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Dhyeya Family & Centre Director MR.VIJAY SINGH

with

UPSC Topper Piyush Raj (IAS) & Satyam Singh (Assistant Professor)

Message



An officer with a right mindset is an officer that a nation aspires for. A right mindset doesn't necessarily comprise unlimited jargon of knowledge rather a right amount of knowledge and its appropriate execution. Especially, when it comes to UPSC and State PSCs preparation, the crux is not to accumulate the knowledge but its effective implementation and utilization in tackling any situation. The situation here can be anything from UPSC CSE Prelims to the major issues that need to be addressed. The journey is hard but it is worth.

Perfect 7 has been part of many UPSC and State PSCs aspirants in their journey of becoming well reputed officers serving nationally and internationally. The magazine itself had gone through constant ebb and flows of change and improvements. Now, that the magazine is in its monthly era, I hope it becomes your perfect preparation partner and guides you through this ever learning endeavor of Civil Services Preparation.

With Best wishes.

Vinay Singh
Founder
Dhyeya IAS

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PERFECT



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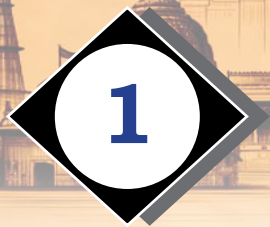
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Indian Society & Art and Culture

Women Empowerment in Indian Police: Challenges and Prospects

The recently released India Justice Report (IJR) 2025 presents a comprehensive review of the country's justice system. The report evaluates broad aspects of the justice system, with the very low participation of women in the police force being a significant concern. Gender equality is essential to make the legal system more inclusive, accountable and effective.

Women in India's Police Force: A Stark Underrepresentation

- Despite India's police force comprising over 20.3 lakh personnel, women's participation remains strikingly low, especially in senior positions. As per the report:
 - » Fewer than 1,000 women officers hold senior ranks in the entire police force.
 - » Among the 3.1 lakh officers (excluding constables), only around 8% are women.
 - » Of the non-IPS women officers, over 90% occupy positions within the constabulary, with the total number of such officers standing slightly above 25,000.
- This data illustrates a significant gap not just in numbers but also in terms of leadership and decision-making opportunities for women within the police system. The disproportionate distribution hampers efforts to create a gender-sensitive policing environment, particularly in cases involving crimes against women.

Why the Need for More Women in Police?

- The urgency to increase women's

participation in police services is underscored by both legal and social imperatives. Several recent amendments to criminal laws and procedures mandate the presence of women officers in certain sensitive legal processes. For example:

- » Arrest and search operations involving female accused must be conducted by women officers.
- » Statements and reports in specific categories of cases, particularly those involving sexual assault and domestic violence, must be recorded by a female officer.
- Further, data from the National Crime Records Bureau (NCRB) reveals that crimes against women account for around 10% of the total reported IPC crimes. Meanwhile, approximately 5.3% of those arrested in 2021 were women. This makes the presence of female police officers not only necessary for procedural correctness but also critical for ensuring that women victims and accused are treated with dignity and fairness.
- In addition, the enactment of the Protection of Children from Sexual Offences (POCSO) Act, 2012 has widened the scope for recruiting women into policing roles, given the sensitive nature of child-related cases. Beyond legal requirements, empirical studies suggest that female officers are less likely to use excessive force, play a vital role in building community trust, and enhance access to justice, especially in cases of sexual or domestic violence.

Representation and Reservation: Current Policies and Gaps:

