through the Ottawa Declaration**.

Member States (8): Canada, Denmark (Greenland), Finland, Iceland, Norway, Russia, Sweden, and the United States.

These countries control land territories and have rights over resources within their Exclusive Economic Zones (EEZs).

Permanent participants: Six Indigenous groups representing Arctic inhabitants.

Observers (Including India): Thirteen countries (e.g., India, China, Japan, UK, France). Thirteen intergovernmental organisations. Twelve non-governmental organisations.

All decisions require the **consensus of the eight Arctic States** and consultation with permanent participants.



2. Exercise Tiger Triumph:



It is an India-U.S. tri-service **Humanitarian Assistance and Disaster Relief (HADR) Exercise**. The exercise aims to enhance interoperability for **conducting HADR operations** and to formulate Standard Operating Procedures (SOPs) for establishing a **Combined Coordination Centre (CCC)**.

3. NITI NCAER States Economic Forum Portal



1. Overview & Development: The NITI NCAER States Economic Forum Portal, developed by **NITI Aayog and NCAER**, is a comprehensive data repository on state finances, covering 1990-91 to 2022-23.

2. Key Components: It consists of four sections—**State Reports (macro & fiscal summaries)**, **Data Repository** (demography, economy, fiscal, health, education), **Economic Dashboard (graphical trends)**, and **Research & Commentary (state finance insights)**.

3. Data Accessibility: The portal provides user-friendly access to structured and consolidated socio-economic, fiscal, and demographic data.

4. Comparative Analysis: It facilitates benchmarking state data against national figures, aiding informed discussions and policy analysis.

5. Research & Policy Support: By leveraging historical trends and analytics, it enables researchers and policymakers to track progress, identify patterns, and develop evidence-based policies.

4. Tribhuvandas Patel



1. Freedom Fighter & Gandhian Influence – Tribhuvandas Patel (1903–1994) was an Indian independence activist influenced by Mahatma Gandhi's philosophy, participating in the **Civil Disobedience Movement, Salt Satyagraha (1930)**, and rural development initiatives.

2. Father of India's Cooperative Dairy Movement – In 1946, under the guidance of Morarji Desai and inspiration from Sardar Patel, he founded the **Kaira District Cooperative Milk Producers' Union (AMUL)** to counter dairy exploitation.

3. Institution Building – He played a key role in establishing the **Gujarat Cooperative Milk Marketing Federation (GCMMF)**, **National Dairy Development Board (NDDB)**, and the **Institute of Rural Management Anand (IRMA)**.

4. Social Inclusion – Advocated for inclusive cooperative models, ensuring participation irrespective of caste or community.

5. Awards & Recognition – Received the **Ramon Magsaysay Award (1963)** and **Padma Bhushan (1964)** for his contributions to social service and cooperative movements.

5. Non-Alcoholic Fatty Liver Disease (NAFLD)



NAFLD, now termed **Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)**, is a liver condition caused by fat accumulation unrelated to alcohol consumption. It ranges from mild Nonalcoholic



Fatty Liver (NAFL) to severe **Nonalcoholic Steatohepatitis (NASH)**, which can lead to cirrhosis and liver failure.

Risk Factors: It is commonly associated with **obesity, type 2 diabetes, high blood pressure, and kidney disease**. It can affect people of all ages, including children.

Health Risks: NAFLD increases the risk of **cardiovascular diseases, liver cancer, and metabolic disorders**. Those with diabetes have a higher risk of heart problems.

No specific medication exists; weight loss, managing diabetes, hypertension, and cholesterol are recommended.

6. Mahabodhi Temple

Built by **Emperor Ashoka** in 260 BCE after his **conversion to Buddhism**. The present structure of the Mahabodhi Temple dates back to the **5th or 6th century A.D., reflecting the architectural style of the Gupta period**. Located in Bodh Gaya, Bihar, the site is believed to be **where Buddha attained enlightenment under the Bodhi Tree. Recognised as a UNESCO World Heritage Site**. Historically managed by Buddhists until the 13th century invasion by Bakhtiyar Khilji. In the late 16th century, **Hindu monk Ghamandi Giri established the Bodh Gaya Math at the site**.

Post-Independence (1949): Bihar government enacted the Bodh Gaya Temple Act, transferring management to a joint committee.

7. What is the Nankai Trough?

The Nankai Trough is a **subduction zone—an undersea trench where the Philippine Sea Plate is being forced under the Eurasian Plate**. This trench stretches about 800 km along Japan's Pacific coastline, from Suruga Bay near central Japan to the Hyuganada Sea near Kyushu

8. About Asbestos

Asbestos refers to a **group of six naturally occurring fibrous minerals known for their resistance to heat, fire, and chemicals, and their durability**. Asbestos was widely used in numerous industrial, residential, and commercial applications due to its unique physical properties. When asbestos fibers are inhaled or ingested, they can lodge in the lungs and tissues,

leading to chronic health conditions like **Asbestosis, Mesothelioma** etc.

9. Naini Lake

The Naini Lake has recorded a water level of 4.7 feet — marking a five-year low. The **lake has reached its zero level more than 10 times since 2000**, compared to just twice in the 1900s. It is a **natural freshwater lake**, tectonic in origin and crescent-shaped due to repeated landslides. Situated in the **Kumaon region of Uttarakhand. Third largest lake in the state by surface area**.

APRIL 3

1. Waqf Bill Amendments Overview:

Amends the Waqf Act, 1995, which governs Waqf property management in India.

Waqf by User: The Bill removes the concept of “**Waqf by use,**” meaning properties continuously used as Waqf (like mosques) will require official documentation (Waqfnama) to be recognized as Waqf.

Survey of Properties: The Bill replaces the Survey Commissioner with the District Collector or other senior officers to oversee the survey of Waqf properties.

Representation on Waqf Boards: The Bill proposes allowing **non-Muslim Chief Executive Officers and members to be appointed to state-level Waqf Boards**.

Application of Limitation Act: The Bill deletes **Section 107 of the 1995 law, making the Limitation Act (1963) applicable to Waqf properties**. This change allows someone who has unlawfully possessed Waqf property for more than 12 years to claim it through adverse possession.

2. Government security (G-Sec)

It is a **tradeable instrument issued by the Central Government or the State Governments**. It acknowledges the Government's debt obligation. **Such securities are short term (usually called treasury bills, with original maturities of less than one year) or long term (usually called Government bonds or dated securities with original maturity of one year or more).**

Scenario In India: In India, the Central Government issues **both, treasury bills and bonds or dated securities while the State Governments issue only**



bonds or dated securities, which are called the **State Development Loans (SDLs)**. G-Secs carry practically no risk of default and, hence, are called risk-free gilt-edged instruments. **RBI acts as the debt manager for the Centre and the States.**

3. Saturn Gained 128 New Official Moons

Saturn has “gained” **128 new moons** in a groundbreaking discovery by astronomers in Taiwan. **Saturn’s New Title:** Saturn now holds the title of “moon champion” with **274 moons, the most of any planet in the solar system.** This surpasses the total number of moons of all other planets combined.

4. About Green Credit Programme

Launched by: Ministry of Environment, Forest and Climate Change (MoEFCC).

Officially unveiled: December 1, 2023, at COP28 in Dubai by PM Modi and UAE President Sheikh Mohammed bin Zayed Al Nahyan

Objective: To incentivize voluntary pro-environmental actions through tradable “green credits”

Linked to: Mission LiFE (Lifestyle for Environment)

Participation: Open to individuals, companies, PSUs, and institutions on a voluntary basis.

APRIL 4

1. Sagaing Fault



The Sagaing Fault is a **major active tectonic boundary running north to south through Myanmar, separating the Indian and Eurasian Plates.** It is one of the longest and most active strike-slip faults globally, extending 1,500 km from the **Andaman Sea in the south to the Eastern Himalayas in the north.** The Indian Plate is moving northward, causing stress buildup along the fault, leading to large earthquakes over time.

2. Flouride

The **Uttar Pradesh Jal Nigam confirmed the presence of excessive fluoride in 120 hamlets**, affecting nearly 2 lakh people. Some villages recorded fluoride levels of 2 mg/L or more, exceeding the safe limit of 1-1.5 mg/L. **Fluoride is a naturally occurring element found in groundwater.** The **national drinking water limit for fluoride is 1.50 mg/L.** Excessive fluoride consumption can cause skeletal fluorosis, accelerate dental decay, and pose serious health risks, particularly for children. **Rajasthan has the highest fluoride contamination in India.** Other affected states include Telangana, western Andhra Pradesh, and eastern Karnataka. **Fluoride levels spike during the dry, summer pre-monsoon months**, with arid regions in western India showing higher contamination than humid areas.

3. Katchatheevu Islands



The Tamil Nadu Legislative Assembly has once again unanimously adopted a resolution urging the Union Government to retrieve Katchatheevu from Sri Lanka. **Katchatheevu is a 285-acre uninhabited island situated in the Palk Strait between India and Sri Lanka.** Acts as a maritime boundary marker between India and Sri Lanka. **Fisheries-rich zone, crucial for Tamil Nadu’s fishing economy.** Anthony’s Church is a place of religious significance for fishermen of both nations.

4. Balpakram National Park:



A rare Binturong was recently captured on a camera trap set up by the **Wildlife Trust of India's Garo Green Spine project team in the Narang Wari Village Reserve Forest (VRF)**, located in the buffer zone of Balpakram National Park. It is situated in the **West Garo Hills district of the north-eastern state of Meghalaya**, about 134 km away from the capital of Shillong. It is known as the **"Land of Perpetual Winds" due to strong winds that blow across the plateau**. There is a deep gorge in Balpakram that is often compared to the Grand Canyon in the United States of America.