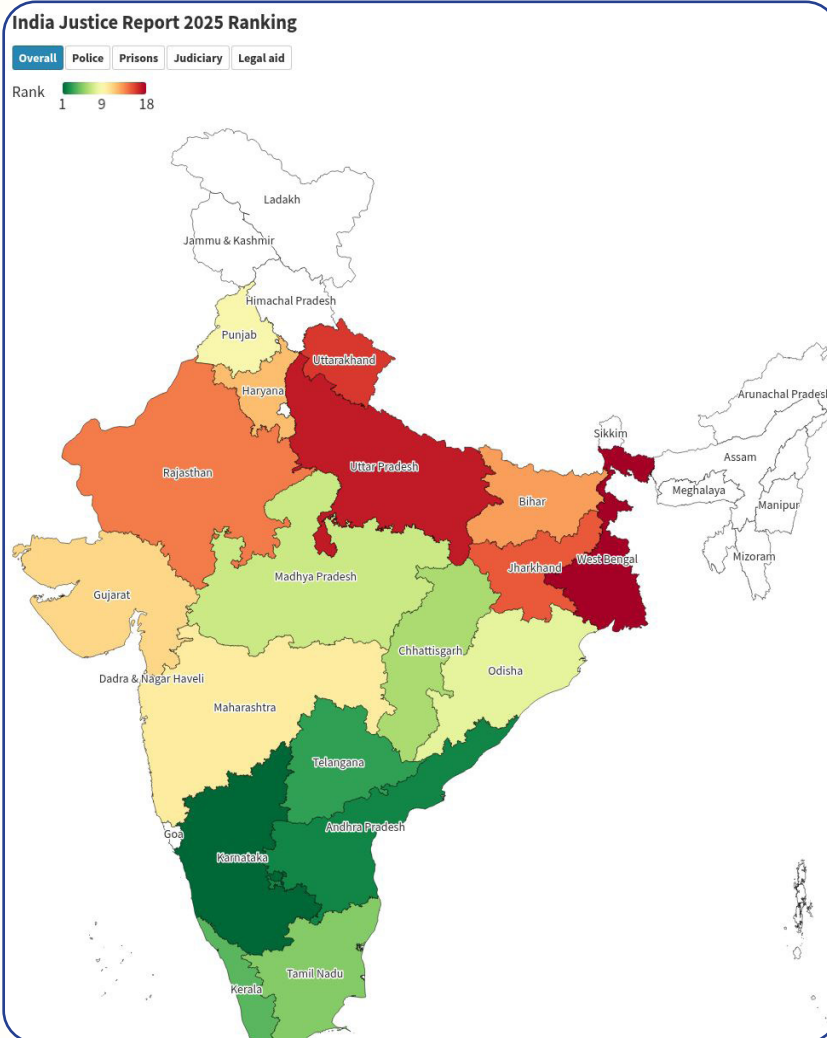
- Recognising the need for improved representation, most Indian states have adopted a policy reserving 30% to 33% of direct recruitment posts in the police force for women. This horizontal reservation ensures that women are recruited across all social categories—Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), and the general category.
- In cases where this minimum threshold is not met through merit-based selection, women candidates are promoted in the selection list to fulfil the quota. However, certain states still limit women's recruitment in the armed police forces to just 10%, indicating a need for more consistent and equitable reservation policies nationwide.

Southern States Lead the Way:

- One of the most notable findings of the IJR 2025 is the exemplary performance of southern states across various indicators of justice delivery. Karnataka, Andhra Pradesh, Telangana, Kerala, and Tamil Nadu have all secured top positions in the report. Their success is attributed to comprehensive and consistent efforts in improving the four pillars of the justice system: police, judiciary, prisons, and legal aid.
 - » Karnataka ranks as the top-performing state among large and mid-sized states. It is also the only state to meet caste-based reservation quotas (SCs, STs, and OBCs) in both police and district

judiciary appointments.

- » Kerala has the lowest vacancy rate among high court judges, reflecting better administrative efficiency.



- » Tamil Nadu leads in prison reforms, maintaining a prison occupancy rate of just 77% compared to the national average of over 131%.
- » Telangana and Andhra Pradesh have secured the first and second ranks respectively in policing performance.

Challenges in Women's Inclusion and Police Reforms

- Despite policy initiatives, the actual implementation of police reforms—including

those aimed at gender inclusivity—remains inconsistent due to structural challenges. Policing in India is a State subject under the Seventh Schedule of the Constitution, making reform implementation the responsibility of individual state governments.

Key challenges include:

- » **Inadequate recruitment infrastructure:** Many states lack a permanent Police Recruitment Board, leading to irregular and ad-hoc hiring processes.
- » **Limited infrastructure:** The absence of basic facilities such as separate toilets, restrooms, and crèche facilities in police stations discourages women from joining or continuing in service.
- » **Shortage of women personnel:** Though financial grants have been offered by the Ministry of Home Affairs (MHA) to set up women's desks at every police station, these often remain non-functional due to a shortage of trained female staff.
- Moreover, while the merger of women police with the regular force has been proposed to improve gender parity, the actual on-ground effect of such administrative changes remains uneven across states.

Training and New Criminal Laws: The

Uncertain Impact:

- The report also highlights a general lack of upskilling and training among police personnel. Data from the Bureau of Police Research and Development (BPR&D), NCRB, National Human Rights Commission (NHRC), and State Human Rights Commissions (SHRC) underscores the need for continuous professional development.
- Simultaneously, the introduction of three new criminal laws by the central government has sparked debates. While these laws are expected to bring benefits such as speedier trials and alternative sentencing mechanisms, concerns remain about increased incarceration rates and restrictions on bail.

Conclusion:

The India Justice Report 2025 brings light to the urgent need for structural reforms and gender inclusivity justice delivery ecosystem in India. While southern states have set an encouraging precedent, the overall representation of women in policing remains far from adequate. Addressing these gaps through coordinated policy, infrastructure development, and sustained investment will be vital in building a justice system that is fair, inclusive, and responsive to the needs of all citizens.

Gender Equality and Economic Growth: The Role of Women in India's Startup Ecosystem

The Indian startup ecosystem has witnessed significant growth over the past decade, with increasing participation from women entrepreneurs. Government initiatives such as Startup India and financial support schemes have played a crucial role in encouraging women-led businesses. Today, nearly half of the government-recognized startups in India have at least one woman director, reflecting a gradual shift towards gender inclusivity in entrepreneurship. Despite these advancements, challenges remain. Societal

norms, financial constraints, and limited access to mentorship often hinder the growth of women-led startups. While many women have successfully established businesses, the overall share of female-led startups in India remains relatively low. Addressing these challenges requires sustained policy support, financial accessibility, and a shift in traditional perceptions of women's roles in business.

Understanding the Startup Ecosystem and Women's Role

- A startup is a newly established business

that aims to develop a product or service with limited resources. In India, the Department for Promotion of Industry and Internal Trade (DPIIT) recognizes startups based on specific criteria, such as age (not older than 10 years), turnover (not exceeding Rs.100 crore), and innovation potential.

- According to government data, India has over 1.6 lakh recognized startups, out of which nearly 73,000 have at least one woman director. India ranks second globally, after the US, in terms of funding raised by women-led startups. However, despite these achievements, only 7.5% of all startups in India are women-led, showing that gender disparities remain a significant challenge.
- Women entrepreneurs contribute significantly to India's economic growth and social progress:
 - » **Economic Impact:** Encouraging women's entrepreneurship could lead to over 30 million women-led enterprises, creating 150-170 million jobs (NITI Aayog). Additionally, integrating more women into the workforce could increase India's GDP growth by 1.5 percentage points (World Bank).
 - » **Gender Equality:** Currently, only 19.2% of Indian women participate in the workforce, compared to 70.1% of men (ILO). Women entrepreneurs play a key role in narrowing this employment gap and ensuring better utilization of human capital.
 - » **Developing Local Markets:** Women-led businesses, especially those leveraging digital platforms, contribute to rural development and urban employment by expanding market access and connecting to global customers.
 - » **Social Change & Role Models:** Women entrepreneurs inspire other women to pursue financial independence, fostering a cultural shift toward gender parity.