5. Aqueduct



Beneath the Rusovce Manor in Bratislava, Slovakia, archaeologists recently uncovered a Roman aqueduct, shedding light on ancient engineering marvels. **An aqueduct is a watercourse constructed to carry water from a source to a distribution point far away.** The earliest aqueducts were also used to transport water for irrigation. Aqueducts were used in ancient India, Persia, Assyria, and Egypt as early as 700 BCE. The **Romans, however, are regarded as the most famous ancient aqueduct builders.**

6. Chhatrapati Shivaji Maharaj (1630-1680)

Birth: Born as Shivaji Bhosale, he is widely revered for his progressive leadership, military strategies, and fight for Swarajya (self-rule). He was influenced by Maharashtra saints like **Tukaram, Dnyaneshwar, and Ramdas**, who advocated social equality and spiritual awakening.

Coronation (1674): He crowned himself at Raigad Fort, marking the beginning of the **'Rajyabhisheka Era'.**

Administrative Reforms:

Established the **Ashta Pradhan Mandal (a council of eight ministers) to assist in governance.** Reformed the revenue system, replacing the **Jagirdari**

system with the Ryotwari system to ensure direct taxation.

Military & Naval Strength: Engaged in alliances and conflicts with the **Mughals, Bijapur Sultanate, Golkonda Sultanate, and European powers.** Built a strong naval force to secure trade routes, protect coastal territories, and challenge European dominance.

7. Katchatheevu

Katchatheevu is a **small, uninhabited island covering approximately 285 acres in the Palk Strait, situated between Tamil Nadu, India, and northern Sri Lanka.** It lies 14.5 km south of Delft Island and about 16 km northeast of Rameswaram. The island is barren, lacking drinking water or infrastructure, except for a Catholic church dedicated to St. Anthony.

8. About Chile

Chile is a **long, narrow country on the west coast of South America.** Its coastline stretches over 6,437 km but is only about 91 km wide.

Cape Horn: Located at the southern tip of South America, Cape Horn is known for high winds and treacherous waves.

The **world's driest desert is the Atacama Desert, located in northern Chile.** Chile is located along a highly seismic and volcanic zone, part of the Pacific Ring of Fire, due to the subduction of the Nazca and Antarctic plates in the South American plate. **Escondida is the largest copper mine in the world, producing over 5% of global supplies.**

9. About Fluoride

Fluoride is a **naturally occurring, non-biodegradable pollutant found in minerals, soil, water, and air.** It is also released during the burning of coal bricks. The **World Health Organization sets the maximum safe level of fluoride in drinking water at 1.5 mg/liter.** In safe doses, fluoride helps prevent tooth decay and supports bone health. In excessive amounts, it causes dental and skeletal fluorosis, joint pain and stiffness & bone deformities. It also poses risks to wildlife and ecosystems.

10. What is Bond Yield?

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

Types of Bond Yields:

- **Current Yield:** Annual coupon payment divided by the bond's current market price.
- **Yield to Maturity (YTM):** Total return if the bond is held until maturity, including coupon payments and any capital gain/loss.
- **Yield to Call (YTC):** Yield assuming the bond is called (redeemed early) before maturity.
- **Yield to Worst (YTW):** Lowest yield possible if the bond is called or matures early.

Bond Price Relation: Price and yield are inversely related and as the price of a bond goes up, its yield goes down.

Indicator: Bond yields reflect the return on investment and are influenced by interest rates and economic conditions

APRIL 7

1. Ream Naval Base



Ream Naval Base in Cambodia has gained attention due to expansions backed by China, raising concerns about a potential Chinese military presence in the region. The **Ream Naval Base holds significant strategic importance due to its proximity to the Malacca Strait**, one of the world's most vital maritime passages for global trade and energy shipments.

2. Saryu River:



It is a river that flows through the **Indian states of Uttarakhand and Uttar Pradesh**. It is also known as the Sarayu or Sarju River. **This river is of ancient significance, finding mentions in the Vedas and the Ramayana.** It rises at Sarmul (or Sarmool), which is located in the extreme north of the district Bageshwar of Uttarakhand on the southern slope of a ridge of the Nanda Kot. It **flows through the Kumaon Himalayas, and passes by the towns of Kapkot, Bageshwar, and Seraghat before flowing into the Sharada River at Pancheshwar at the India-Nepal border.** Sharada River (also known as the Kali River) then flows into the Ghaghara River in Sitapur District, Uttar Pradesh. **Lower Ghaghara is popularly known as Sarayu in India, especially while it flows through the city of Ayodhya.** Ayodhya, the birthplace of Lord Rama, is situated on the banks of the river Sarayu.

3. Dwarkadhish Temple



The **Dwarkadhish Temple, also called Jagat Mandir, is in Dwarka, Gujarat.** It is dedicated to **Lord Krishna, known as Dwarkadhish (King of Dwarka).** Part of the Char Dham pilgrimage circuit, along with Badrinath, Rameshwaram, and Puri. Believed to be originally built around 200 BCE by Vajranabha, Krishna's great-grandson. The five-story structure has 72 limestone pillars and showcases Chalukya-style architecture. Follows the Pushtimarg tradition of Vallabhacharya (Shuddhadvaita philosophy). Managed by **Vallabhacharya's descendants (Vallabha Kul).** **Associated with Nathdwara Temple in Rajasthan.**



4. Technology and Innovation Report 2025



The Technology and Innovation Report 2025 is released by the **UN Conference on Trade and Development (UNCTAD)**. The report focuses on the **theme Inclusive Artificial Intelligence for Development**. It aims to help policymakers understand the complex AI landscape. The goal is to support the **creation of science, technology, and innovation (STI) policies that are inclusive and equitable**.

5. Mukundra Hills Tiger Reserve:



It is situated near Kota in southeastern Rajasthan. The tiger reserve was constituted in the year 2013, which encompasses the area of **Mukundra National Park, Dara Sanctuary, Jawahar Sagar Sanctuary, and part of Chambal Sanctuary (from Garadia Mahadev to Jawahar Sagar Dam)**, forming its core/ critical tiger habitat. It was once a hunting preserve belonging to the Maharaja of Kota. It is traversed by four rivers: **Chambal, Kali, Ahu, and Ramzan**.

Vegetation: Dry Deciduous Forest

APRIL 8

1. River blindness



River blindness (Onchocerciasis) is a **neglected tropical disease caused by the parasitic worm Onchocerca volvulus**. It spreads through bites from infected blackflies of the genus *Simulium*, which breed near fast-flowing rivers. It is the second leading infectious cause of blindness globally. Primarily affects rural areas in sub-Saharan Africa, Yemen, and Latin America. Treated via Mass Drug Administration (MDA) of ivermectin. **WHO declared Colombia, Ecuador, Mexico, Guatemala, and Niger (the first African country to achieve this milestone) free of the disease.**

2. Hadean protocrust



The Hadean protocrust refers to **Earth's earliest crust formed during the Hadean aeon, about 6 billion years ago**. Named after the Greek god Hades, this era was marked by extreme heat and instability. **Earth's surface was partially molten with intense volcanic activity and meteorite bombardment**. A global magma ocean slowly cooled, forming early crust fragments. These fragments were unstable and often recycled. Some thicker segments formed the first proto-continent, floating on the semi-fluid asthenospheric mantle.

3. Semaglutide



Semaglutide is a glucagon-like peptide-1 (GLP-1) receptor agonist that mimics a natural hormone to regulate blood sugar and appetite. It's **used for treating type 2 diabetes and aiding weight loss in overweight or obese individuals**. Available as an injection or oral tablet; the SOUL trial studied the oral form, Rybelsus. **The SOUL trial (2019) was a phase 3, double-blind, placebo-controlled study**. It showed a 14% reduction in major cardiovascular events in type 2 diabetes patients with **cardiovascular disease (CVD) or chronic kidney disease (CKD)**.

4. Woolly Flying Squirrel (Western Woolly Flying Squirrel)



Scientific Name: Eupetaurus cinereus. Sole species of the genus Eupetaurus

Habitat: Fragmented, dry conifer woodland in a narrow elevational band

Endemic to the northwestern Himalayas; found in northern Pakistan and northwestern India

Conservation Status: Endangered (IUCN Red List)
Thought extinct, **rediscovered in 1994** after nearly 70 years One of Asia's rarest and least known mammals

5. "Women and Men in India 2024":



Published by **MoSPI**, the report provides gender-disaggregated data across population, education, health, economy, and governance. **Gender Parity Index improved at primary and higher secondary levels in FY24**. Equal enrolment at upper primary and elementary levels. Female LFPR (15+) rose from 49.8% (2017–18) to 60.1% (2023–24). **Women own 39.2% of bank accounts; 42.2% in rural areas**. DEMAT accounts for women grew from 6.67M (2021) to 27.71M (2024). Increase in female-headed proprietary businesses. **Female voter turnout (65.8%) surpassed males in 2024**. Startups with women directors rose from 1,943 (2017) to 17,405 (2024)

6. World Health Day 2025



Observed annually on **April 7**, marking the founding of **WHO in 1948**. Celebrated since 1950 to highlight key global health issues. The **2025 theme is "Healthy beginnings, hopeful futures."**

APRIL 9

1. Three Gorges Antarctic Eye



China has recently launched the "Three Gorges Antarctic Eye," a 3.2-metre aperture radio/millimetre-

wave telescope, at the **Zhongshan Station in Antarctica**. It is a 2-metre radio/millimeter-wave telescope, located at Zhongshan Station, Antarctica. It builds upon China's earlier achievements, such as the Antarctic Survey Telescopes (AST3).

Purpose: Studying interstellar gas (hydrogen and ammonia), star formation.

Challenge overcome: Built to withstand Antarctica's extreme cold and strong winds.

Developed by: China Three Gorges University and Shanghai Normal University.

2. Megaliths



Ancient relics estimated to be 2,000 years old, belonging to the Megalithic Period, were recently unearthed at **Manimoola village in Bandadukka, Kerala**. **Megaliths are large stones used in prehistoric monuments for burial (sepulchral) and ritual (non-sepulchral) purposes**. Most Indian megaliths date to the Iron Age (1500–500 BCE), some to 2000 BCE.

Burial types: Dolmenoid cists, Cairn circles, Capstones, Urns/Sarcophagi

Non-burial type: Menhirs (upright memorial stones)

3. POEM – 4



POEM-4 (PSLV Orbital Experiment Module-4) is an **ISRO space research platform** using the spent PS4 stage of the PSLV rocket. Part of the SpaDeX mission, it follows POEM-3 and has 3x more payload capacity.

Hosted 24 payloads: 14 from ISRO and 10 from non-government entities.

Key payloads: Walking Robotic Arm (RRM-TD), Debris Capture Robotic Manipulator (VSSC) and Gradient Control RWA (IISU)

Launched on Dec 30, 2024, via PSLV-C60 with twin SPADEX satellites. Later de-orbited to 350 km, 2° inclination, and passivated for safety.

4. Acute Promyelocytic Leukemia (APL)



Acute Promyelocytic Leukemia (APL) is a **rare, aggressive subtype of Acute Myeloid Leukemia (AML)**, accounting for **10–15% of AML cases**. It results from a **PML-RARA gene fusion that disrupts blood cell formation**, leading to low white cells and platelets. APL can cause fatal internal bleeding if untreated. Early diagnosis is critical, as timely treatment can cure most cases.

Common symptoms: bleeding, fatigue, fever, bone pain. Diagnosis involves CBC and cell morphology.

5. Mount Kanlaon



Mount Kanlaon is an **active stratovolcano in north-central Negros, Philippines**. It is part of the Pacific Ring of Fire. Features include **pyroclastic cones, craters, a caldera with a lake, and an active southern crater**. Formed by lava flows, lahar, tephra, and pyroclastic materials. It hosts rich biodiversity and feeds major rivers.

6. About Dokra Art

The art form is over 4,000 years old, dating back to the Indus Valley Civilization (e.g., the famous Dancing Girl sculpture from Mohenjo-daro). The **name**



“Dhokra” or “Dokra” is believed to have originated from the Dhokra Damar tribes of West Bengal. The unique and defining feature of Dokra art is its reliance on the lost wax casting technique. Due to the lost wax technique where the mold is used only once and then broken, each Dokra artifact is inherently unique. **Geographical Indication (GI) Tag was given for Dokra of Bankura in West Bengal (granted in 2008).**

7. Palna Scheme

About:

In 2022, erstwhile **National Creche Scheme was reorganized and renamed as Palna Scheme under the sub scheme ‘Samarthya’ of ‘Mission Shakti’.** Palna is a Centrally Sponsored Scheme ensuring the participation of State/ UT government to ensure better day-to-day monitoring and proper implementation of scheme, and is implemented with a **funding ratio of 60:40 between Centre and State Governments** and UTs with legislature except North East & Special Category States where ratio is 90:10. For **UTs without a legislature, 100% funding is provided by the central government.**

8. What is an Equivalence Certificate?

An equivalence certificate is a **document issued to validate that a foreign academic qualification (certificate, diploma, or degree) is comparable to an Indian qualification of similar level and purpose.** This certificate is essential for pursuing higher education or employment in India.

9. About NaMPET:

National Mission on Power Electronics Technology (NaMPET): A mission-mode programme by MeitY focused on the development, deployment, and commercialization of Power Electronics technologies.

Main Areas: Includes Microgrids, Green Energy, e-mobility ecosystem, Smart Power Quality Centre, High Voltage Power Electronics, and technology outreach for startups.

Implemented by C-DAC: Led by C-DAC, Thiruvananthapuram with participation from academia, R&D organizations, and industries.

APRIL 10

1. De-extinction



A US-based bioscience company, Colossal Biosciences, has recently made headlines by announcing the birth of three genetically modified grey wolf pups. De-extinction is the revival of extinct species using genetic material via gene editing and cloning. **Dire wolf (Aenocyon dirus), a large prehistoric canine, went extinct ~13,000 years ago; it hunted large prey and resembled but was distinct from grey wolves.**

Colossal's process included: DNA extraction from 13,000- and 72,000-year-old specimens. Genome reconstruction and comparison with related canids. 20 gene edits made to 14 genes in grey wolf DNA. Embryos implanted in dogs led to dire wolf-like pups.

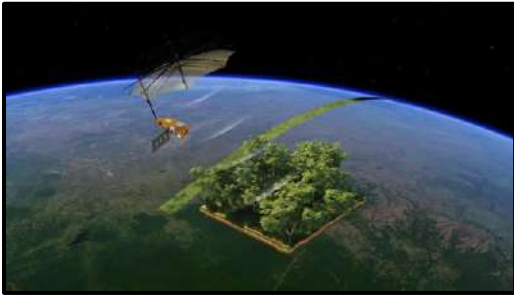
2. Inter-Parliamentary Union (IPU)



The **Inter-Parliamentary Union (IPU)**, founded in 1889, is the world's first multilateral political organization. It has **181 Member Parliaments and 15 Associate Members.** The slogan of IPU is **“For democracy. For everyone.”** It promotes democracy and diversity, and protects MPs' human rights. IPU convenes biannual assemblies with over 1,500 delegates to support global governance and the UN's 2030 Agenda. **Its main body, the Governing Council, includes three MPs from each member.**

Headquarters: Geneva; funded by member contributions.

3. Biomass Satellite Mission



An European Space Agency mission to **measure global forest biomass and understand the carbon cycle**. Will generate 3D maps of dense and remote tropical forests. Launch via Vega C rocket from French Guiana into a sun-synchronous orbit at ~666 km altitude. **First satellite to carry a P-band radar, enabling deep forest canopy scanning**. Captures data on trunks, branches, and stems where most carbon is stored. **Aims to assess forest height, above-ground biomass, and monitor forest changes from space.**

4. Electronics Components Manufacturing Scheme



The **Ministry of Electronics and Information Technology (MeitY)** launched the Electronics Components Manufacturing Scheme to boost passive electronic component production in India. It is the **first dedicated PLI scheme for components like resistors, capacitors, switches, and connectors.**

Offers three incentives: turnover-linked, capex-linked, and hybrid models.

Incentives range from **1–10% based on year and component.**

Employment generation is mandatory for all applicants. The scheme lasts six years with a one-year gestation period. Complements the India Semiconductor Mission (ISM) by focusing on passive components.

5. Theobaldius konkanensis



It is a newly discovered land snail species from the **Konkan region, Maharashtra**. It is endemic to the northern Western Ghats. **Found mainly in tropical evergreen and semi-evergreen forests**. Active year-round, with live specimens seen from June to September; shells found otherwise. Lives on forest floors, in leaf litter, and on damp branches.

6. Lodhi Garden

Lodhi Garden, located in the **heart of New Delhi**, marks **89 years of its establishment as a public garden.**

About

Lodhi Garden traces its origins back to the 14th and 15th centuries and was initially known as **Bagh-e-Jud**. The garden's roots are entwined with the **Hazrat Nizamuddin Auliya Dargah** and later became a **burial site during the Sayyid and Lodi dynasties**, showcasing Indo-Islamic architecture. The garden was developed during the British Period and was inaugurated by Lady Willingdon on 9th April 1936.

7. Small Hive Beetle

SHBs are **small, oval-shaped beetles (5-7 mm), reddish-brown in color**. It is a **notorious enemy of honey bees** and has caused widespread damage to the apiculture industry globally. It infiltrates hives, laying eggs that hatch into larvae, which feed on honey, pollen, and bee brood, contaminating honey and causing colony collapse.

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

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

Classifications: It is classified as an "Invasive Alien Species," a category of non-native organisms that pose significant threats to biodiversity and local ecosystems. The **World Organisation for Animal Health (OIE)** has classified SHB infestation as a notifiable disease due to its destructive potential.



8. Volatility Index (VIX)

The term “VIX” is a trademark owned by the **Chicago Board Options Exchange (CBOE)**. It measures the **market’s expectation of volatility over the near term, reflecting the rate and magnitude of price changes, often associated with risk**. It is calculated as annualized volatility, expressed as a percentage, based on the order book of options for a specific underlying index.

9. About Central Pollution Control Board (CPCB)

It is a statutory organization under the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** in India. CPCB was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981**. It serves as a field formation and also provides technical services to the **Ministry of Environment and Forests** of the provisions of the **Environment (Protection) Act, 1986**.

APRIL 11

1. Hantavirus



Black rats (*Rattus rattus*) are the **sole identified carriers of hantavirus in rural Madagascar**. These rats, originally from Asia, were introduced between the 10th–14th centuries and are now widespread. A study tested nearly 2,000 animals, including bats and native rodents, with no other species testing positive. **Hantavirus spreads via aerosolized rodent urine, feces, and saliva, or direct contact; bites are rare**. Human-to-human transmission is extremely rare; environmental exposure is the main risk.