Government Support for Women Entrepreneurs:

- To encourage women's participation in entrepreneurship, the Indian government has launched several policy initiatives and financial schemes:
 - » **Startup India Seed Fund Scheme (SISFS):** Provides early-stage funding to startups.
 - » **Fund of Funds for Startups (FFS):** Helps startups get access to capital.
 - » **Credit Guarantee Scheme for Startups (CGSS):** Supports risk coverage for lenders funding startups.
 - » **Capacity Development Programme for Women Entrepreneurs:** Has provided training and mentorship to over 1,300 women entrepreneurs across 10 states.
 - » **Mudra Yojana for Women (Mahila Udyami Yojana):** Offers collateral-free loans up to Rs.10 lakh to support small businesses.
 - » **Women Entrepreneurship Platform (WEP) by NITI Aayog:** Aggregates mentorship, resources, and funding opportunities for women entrepreneurs.
 - » **Pradhan Mantri Virasat Ka Samvardhan (PM Vikas) Scheme:** Focuses on livelihood improvement for minority women.
- Sectors where Women Entrepreneurs Thrive
 - » Retail and E-commerce (Business-to-Consumer models, online platforms)
 - » Education Technology (EdTech)
 - » HealthTech and Wellness
 - » Sustainable and Social Enterprises
- Despite this growth, the number of acquisitions of women-led startups declined from 45 in 2021 to just 16 in 2024, indicating challenges in scaling businesses. However, in 2024, five women-led startups went public, including MobiKwik, Usha Financial, Tunwal, Interiors and More, and LawSikho, showcasing growing opportunities in certain sectors.

Women Entrepreneurship and Gender Norms:

- » **Financial Independence:** Women-led businesses contribute to household income and economic empowerment.
- » **Decision-Making Power:** Greater financial contributions can improve women's role

in household and business decision-making.

- » **Breaking Stereotypes:** Successful women entrepreneurs serve as role models for younger generations.
- However, challenges persist. Many women entrepreneurs continue to face the double burden of managing both work and domestic responsibilities. Financial independence does not always translate into complete social empowerment due to deeply ingrained gender roles.

Challenges Faced by Women Entrepreneurs:

- **Access to Funding:**
 - » Women-led startups receive less investment compared to male-led ones.
 - » Many investors hesitate to fund women entrepreneurs due to gender biases.
- **Societal and Familial Pressures:**
 - » Women are often expected to prioritize family over business.
 - » Lack of family support and societal expectations discourage entrepreneurial ambitions.
- **Regulatory and Market Challenges:**
 - » Women entrepreneurs often struggle with complex legal regulations and compliance burdens.
 - » Supply chain disruptions, lack of skilled workforce, and limited market access hinder business growth.
- **Limited Representation in High-Growth Sectors:**
 - » Women entrepreneurs are often concentrated in micro-enterprises rather than high-growth industries like technology, manufacturing, and finance.
 - » Only 18.42% of enterprises in urban India are owned by women.
- **Necessity-Driven vs. Opportunity-Driven Entrepreneurship:**
 - » Many women turn to entrepreneurship due to a lack of employment opportunities rather than a genuine interest in business.
 - » This limits the scalability and long-term sustainability of their ventures.

Steps to Strengthen Women's Role in the

Startup Ecosystem

- **Increased Financial Access:**
 - » More women-focused venture capital funds should be established.
 - » Simplified loan procedures and lower interest rates can encourage more women to start businesses.
- **Skill Development and Mentorship:**
 - » Training programs should focus on business strategy, financial literacy, and digital skills.
 - » More mentorship networks should be created to connect women entrepreneurs with experienced business leaders.
- **Policy Reforms:**
 - » The government should introduce gender-responsive policies that ease compliance burdens for women-led businesses.
 - » Improved maternity benefits and workplace childcare support can help women balance work and family responsibilities.
- **Market Access and Networking:**
 - » Women entrepreneurs need better access to B2B partnerships, government procurement programs, and global markets.
 - » Initiatives like Women Entrepreneurship Platforms (WEPs) can help in market expansion.
- **Encouraging STEM Participation:**
 - » More women should be encouraged to enter technology and innovation-driven sectors.
 - » Scholarships and funding for women in STEM (Science, Technology, Engineering, and Mathematics) can help bridge the gender gap.