2. Critical minerals



Critical minerals are **essential for technology and national security, with supply risks due to limited availability**. Their criticality changes with demand and supply dynamics. **In 2022, 30 critical minerals were identified by the Ministry of Mines**. **24 minerals added to Part D of Schedule I of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**, giving auction rights to the Centre. Centre of Excellence for Critical Minerals (CECM) set up to review and advise on policy. **Geological Survey of India (GSI), Indian Rare Earths Limited (IREL), and Department of Atomic Energy (DAE)** lead exploration and processing. **Khanij Bidesh India Limited (KABIL)** signed deals with Argentina and Australia. **National Critical Mineral Mission (NCMM)** ensures mineral security, aligning with climate goals.

3. Arctic Biome



The 2024 Arctic Report Card by the US NOAA confirms this trend, noting that frequent fires and fossil fuel pollution are turning the Arctic tundra into a carbon source. **The Arctic tundra is a treeless, permafrost-covered plain with nutrient-poor soil and limited plant growth**. It spans 5 million km² across northern regions like Canada, Greenland, and Eurasia. **Temperatures range from -60°C to 15.5°C; precipitation is low, mainly snow and sleet**. Vegetation includes mosses, lichens, grasses, and dwarf shrubs; wildlife includes caribou, polar bears, and migratory birds. Human presence is limited; resource extraction and transport infrastructure are

increasing. **The Arctic Boreal Zone, once a carbon sink, is now emitting carbon due to permafrost thaw and wildfires.**

4. Sickle Cell Disease (SCD)



Sickle Cell Disease (SCD) is the **most common inherited blood disorder affecting red blood cells**. It involves abnormal hemoglobin S, which distorts RBCs into sickle shapes. These **cells block blood flow and break down easily, causing anemia**. Caused by inheriting two sickle cell genes, one from each parent. Symptoms include fatigue, swelling, jaundice, severe pain, and infections. Treatments include **symptom management, bone marrow transplant, and emerging gene therapy**. The UK approved gene therapy for SCD.

5. Bear market



A **bear market involves prolonged price declines of 20% or more**. It is marked by investor pessimism, asset sell-offs, and economic weakness. A "bear" is an investor who sells borrowed assets expecting prices to drop, aiming to repurchase at lower prices (short selling). Bear markets can affect overall markets or individual securities/commodities. A decline must last at least two months to be considered a bear market. They often occur alongside **economic downturns and oppose bull markets**.

APRIL 14

1. Kathak



Renowned **Kathak dancer Kumudini Lakhia** passed away recently at the age of 94. Derived from **Sanskrit 'Katha' (story); began as temple storytelling**. Developed into a court dance during the Mughal era. Notable schools are Lucknow, Jaipur, and Benaras. Emphasizes footwork, spins, mudras, expressions; dancers wear ghungroos. **Only classical dance form linked to Hindustani music**. **Wajid Ali Shah supported its growth**.

Prominent exponents: Key figures include Birju Maharaj, Sitara Devi, Shovana Narayan, and Aditi Mangaldas.

2. India-Middle East-Europe Economic Corridor (IMEEC)



India-Middle East-Europe Economic Corridor (IMEEC) is a **multimodal connectivity project linking India, the Middle East, and Europe**. Launched via a Memorandum of Understanding (MoU) at the G20 Summit 2023 in New Delhi. **Signatories include India, EU, France, Germany, Italy, Saudi Arabia, UAE, and the US**. Part of the Partnership for Global Infrastructure and Investment (PGII), announced at the 2021 G7 Summit. Seen as a strategic counter to China's Belt and Road Initiative (BRI). **Comprises Eastern Corridor (India-Gulf) and Northern Corridor (Gulf-Europe)**.

3. Microplastics

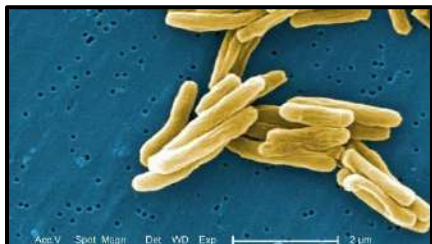


Microplastics are **plastic particles ≤ 5 mm; nanoplastics are $<1,000$ nm**.

Types: Primary (e.g., cosmetics, microfibers) and secondary (from plastic breakdown).

Enter via use and breakdown; **non-biodegradable and accumulate**. Ingested by organisms; cause toxicity and bioaccumulation. Enter leaves through stomata/cuticle, move via plant tissues, accumulate in trichomes. Pose ecological and public health risks; long-term human effects need more research.

4. rt-LAMP assay



The rt-LAMP assay is a **molecular diagnostic tool with high sensitivity, detecting TB DNA at just 10 copies/μL**. It operates at a single temperature, unlike RT-PCR, simplifying the process. Uses six primers for faster, more specific DNA amplification than RT-PCR. A **fluorescent dye (Syto 16) improves accuracy by avoiding reaction inhibition**. Results are available within 10–20 minutes. It has **received approval from the Central Drugs Standard Control Organisation**. Currently under validation by ICMR and evaluation by WHO's HTAP.

5. Phawngpui National Park:



Phawngpui National Park, also known as the **Blue Mountain National Park**, is located in the **southeastern corner of Mizoram, near the India-Myanmar border**. It is the highest peak in the state, rising to an altitude of 2,157 meters above sea level. It **overlooks the Chhimtuipui River and the hill ranges of Myanmar**. The local Mizo people consider the national park as a sacred place, and believe that it is inhabited by the spirits of their ancestors. **The national park is often enveloped by clouds, and appears blue from a distance.**

APRIL 15

1. Hudson River



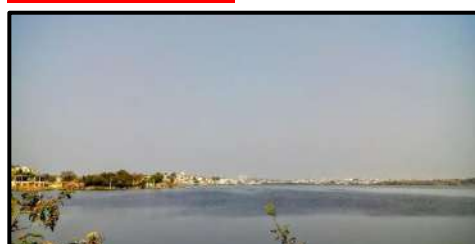
The Hudson River, named after **Henry Hudson**, flows 315 miles mainly within **New York, forming a 21-mile border with New Jersey**. It originates in the **Adirondack Mountains, with Lake Tear of the Clouds as the main source**, and drains into Upper New York Bay. Mast bumping is a helicopter issue in teetering rotor systems, where low-G maneuvers or abrupt inputs cause the rotor hub to strike the mast, risking rotor separation and crashes.

2. Pakke Tiger Reserve



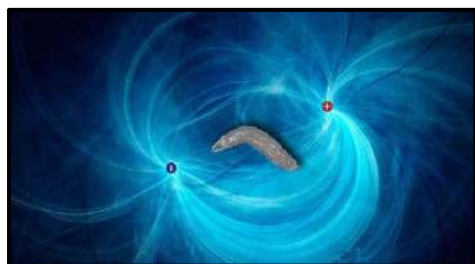
Pakke Tiger Reserve is located in **East Kameng District, Arunachal Pradesh**, spanning 862 sq.km in the Eastern Himalayan foothills. It is bordered by **Tenga and Doimara Reserve Forests, Nameri National Park (Assam), Papum Reserve Forest, and agricultural lands**. The reserve features a subtropical climate and diverse habitats like evergreen and broadleaf forests. Home to species like tigers, leopards, elephants, and hornbills. **The Nyishi tribe aids conservation; won India Biodiversity Award 2016 for hornbill protection.**

3. Mir Alam Tank



Mir Alam Tank is a **freshwater reservoir in Hyderabad, Telangana, south of the Musi River**. It spans about 260 acres and holds 21 million cubic meters of water. Fed by streams and springs from nearby hills, it was Hyderabad's main water source before Osman Sagar and Himayat Sagar. **Named after Mir Alam Bahadur, Prime Minister during Asaf Jah III's reign**. Construction began in 1804, completed in two years with 21 semicircular arches, reportedly planned by Michel Raymond.

4. Electoreception



Electoreception is the **ability to detect weak electric fields in the environment**. It helps animals sense electric signals from other organisms or surroundings. **Common in aquatic vertebrates like sharks and electric fish**. Recently observed in invertebrates such as fruit fly larvae. **Discovered in the 1960s by neuroscientist Theodore H. Bullock and scientists Thomas Szabo and Alfred Fessard**. Some species use it for social communication, highlighting its broader evolutionary role.

5. BatEchoMon

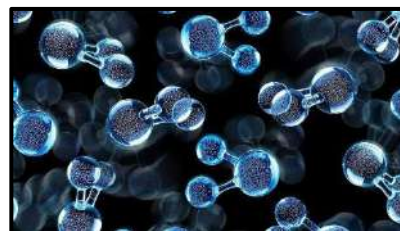


BatEchoMon is **India's first real-time bat echolocation monitoring system**. Developed by **Kadambari Deshpande and Vedant Barje** under **Jagdish Krishnaswamy** at **IIHS Bengaluru**. Part of the Long-Term Urban Ecological Observatory project. Uses **AudioMoth, Raspberry Pi, solar power, and Wi-Fi** for autonomous operation. **Activates at sunset, records bat calls overnight**. Employs CNN algorithm to analyze

and classify calls. Outputs include spectrograms, audio files, and species-specific statistics.

APRIL 16

1. Plastic Ice VII



For the first time in scientific history, **researchers have directly observed a strange phase of water known as Plastic Ice VII**, which is believed to **exist deep within the interiors of icy planets and moons, such as Neptune, Europa, and Titan**. Plastic Ice VII is a hybrid phase of water with **properties of both solids and liquids**. Water molecules are fixed in a cubic crystal lattice like in a solid. **These molecules can rotate freely, resembling liquid behavior**. It exhibits plasticity, allowing it to deform under pressure while remaining solid. The term "plastic" refers to this malleable behavior, not synthetic material. **Physicist Livia Bove describes it as a solid that can be squeezed through a hole**.

2. Sir Chettur Sankaran Nair



Sir Chettur Sankaran Nair (1857–1934) was a prominent nationalist from Kerala and a legal luminary. He became the **youngest President of the Indian National Congress in 1897**. Served on the Raleigh University Commission (1902), was knighted in 1912, and was a Madras High Court judge. Joined the **Viceroy's Executive Council in 1915 but resigned in 1919 after the Jallianwala Bagh massacre**. Faced a defamation trial by Michael O'Dwyer in 1922, exposing British judicial bias.

3. Rare Earth Magnets



Rare earth magnets are **powerful permanent magnets made from elements like Neodymium, Samarium, and Dysprosium**. They are essential for EVs, wind turbines, defense systems, electronics, drones, and robotics. **China controls over 80% of global rare earth refining, creating supply chain risks**. Rare Earth Elements (REEs) include Scandium, Yttrium, and 15 Lanthanides. REEs are classified as **Light (La–Eu)** and **Heavy (Gd–Lu)**; **Scandium and Yttrium are grouped with HREEs due to similar properties**.

4. Sillahalla Pumped Storage Hydroelectric Project



Project: Sillahalla Pumped Storage Hydroelectric Project by Tamil Nadu Green Energy Corporation Limited

Location: Nilgiris district, Tamil Nadu, near Silent Valley and Mukurthi National Parks

Goal: Generate 1,000 megawatts of electricity to meet peak power demand

Concerns: Submergence of 1,000 acres of farmland and 500 acres of forest; around 3,000 farmers affected

Issues: Joint ownership of land (joint pattas) hampers compensation; earlier compensation delays in road projects

5. Repo Rate



Definition: Interest rate at which RBI lends to commercial banks using government securities as collateral.

Used by RBI to manage **liquidity, control inflation, and influence economic activity**.

Rate Cut Effects:

- **Reduces borrowing costs** for banks, enabling cheaper loans.
- Leads to **lower FD interest rates for new deposits**.
- **Encourages credit flow**, boosting investment and consumption.
- Supports sectors like **real estate and infrastructure**.
- Helps cushion the economy from global challenges.

6. Harvest Festivals

Baisakhi marks the start of the solar calendar and the harvest season, celebrated predominantly in Punjab. **Baisakhi usually falls on April 13 or April 14**. According to the hindu calendar, this day is observed on the first day of the month of Vaishakh. This day also coincides with several other regional spring festivals across India that celebrate the onset of the harvest season. These include **Pana Sankranti in Odisha, Poila/Pohela Baisakh in West Bengal, Rongali Bihu in Assam, Puthandu in Tamil Nadu, Vaishakhi in Bihar, and Vishu or Pooram Vishu in Kerala**. While each festival follows its own unique customs and traditions, they all share a common spirit of gratitude and new beginnings.

7. About Meningitis

Definition: Meningitis refers to the **inflammation of the meninges**—the protective membranes covering the brain and spinal cord.

Public Health Concern: It remains a major global public health threat, particularly for infants, young children, and adolescents.

Causes and Types: Infectious Meningitis:

Caused by pathogens such as:

- **Bacteria:** Neisseria meningitidis (meningococcus), Streptococcus pneumoniae (pneumococcus), Haemophilus influenzae



- **Viruses:** Enteroviruses, Herpes simplex virus, etc.
- **Fungi:** Cryptococcus species
- **Parasites:** Less commonly involved, but possible in immunocompromised individuals.
- **Non-Infectious Meningitis:** Can result from conditions like: Autoimmune disorders, Certain medications & Cancer etc.

8. GPS Spoofing

About

GPS (global positioning system) spoofing can be considered to be a **form of cyberattack that includes generating false GPS signals to mislead an aircraft**. The false signals result in **misleading the navigation equipment, posing a significant risk to the aircraft**. Due to excessive reliance on satellite navigation systems in areas susceptible to electronic warfare, the cyberattack has sparked security concerns. Even though modern aircraft have backup systems, such incidents underscore the need for increased vigilance and more robust defence in military and humanitarian operations.

9. Project Cheetah

It began in 2022 with 8 cheetahs from Namibia and 12 from South Africa. However, since then, 8 adult cheetahs and 5 cubs have died. It is being implemented by **National Tiger Conservation Authority (NTCA)**, a statutory body under Ministry of Environment, Forest and Climate Change (MoEF&CC) in collaboration with Madhya Pradesh Forest Department, Wildlife Institute of India (WII) and Cheetah experts from Namibia and South Africa.

10. Methamphetamine

It is a lab-made (synthetic) stimulant also known as “ice” or “crystal meth”. It is a **highly addictive recreational drug which exhibits powerful euphoric effects**. It causes short-term euphoria, alertness, and energy but can also lead to serious health issues like **paranoia, anxiety, heart problems, stroke, or death**. Long-term use may result in insomnia, memory loss, addiction, and other health complications

APRIL 17

1. Hampi



Hampi, capital of the **Vijayanagara Empire**, was founded in 1336 CE by **Harihara I and Bukka Raya I**. Located in Karnataka on the banks of the **Tungabhadra River**, it was once known as **Pampakshetra**. Foreign travellers praised its grandeur; it fell in 1565 CE after the Battle of Talikota. Rediscovered by Colin Mackenzie in 1799; British officials documented and photographed it.

Key sites: Vitthala Temple, Virupaksha Temple, Lotus Mahal.

Declared a **UNESCO World Heritage Site in 1986**.

2. Tuti Island



Tuti Island lies at the **confluence of the Blue and White Nile in Khartoum, Sudan**. Known as “Khartoum’s garden,” it spans 8 km² and is famed for agriculture and fishing. Settled by the **Mahas in the 15th century**, it holds cultural significance and symbolizes sustainability. War has displaced 13 million, killed thousands, and caused famine in Khartoum. Climate change disrupts the Nile’s cycle, increasing Tuti’s vulnerability. The **HEART Project** aims to preserve local heritage and knowledge systems.

3. Leptobrachium aryatium



Leptobrachium aryatium is a **newly identified frog species after 21 years of study**. Initially misidentified as *Leptobrachium smithi* in 2004. Found in **Garbhanga Reserve Forest, near Guwahati, Assam, bordering Meghalaya**. Located near Deepor Beel, a Ramsar site, and part of an important elephant corridor. Named after **Arya Vidyapeeth College for its local educational contributions**. Features include orange-black eyes, reticulated throat, and dusk-time call. Identified using morphology, DNA, and bioacoustics.

4. Etalin Hydroelectric Project



The Etalin Hydroelectric Project (EHEP) is a **3,097 MW hydropower project in Arunachal Pradesh's Dibang Valley**. It is among India's largest proposed hydropower projects. The project includes two run-of-the-river schemes with concrete gravity dams on the **Dri and Tangon rivers**. Located in a rich Himalayan biodiversity hotspot, the area is home to Idu-Mishmi tribes. EHEP is developed by **Etalin Hydro Electric Power Company Ltd**, a JV of Jindal Power (74%) and HPDCAPL (26%).

5. Thangjing Hill



Thangjing Hill (also known as Thangching or Thangting Hill) is in **Manipur's Churachandpur district, west of**

Moirang. It lies on the Thangjing range, which runs north-south and borders the Imphal Valley to the west. **The hill is sacred to the Meitei community and believed to be the abode of Thangching**, Moirang's ancestral deity. Meiteis visit it during the month of Sajibu (April). In Meitei cosmology, it symbolizes the right leg of Manipur.

6. India and Denmark relation

They established diplomatic ties in 1949, grounded in shared democratic values and a commitment to peace. Their relationship was elevated to a **"Green Strategic Partnership" during a virtual summit in September 2020**, guiding current bilateral cooperation.

Bilateral institutional mechanisms India and Denmark have several bilateral institutional mechanisms, including the **Joint Commission Meeting (since 2008) and Foreign Office Consultations (since 1995)**. These forums cover areas of mutual interest.

7. International Diabetes Federation (IDF)

It is an **umbrella organization of over 230 national diabetes associations in 165 countries and territories**. It was founded in **1950 at Amsterdam, The Netherlands**. It represents the interests of the growing number of people with diabetes and those at risk. **IDF's mission is to promote diabetes care, prevention and a cure worldwide**.

8. About ASHAs?

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



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

9. What is ONDC?

It is just like a **"UPI for e-commerce"**. Just like UPI lets any app send or receive money, **ONDC wants to make it easier for buyers, sellers, delivery partners, and platforms to work together no matter which app or website they use.**

ONDC is backed by the **Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry**. It's built using open-source tech and follows common rules so that no single platform controls everything. It wants to help small kirana stores and local sellers get online and compete with big e-commerce players. It also **aims to simplify logistics, reduce costs, and make sure consumers get more choices and better deals.**

10. Key Facts of Manufacturing Sector

Manufacturing as a Growth Driver:

- Key to **Viksit Bharat**; contributes ~20% to India's GDP.
- **Low Female Participation:** Women in formal manufacturing fell from 20.9% (2015-16) to 18.9% (2022-23).
- **Tamil Nadu's Dominance:** Employs 41% of all women in formal manufacturing.
- **Informal Sector:** Women make up 43% of the informal manufacturing workforce.
- **Gender Gap:** Bihar, West Bengal, Chhattisgarh, Haryana have <6% female workforce in formal manufacturing.
- **Even industrialized States (Gujarat, Maharashtra, U.P.) have <15% women in formal manufacturing.**

APRIL 18

1. Tanzania



Tanzania recorded its **highest average annual temperature in 2024**, with the national average reaching 24.3°C, which is 0.7°C above the long-term normal.