Conclusion

Women entrepreneurship in India is growing but still faces structural and cultural challenges. While initiatives like Startup India have created a more inclusive environment, gender biases, financial barriers, and societal norms continue to limit the full potential of women entrepreneurs. To ensure true empowerment,

India must focus on financial inclusion, policy reforms, and skill-building programs. Women-led startups have the potential to drive economic growth, create jobs, and inspire social change—

but this requires a concerted effort from the government, industry, and society as a whole.

Short Issues

Bhagavad Gita and Natyashastra Join UNESCO's Memory of the World Register

Context:

The manuscripts of the Bhagavad Gita and Natyashastra have been recently added to UNESCO's prestigious Memory of the World (MoW) Register. Prime Minister Narendra Modi acknowledged the recognition, stating that these texts have “nurtured civilisation and consciousness for centuries” and continues to inspire globally.

About Memory of the World Programme by UNESCO:

- Launched in 1992, the Memory of the World Programme by UNESCO aims to preserve and promote valuable archival records, manuscripts, and oral traditions of universal significance. With this year's 74 new additions, the MoW Register now includes 570 entries from across the world—spanning manuscripts, historical documents, audio-visual records, and oral traditions.

Notable past entries include:

- Mahavamsa, the historical chronicle of Sri Lanka
- Shaiva Siddhanta manuscripts (11,000+ texts)
- Frankfurt Auschwitz trial recordings (430 hours)
- Sheikh Mujibur Rahman's March 7, 1971 speech

India's Submissions to the Register

- With these new inclusions, India's total

entries rise to 13, including two joint submissions:

- » Rig Veda (2005)
- » Abhinavagupta's works (2023)
- » Non-Aligned Movement summit archives (joint, 2023)
- » Dutch East India Company records (joint, 2003)
- The latest additions—Bhagavad Gita and Natyashastra—are specific manuscripts preserved at the Bhandarkar Oriental Research Institute, Pune.

About Bhagavad Gita:

- Bhagavad Gita is part of the Mahabharata's Bhishma Parva, comprising 700 verses across 18 chapters. Traditionally attributed to Vyasa, it dates back to the 1st or 2nd century BCE, though it may have been written down later.
- The Gita records a profound dialogue between Arjuna and Krishna, exploring dilemmas of duty, action, and righteousness. Krishna's philosophical counsel synthesizes Vedic, Buddhist, Jain, and Charvaka traditions, offering universal ethical and spiritual insights.
- Widely translated and read across the world, the Gita has influenced countless thinkers and remains central to global philosophical discourse.

About Natyashastra:

- Attributed to sage Bharata, the Natyashastra is a foundational text on drama, dance, music, and aesthetics, dated between 500 BCE and 500 CE. Codified around the 2nd century BCE, it comprises over 36,000 verses. It introduces the key aesthetic

concept of rasa—the emotional essence experienced by an audience during a performance.

Conclusion:

The inclusion of the Bhagavad Gita and Natyashastra manuscripts in the UNESCO Memory of the World Register not only reaffirms the global intellectual and cultural significance of India's ancient heritage but also highlights the ongoing relevance of these texts. As India continues to preserve and promote its documentary treasures, these recognitions serve as milestones in its cultural diplomacy and scholarly legacy.

Geriatric Care in India

Context:

Health City Vistaar Hospital in Lucknow recently launched its new geriatric healthcare initiative, Jeevan Vistaar, aimed at promoting dignity, independence, and emotional well-being among senior citizens. The initiative emphasizes holistic care for individuals aged 60 and above.

Need for Geriatric Healthcare:

- India's rising life expectancy—driven by improved healthcare and access to lifesaving medications—has not been matched by an increase in health span. Chronic ailments like hypertension, diabetes, and arthritis are now common among the elderly, leading to prolonged illness and dependency.
- Socio-economic challenges such as financial insecurity, social isolation, and lack of family support—worsened by nuclear family structures and urban migration—add to their vulnerability.
- Geriatric medicine has emerged as a recognised specialty in India, with dedicated outpatient units, postgraduate courses, and standalone centres.
- While initially focused on infectious diseases, it now primarily addresses non-communicable and degenerative conditions like dementia, cardiovascular disease, and

osteoarthritis, driven by lifestyle shifts and longer lifespans.

Key Challenges in Elderly Healthcare:

- **Comorbidities and Polypharmacy:** Elderly patients often require multiple medications and specialist visits, increasing risks associated with polypharmacy and care fragmentation.
- **Mental Health Issues:** Disorders like depression and loneliness—especially after COVID-19—remain underdiagnosed due to low awareness and stigma.
- **Financial Strain:** Rising medical costs, limited insurance coverage, and reduced income after retirement contribute to significant financial stress.
- **Limited Mobility and Support:** Many elderly individuals face barriers to accessing healthcare due to physical limitations and lack of family assistance, often being accompanied by equally dependent spouses.

Institutional and Community-Based Interventions:

- **Specialised Geriatric Centres:** Facilities offering integrated services under one roof are meeting previously unmet healthcare needs, reflecting growing public awareness.
- **Home-Based and Doorstep Care:** Government-led initiatives are training elderly care support assistants and implementing schemes that deliver drugs and primary care at home.
- **Preventive Healthcare:** Adult vaccination drives and screening for vision, hearing, and cognitive impairments are being rolled out to enhance early detection and intervention.

Possible Interventions:

- **Education and Workforce Development:** Expansion of geriatric training for doctors, nurses, and primary care providers is essential. Academic programs and short-term courses must be institutionalized.
- **Infrastructure and Regulation:** Hospitals and public spaces must be made age-friendly and fall-safe. Standardized and regulated guidelines are needed for home

care and assisted living services.

- **Policy and Financial Support:** Geriatric departments should be set up in all medical colleges. Subsidized healthcare schemes and long-term financial planning must be prioritized.
- **Community and Family Engagement:** Promoting intergenerational bonding and sensitizing youth to the needs of the elderly can build empathy. Caregiver support systems and community-based screenings are also essential.

Conclusion:

As India enters the “grey era,” there is an urgent need to reimagine geriatric care with empathy, innovation, and strategic foresight. By embracing a holistic and inclusive approach, the country can ensure that its ageing population is not merely sustained, but truly supported.

26th Edition of Women and Men in India 2024

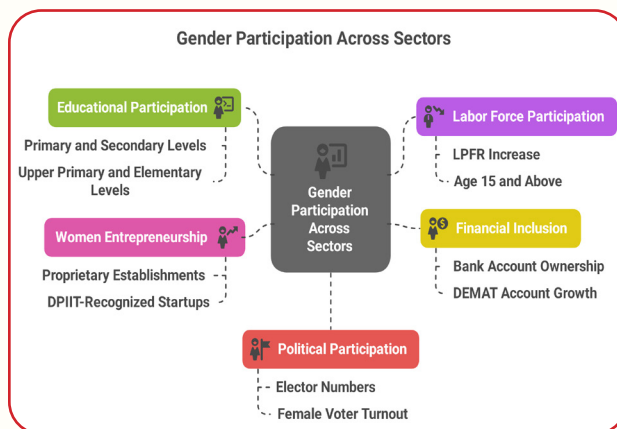
Context:

The Ministry of Statistics and Programme Implementation (MoSPI), Government of India, has released the 26th edition of its publication, Women and Men in India 2024: Selected Indicators and Data. This comprehensive report provides gender-disaggregated statistics across key domains, including population, education, health, economic participation, and decision-making.

Key Findings of the Report:

- **Educational Participation:** The Gender Parity Index (GPI) remains high at the primary and higher secondary levels, indicating strong female enrolment. Upper primary and elementary levels have shown fluctuations but remained close to parity.
- **Labor Force Participation:** The Labor Force Participation Rate (LPFR) for individuals aged 15 and above has increased from 49.8% in 2017-18 to 60.1% in 2023-24, reflecting a rise in workforce engagement.
- **Financial Inclusion:** Women own 39.2% of

all bank accounts and contribute to 39.7% of total deposits, with rural areas showing the highest participation (42.2%). The number of DEMAT accounts surged from 33.26 million in 2021 to 143.02 million in 2024. While male account holders remain the majority (26.59 million in 2021 to 115.31 million in 2024), female participation has grown significantly (6.67 million to 27.71 million).