Capital: Dodoma

Location: East Africa, just south of the Equator

Borders: Kenya, Uganda (N); Rwanda, Burundi, DRC (W); Zambia, Malawi, Mozambique (S)

Water Bodies: Lake Victoria (N), Lake Tanganyika (W), Lake Nyasa (SW), Indian Ocean (E)

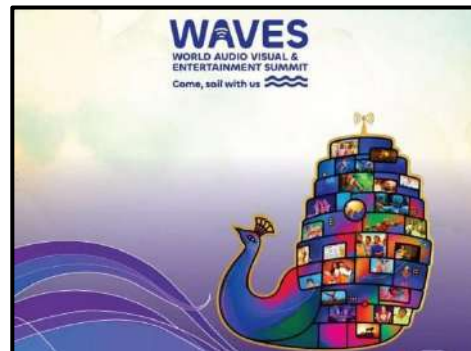
Climate: Tropical; long dry season, two rainy seasons

Major Lakes: Lake Tanganyika – 2nd deepest globally

Highest Peak: Mount Kilimanjaro – Africa's tallest, dormant volcano

Major Rivers: Ruvuma, Rufiji

2. WAVES 2025 - Anti-Piracy Challenge



WAVES 2025 is a global summit organized by the **Ministry of Information and Broadcasting, India**, held in **Mumbai from May 1–4, 2025**. It aims to promote **India as a hub for media innovation and IP creation**. Covers sectors like films, TV, radio, gaming, AR/VR/XR, AI, and digital media. Supports the \$30 billion creative economy, employing 8% of India's workforce. The **Anti-Piracy Challenge under the Create in India Challenge** focuses on anti-piracy technologies like fingerprinting and watermarking.

3. Exercise DUSTLIK-VI



Exercise DUSTLIK-VI is a **bilateral military drill between India and Uzbekistan**. Held alternately, the 2024 edition (DUSTLIK-V) took place in **Termez, Uzbekistan**. The first edition began in **November 2019 in Uzbekistan**.

Theme: "Joint Multi-Domain Sub-Conventional Operations in a Semi-Urban Scenario".

Focuses on anti-terrorist response and coordinated battalion-level operations.

4. Type 5 diabetes



Type 5 diabetes affects **lean, undernourished youth in low- and middle-income countries**. Caused by malnutrition-induced reduction in insulin production, not insulin resistance. Beta cell function is abnormal, leading to severely reduced insulin secretion. **First identified in Jamaica (1955), named "malnutrition-related diabetes" by WHO in 1985**. Removed as a category in 1999 but cases persist globally, especially in the Global South. **Patients show very low BMI, low insulin, minimal body fat, and poor nutrient intake.**

5. Mount Lewotobi



Lewotobi is a **twin volcano in East Nusa Tenggara, Flores Island, Indonesia**. It lies on the Pacific Ring of

Fire and is among the region's frequently active volcanoes. The two peaks, 2 km apart, are named **Lewotobi Lakilaki (1584 m) and Lewotobi Perempuan (1703 m)**. Lakilaki has been more active; **Perempuan has erupted only twice historically**. Lava domes have formed in both craters. Iliwokar, a flank cone, is on Perempuan's east side.

APRIL 21

1. Pir Panjal Railway Tunnel



The Pir Panjal Railway Tunnel (Banihal Tunnel) is **India's longest railway transportation tunnel at 11.2 kilometers, part of the Udhampur–Srinagar–Baramulla Rail Link (USBRL) project**, connecting Quazigund and Banihal under the Pir Panjal mountain range. It is the only broad-gauge mountain railway tunnel in India and lies within the USBRL's 202-kilometer core segment. **The Pir Panjal Range, part of the Lesser Himalayas, spans Himachal Pradesh and Jammu & Kashmir, with peaks such as Indrasan (6,221 m) and Deo Tibba (6,001 m)**. It divides major river systems—Beas and Ravi from the Chenab, and is the origin zone for tributaries of the Jhelum and Indus Rivers.

Important passes include the **Pir Panjal Pass (traversed by the Mughal Road) and Banihal Pass (via the Jawahar Tunnel, 2.5 kilometers long)**.

2. Enzymes and Coenzymes



Enzymes are **protein catalysts requiring cofactors, and coenzymes are organic cofactors that assist enzyme activity**. Coenzyme Q (CoQ or ubiquinone) is a lipid-soluble antioxidant with 1–10 isoprene units, essential

for mitochondrial energy production. CoQ9 is common in plants, especially cereals (wheat, rice, corn) and other species like bamboo and cinnamon. **CoQ10 supports the mitochondrial electron transport chain in humans, especially in energy-demanding organs like the heart, and is needed due to aging and health conditions.**

3. K2-18b



In 2025, scientists detected the presence of either **dimethyl sulphide (DMS)** or **dimethyl disulphide (DMDS)** in the atmosphere of K2-18b. **K2-18b is an exoplanet 124 light-years away in the Leo constellation**, discovered in 2015 by the Kepler Space Telescope. It is **5.2 times wider and 9 times more massive than Earth, with a hydrogen-rich atmosphere.** It receives Earth-like radiation, suggesting possible habitability. Hubble found water vapor in 2019; JWST later detected CO₂ and CH₄. DMS, a potential biomarker, is mostly produced by Earth's phytoplankton and soil bacteria.

4. Lower Subansiri Hydroelectric Project



Lower Subansiri Hydroelectric Project (LSHP) is a 2000 MW run-of-the-river project on the **Subansiri River**, on the **Arunachal Pradesh–Assam border**.

Developed by: National Hydro Power Corporation (NHPC).

Dam: Concrete gravity dam, 116 m high from riverbed, 130 m from foundation, 284 m long.

Reservoir capacity: 1.37 km³.

Powerhouse: Eight 250 MW Francis turbines on the left bank.

5. Davis Strait proto-microcontinent



The Davis Strait proto-microcontinent is a **newly discovered submerged microcontinent between Baffin Island (Canada) and Greenland**. It formed due to tectonic evolution, creating a 19–24 km thick continental crust, bordered by thinner 15–17 km crust. **The Davis Strait connects Baffin Bay to the Labrador Sea and is part of the Northwest Passage.** It is 650 km long and up to 400 miles wide, formed 45–62 million years ago through strike-slip faulting along the Ungava Fault Zone.

APRIL 22

1. Exercise Desert Flag



Exercise Desert Flag is a **major multinational air combat exercise simulating complex aerial scenarios**. Indian Air Force is participating with MiG-29 (air superiority fighter) and Jaguar (ground attack aircraft). **Participating countries include Australia, Bahrain, France, Germany, Qatar, Saudi Arabia, South Korea, Turkey, UK, USA, UAE, and India.**

Objectives: Enhance air combat tactics, exchange operational knowledge, and share best practices among advanced air forces.

2. CROP



CROP (Comprehensive Remote Sensing Observation on Crop Progress) is a semi-automated, scalable framework by ISRO's NRSC. It **monitors crop sowing, growth, and harvesting, especially during the rabi season.** Uses data from EOS-04 (SAR), EOS-06 (optical), and Resourcesat-2A (high-res optical) satellites. Integrates optical and SAR datasets for reliable monitoring under diverse conditions. **Covers eight major wheat-producing states: UP, MP, Rajasthan, Punjab, Haryana, Bihar, Gujarat, and Maharashtra.**

3. Hepatitis A



Hepatitis A is a **highly contagious liver disease caused by the hepatitis A virus (HAV).** It leads to liver inflammation. Transmission occurs through **contaminated water or food, or close contact with an infected person** (including sex or sharing needles). There is **no specific treatment; the body clears the virus naturally.** Most people recover within six months without lasting liver damage. A safe and effective vaccine is available for prevention.

4. The Sapsan Missile



The Sapsan (Hrim-2) is a **Ukrainian tactical ballistic missile system.** Combines features of tactical missiles

and **multiple rocket launchers.** Export version has a range of 50–280 km; domestic version extended to 700 km. Uses a 10-wheeled TEL carrying two containerized missiles. Aero-ballistic features help evade S-300/S-400 defenses. Can launch both ballistic and cruise missiles. **Warhead weighs 480 kg, available in unitary or cluster types. Guided by inertial, radar, and optoelectronic systems.**

5. Earth Day



Earth Day is observed annually on **April 22.** The **2025 theme is "OUR POWER, OUR PLANET,"** emphasizing a global shift to renewable energy. It calls on all sectors to triple clean energy production by 2030. **First celebrated in 1970, it was initiated by U.S. Senator Gaylord Nelson.** Over 20 million Americans participated in the first event. It became a global movement in 1990, reaching 141 countries. **Earth Day promotes environmental protection and climate action.**

6. Yellow Sea



The Yellow Sea, also called **Huang Hai in China and West Sea in Korea,** is a marginal sea of the Western Pacific Ocean. It lies north of the East China Sea, bordered by China (north/west) and both Koreas (east). **Named for yellow sand from the Gobi Desert, it spans ~400,000 sq.km.** It is 960 km long, 700 km

wide, and shallow (55–120 m deep). Major rivers include Han, Yangtze, and Yalu.

Key islands: Jeju, Ganghwa, and Shandong Peninsula islands.

Main ports: Qingdao, Dalian, Inch'ŏn, Namp'o.

APRIL 23

1. Bullseye Galaxy



The **Bullseye Galaxy** formed ~50 million years ago from a collision with a blue dwarf galaxy. This collision created rippling gas waves, forming star-filled rings. Eight rings were observed by Hubble; a ninth by Keck Observatory. Spanning 250,000 light-years, it's nearly 5× wider than the Milky Way. **A gas trail still connects it to the dwarf galaxy.** It may evolve into a Giant Low Surface Brightness Galaxy, rich in dark matter and challenging cosmological models.

2. SpaDeX



SpaDeX is an **ISRO technology mission to demonstrate in-orbit docking/undocking of small satellites**. It involved two 220 kg satellites: **SDX01 (Chaser)** and **SDX02 (Target)**. Launched by PSLV-C60 into a 460 km, 45° inclined orbit.

Primary objective: Demonstrate spacecraft rendezvous, docking, and undocking.

Secondary objectives: Power transfer between docked spacecraft, Validate composite control systems and Test payloads post-undocking

India is the fourth country to achieve successful satellite docking.

3. Article 355 of the Indian Constitution



Article 355 is part of the **emergency provisions in Part XVIII of the Indian Constitution (Articles 352–360)**. It mandates the **Union to protect states from external aggression and internal disturbances**. The Centre can intervene in a state's law and order without imposing President's Rule. It serves as a preventive step before full federal intervention. The aim is to enable swift action to maintain peace and constitutional governance in the states.

4. Hindu Kush Himalaya (HKH)



The Hindu Kush Himalaya (HKH) spans 3,500 km across 8 countries - **Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan**. It stretches northeast to southwest, separating the Amu Darya and Indus valleys. **Tirich Mir in Pakistan (7,708 m) is its highest peak.** Known as the "Third Pole" due to vast ice cover, affecting global climate. Source of 10 major Asian rivers, supporting 1.9 billion people. **Hosts 4 biodiversity hotspots and diverse ecosystems.** Divided into eastern, central, and western (Bābā) sections.

5. Alamosaurus



Alamosaurus was one of the **largest known dinosaurs and native to North America during the Late Cretaceous (100.5–66 million years ago)**. It was an herbivorous sauropod with armored spikes for

defense. **Sauropods were the largest land animals to evolve.** Alamosaurus was the only known sauropod in North America during the Upper Cretaceous and the largest terrestrial animal of its time there. It measured up to 30.5 meters long and 80 tons. It went extinct during the Cretaceous-Paleogene event.

6. What Are UNESCO Global Geoparks?

The UNESCO Global Geoparks Network, **brings together territories recognized for their rich geological heritage, rock formations, mountain or volcanic ranges, caves, canyons, fossil sites or ancient desert landscapes**, which bear witness to our planet's history, evolution and climate.

Established: The Global Geopark designation was established in 2015 by UNESCO.

7. About Kokborok

Kokborok is the language of the **Borok people and was notified as one of the official languages of Tripura in 1979.** Other official languages are Bengali, and English. The word Kokborok is composed of two words, viz., kok which means "language" and borok means "man". Thus **Kokborok means "the language of man" or "the language of the Borok people"**. The dialect belongs to the Tibeto-Burman group of languages and its root can be traced to the **Sino-Tibetan speech family**. It is closely related to the Bodo language and the Dimasa language of the neighbouring state of Assam. **The Kokborok dialect has no script of its own and is written in Devanagari, Bengali and Roman scripts.**

8. What is BharatNet?

The **government of India launched BharatNet in October 2011, under the Ministry of Communications**. It is an ambitious project aimed at providing affordable high-speed internet access to every Gram Panchayat in the country. **BharatNet operates as the world's largest rural broadband connectivity program.**

9. Natuna Island

Natuna Island, also known as **Bunguran Island is the largest island in the Natuna Islands archipelago**, located in the northernmost part of Indonesia's Riau Islands Province.

Location: It is located in the **South China Sea** and lies approximately halfway between Peninsular Malaysia and the island of Borneo.

Topography: The island features **Mount Ranai, its highest point**, reaching 1,035 meters above sea level.

APRIL 24

1. Factors Influencing Gold prices

- **Supply and Demand:** The availability of gold and the demand for it, both for investment and industrial use, directly impact prices.
- Increased mining output can **lower prices, while high demand can raise them.**
- **Inflation: Gold is often seen as a hedge against inflation.** When inflation rises, investors flock to gold to preserve their purchasing power, driving up prices.
- **Interest Rates:** Lower interest rates decrease the opportunity cost of holding gold, making it more attractive to investors. Conversely, higher rates lead to lower gold prices.
- **Geopolitical Stability:** Political uncertainty or conflict lead investors to seek safety in gold, boosting demand and prices.
- **Currency Strength:** Gold is typically priced in U.S. dollars. **A weaker dollar makes gold cheaper for holders of other currencies, potentially increasing demand and prices.**

2. Liquefied Petroleum Gas (LPG)

Components: It primarily consists of propane (C₃H₈) and butane (C₄H₁₀) or a mixture of both.

Characteristics: It is a colorless, odorless, flammable liquid that is used as a fuel.

Applications: Power generation, Energy Storage, Transportation, Industrial usage, etc.

3. Perovskite Solar Cells

Perovskite solar cells (PSCs) are a **class of next-generation photovoltaics (PVs) that use a unique crystal structure known as perovskite to absorb sunlight.** These materials have high power conversion efficiencies (PCE) at relatively low production costs. However, **perovskites contain toxic substances like lead, raising concerns about safe disposal and environmental contamination.** Traditional methods

for recycling PSCs rely heavily on toxic organic solvents such as dimethylformamide (DMF), which pose environmental hazards

4. Taj Mahal

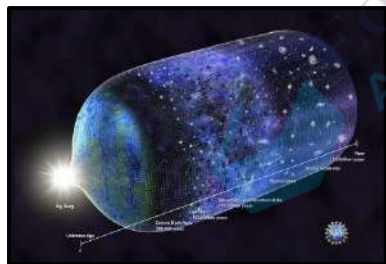
The Taj Mahal is an **ivory-white marble mausoleum located in Agra, India**. It sits on the south bank of the Yamuna River. **Commissioned in 1632 by Mughal Emperor Shah Jahan** (reigned 1628–1658). It was built in memory of his wife, Mumtaz Mahal. It was **declared a UNESCO World Heritage Site in 1983**. It is regarded as a prime example of Mughal architecture.

5. What is Arsenic (As)?

Arsenic is a **naturally occurring trace element that occurs in many minerals, usually in combination with sulfur and metals**. It is highly toxic in its inorganic form. **Effects on health:** Long-term exposure to arsenic can **cause cancer, skin lesions, cardiovascular disease, diabetes etc.** In-utero and early childhood exposure have been linked to negative impacts on cognitive development and increased deaths in young adults. In **Taiwan, arsenic exposure has been linked to "Blackfoot disease"**. It is a severe disease of blood vessels leading to gangrene.

APRIL 25

1. Dark Matter, Meaning, Significance, Dark Energy



Dark Matter: A non-luminous form of matter detectable only via gravity, making up **~27% of the universe**. It helps **explain galaxy formation and structure, acting as cosmic "scaffolding."** Does not interact with electromagnetic forces; candidates include WIMPs, axions, and MACHOs.

Dark Energy: Constitutes **~68% of the universe and is linked to space's vacuum**. Causes accelerated expansion of the universe, with effects observed via Hubble law measurements.

2. Heat waves



Heat waves are **periods of abnormally high temperatures relative to a region's climate**. Declared when temperatures reach **≥40°C in plains or ≥30°C in hilly regions**.

By departure from normal:

- **Heat Wave:** +4.5°C to +6.4°C
- **Severe Heat Wave:** >+6.4°C

By actual temperature:

- **Heat Wave:** ≥45°C
 - **Severe Heat Wave:** ≥47°C
 - Applies only if max temperature is ≥37°C.
- Common from March to June in India.
- **Core zones:** Central, Northern, and Peninsular India.

3. Indus Waters Treaty



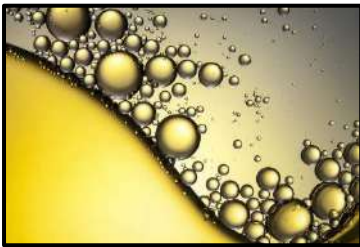
The Indus Waters Treaty was signed on **September 19, 1960, between India and Pakistan** with the World Bank as mediator. It governs water sharing of six rivers: **Indus, Jhelum, Chenab, Ravi, Beas, and Sutlej**. Pakistan received unrestricted use of the three western rivers: Indus, Jhelum, and Chenab. **India retained the eastern rivers: Ravi, Beas, and Sutlej**. India can use western rivers for limited, non-consumptive purposes. **About 80% of the water was allocated to Pakistan**. A Permanent Indus Commission (PIC) ensures treaty implementation and cooperation.

4. National Commission for Allied and Healthcare Professions (NCAHP)



The **National Commission for Allied and Healthcare Professions (NCAHP)** is a statutory body under the **NCAHP Act 2021**. It regulates education and practice standards for allied healthcare professionals. **NCAHP oversees registration, training, and accreditation of various practitioners such as physiotherapists, psychologists, and medical technologists.** It ensures quality care through competency-based education and continuous professional development. The Commission also engages in research, policy-making, and maintains a central database on standards and regulations.

5. Lipids



Lipids are **fatty, non-polar hydrocarbons found in all cells and blood.** They give structure to cells and control substance movement. **Lipids aid in energy storage, vitamin absorption, and hormone production.** Insoluble in water but soluble in non-polar solvents like chloroform. Found in high amounts in fried foods, animal fats, and dairy. **Types include triglycerides, steroid hormones, bile salts, fatty acids, phospholipids, and cholesterol.** Imbalances can lead to disorders like hyperlipidemia, atherosclerosis, and coronary artery disease.

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1. Bone Collector' Caterpillar



The "**Bone Collector**" is a newly discovered **carnivorous caterpillar from Oahu, Hawaii.** It builds a protective case using prey body parts (e.g., ant heads, fly wings) and silk. It **inhabits a small, isolated, and threatened mountain forest patch.** Its evolutionary lineage dates back over six million years, predating the **Hawaiian islands.** It feeds on insects trapped in spider webs and decorates its silk case with parts of its prey.

2. Bonds and Indian Bond Market



Bonds offer fixed returns over a set period and are safer than equities. **Bond yields move inversely with prices; inflation reduces real returns.** Rising inflation prompts central banks to raise interest rates, lowering bond prices. Currency depreciation reduces real returns for foreign investors. **The Indian Bond Market enables fund-raising via bonds by governments, corporations, and institutions.**

Primary Market: New issues like G-Secs, Corporate Bonds, Municipal Bonds, PSU Bonds, Green Bonds, Masala Bonds.

Secondary Market: Trading of existing bonds like T-Bills, CPs, and CDs among investors.

3. Critical Tiger Habitat (CTH):



Identified under **Wild Life Protection Act (WLPA), 1972.** Based on scientific evidence, kept inviolate for tiger conservation without affecting Scheduled Tribes' rights. Notified by state government in consultation with expert committee. Peripheral forests act as buffer zones.

Central Empowered Committee (CEC):

Set up by **Supreme Court in 2002 (reconstituted 2008)**; watchdog for environmental compliance. In 2023, shifted under MoEFCC as a permanent statutory body.

Composition: Chairperson (25 years experience, age limit 66), Member Secretary (12 years experience), and three expert members (20 years experience each).

NGOs are now excluded from CEC.

4. Medium Range-Surface to Air Missile (MR-SAM)



Medium Range-Surface to Air Missile (MR-SAM) is a **high-response, quick-reaction, vertically launched supersonic missile for neutralizing aerial threats**. Developed by **Defence Research and Development Organisation (DRDO) and Israel Aerospace Industries; produced by Bharat Dynamics Limited (BDL)**. System includes command and control unit, tracking radar, mobile launcher, and missiles.

Launcher carries up to eight canisterised missiles and supports single or ripple firing.

Features: active radar Radio Frequency (RF) seeker, rotating phased array radar, dual-pulse solid propulsion, thrust vector control.

Capabilities: Speed of Mach 2; range up to 70 km; simultaneous multi-target engagement.

5. Cucumber Mosaic Virus (CMV)



Cucumber Mosaic Virus (CMV) is a **widespread plant virus first identified in 1916 in the U.S.** It infects over

1,200 species, including cucumbers, squash, cereals, and medicinal plants. CMV spreads via sap-sucking aphids; nearly 90 species can transmit it. **In India, CMV causes 25–30% yield loss in bananas and up to 70% in pumpkins, cucumbers, and melons.**

Symptoms: mosaic discoloration, stunted growth, and poor-quality fruits.

Management: cultural practices, agrochemicals, and destroying infected plants.

6. Indian Cybercrime Coordination Centre (I4C)



Established under the **Ministry of Home Affairs (MHA) as the national nodal agency to combat cybercrime**. Aims to coordinate efforts of Law Enforcement Agencies (LEAs), academia, industry, and the public in cybercrime prevention and prosecution. **Enhances capacity building, public awareness, and cybercrime reporting via National Cybercrime Reporting Portal (NCRP).**

Components include: National Cybercrime Threat Analytics Unit (TAU), NCRP, National Cybercrime Training Centre (NCTC), Research & Innovation Centre, National Cybercrime Forensic Laboratory (Investigation) Ecosystem, Cybercrime Ecosystem Management Unit, and Joint Coordination Team.

Focuses on crimes against women/children, research and development, cyber law reforms, and international cooperation.

APRIL 30

1. Padma Awards



Established in **1954 alongside Bharat Ratna**; initially three classes renamed in 1955 to **Padma Vibhushan, Padma Bhushan, and Padma Shri**.

Purpose: Recognize exceptional/distinguished service in various fields.

Eligibility: Open to all; govt servants excluded except doctors/scientists.

Process: Nominations (including self-nominations) reviewed by Padma Awards Committee, led by Cabinet Secretary.

Award Cap: **120 per year**, excluding posthumous and foreign/NRI/OCI recipients.

No title: Cannot be used as prefix/suffix

2. Investor Education and Protection Fund

Authority (IEPFA)



Investor Education and Protection Fund Authority (IEPFA), established in **2016 under the Companies Act, 2013, manages the Investor Education and Protection Fund (IEPF) under the Ministry of Corporate Affairs**.

The fund includes unclaimed amounts for 7 years such as unpaid dividends, matured deposits, and donations.

The 'Niveshak Shivir' initiative by Investor Education and Protection Fund Authority (IEPFA) and Securities and Exchange Board of India (SEBI) simplifies reclaiming unclaimed dividends and shares. Camps in major cities will offer Know Your Customer (KYC) updates, claim verification, and grievance redressal. A **Quick Response (QR) code-based Google Form will be used for pre-registration.**

3. Central Consumer Protection Authority (CCPA)



The Central Consumer Protection Authority (CCPA) was established under **Section 10 of the Consumer Protection Act, 2019**. The Act replaced the 1986 Act and came into force on July 20, 2020.

Nodal Ministry: Ministry of Consumer Affairs, Food & Public Distribution.

CCPA safeguards consumer rights, prevents unfair trade practices, and curbs misleading ads. It can initiate class-action suits, conduct investigations, and impose penalties.

Composition: Chief Commissioner and two Commissioners (for goods and services).

4. GAVI, the Vaccine Alliance



GAVI, the Vaccine Alliance was established in 2000 as a public-private partnership to improve vaccine access in the world's poorest countries. It is **based in Geneva, Switzerland, and unites stakeholders like WHO, UNICEF, the World Bank, governments, civil society, and private donors**. Gavi provides financial support, technical expertise, and negotiates vaccine prices. It has vaccinated 1.1 billion children, saving 18.8 million lives (as of 2023). Gavi co-led the COVAX initiative (2020–2023) for equitable COVID-19 vaccine distribution.

5. Uturuncu Volcano



Uturuncu Volcano is located in **southwestern Bolivia, within the Andes Mountains**. It is a stratovolcano with dacitic lava domes and flows, standing at 6,008 meters. It is **the tallest mountain in southern Bolivia**. Though it last erupted 250,000 years ago, it remains seismically active. It lies **above the vast Altiplano-Puna Magma Body (APMB)**. Known as a "zombie" volcano due to



non-eruptive unrest from subsurface liquid and gas movement.

6. Sharia courts

They are informal Islamic forums led by a **Qazi that interpret Shariat (Islamic law based on the Quran and the teachings of the Prophet Mohammed)** to provide guidance on personal matters like marriage, divorce, inheritance, and maintenance. They serve **mainly as arbitration centers**, especially for the economically disadvantaged. However, their decisions are not legally binding or enforceable, and any party dissatisfied with their ruling can seek recourse in regular courts.

7. SMILE Scheme

As per the **Union Social Justice Ministry**, the SMILE scheme has identified fewer than 10,000 people engaged in begging.

About

Scheme Name: Support for Marginalised Individuals for Livelihood and Enterprise (SMILE).

Launch Year: 2022.

Implementing Ministry: Union Ministry of Social Justice and Empowerment.

One of its components was the sub-scheme to **identify, profile, and rehabilitate individuals engaged in the act of begging with their consent**. The other component of the scheme is for the empowerment of transgender persons.

Objectives: Make religious, tourist, and historical urban spaces "beggary-free".

Rehabilitate at least 8,000 individuals over FY 2023–24 to FY 2025–26.

8. Geotagging

It is a **process of adding geographical identification to various media like photography**. It helps organize and share content by location. It has applications in areas like **disaster management, agriculture, and urban planning**.

Marine Protected Areas (MPAs)

Ocean areas are **reserved for long-term conservation of marine ecosystems, governed by national**

authorities, local governments, NGOs, or through community co-management.

Current Status: Over 16,000 MPAs established globally, covering about 8% of the world's oceans. However only 3% of oceans are under full protection.

Global Target: The **30X30 target of the Kunming-Montreal Global Biodiversity Framework (KMGBF)** aims to protect 30 percent of the oceans by 2030.

9. About Similipal

Similipal, located in **Odisha's Mayurbhanj district**, is home to 40 royal Bengal tigers, **shelter to 25% of Odisha's elephant population** and 104 orchid species, many endemic to the region. It is a haven for over 360 species of birds, and diverse mammals like leopards, sambar, and mugger crocodiles. **The forests of Similipal are a mix of sal trees, moist deciduous, and semi-evergreen types.** The tigers of Similipal possess higher-than-normal levels of melanin, giving them coats that are more black with yellow stripes. **The pseudo-melanistic tiger is a colour variant of the Bengal tiger.** Its strange coat is a result of a mutation in a particular gene.