- **Women Entrepreneurship:** The percentage of female-headed proprietary establishments in manufacturing, trade, and services has increased steadily from 2021-22 to 2023-24. Additionally, DPIIT-recognized startups with at least one-woman director have grown from 1,943 in 2017 to 17,405 in 2024, signaling rising female entrepreneurship.
- **Political Participation:** The number of electors increased from 173.2 million in 1952 to 978 million in 2024, with a notable rise in female voter registration. Female voter turnout, which was 67.2% in 2019, slightly declined to 65.8% in 2024. However, the gender gap in voting has narrowed, with female turnout surpassing male turnout in 2024.

Conclusion:

The Women and Men in India 2024 report provide a critical overview of gender-related trends in India. While significant progress has been made in education, workforce participation, financial inclusion, entrepreneurship, and political engagement, persistent disparities remain. The

insights from this report underscore the need for continued efforts in policy development and socio-economic interventions to promote gender equality and inclusive development.

New Study Reveals Alarming Discrepancies in Child Labor Cases

Context

A recent study by Enfold and CivicDataLab has revealed a significant gap between the number of child labor cases reported by the National Crime Records Bureau (NCRB) and those recorded in judicial data from the e-Courts platform. The study, which analyzed data from Maharashtra, Assam, Bihar, Jharkhand, Tamil Nadu, and Uttar Pradesh, highlights the need for better data collection and stronger enforcement to address child labor effectively.

Key Findings:

- **Discrepancy in Reported Cases:** NCRB data shows 1,329 cases under the Child and Adolescent Labour (Prohibition and Regulation) Act, 1986 (CALPRA) between 2015 and 2022. In contrast, eCourts data reveals 9,193 trials—nearly eight times the NCRB number.
- **Underreporting:** The NCRB's "Principal Offence Rule" may contribute to underreporting, as only the most severe crime is considered when multiple offenses are registered in a single FIR case.
- **Importance of Judicial Data:** Former Supreme Court Justice Madan Lokur emphasized the value of judicial data in understanding policy issues and improving the justice delivery system.

Why This Discrepancy Matters?

- The difference between NCRB and e-Courts data raises serious concerns. Accurate data is crucial for policymaking, resource allocation, and effective law enforcement.
- Underreported child labor cases may result in weaker policy measures, leaving many children unprotected and trapped in

exploitative labor.

Understanding Child Labor in India:

- Child labor is a widespread issue in India, affecting millions of children. The International Labour Organization (ILO) defines child labor as any work that deprives children of their childhood, potential, dignity, and physical or mental development.
- The Indian Constitution, under Article 24, prohibits the employment of children below 14 years in factories, mines, or hazardous jobs. However, despite legal protections, child labor remains widespread due to multiple socio-economic factors:
 - » **Poverty and Indebtedness:** Many families rely on children's income for survival, especially in rural and economically disadvantaged areas.
 - » **Lack of Education:** Limited access to quality education forces children into labor, as they have no alternative for skill development.
 - » **Cultural and Social Norms:** In some communities, child labor is socially accepted, with children following their families into work. This makes it harder to break the cycle.

Way Forward:

- **Improve Data Collection:** Governments and organizations must enhance reporting mechanisms to ensure accurate and comprehensive data. Using platforms like e-Courts can provide a clearer picture of the issue.
- **Strengthen Laws and Enforcement:** Stricter punishments for violators, along with better implementation of child labor laws, can help prevent exploitation.
- **Increase Access to Education:** Expanding quality education and skill development programs can reduce dropout rates and provide children with better opportunities, preventing them from entering the workforce prematurely.

Conclusion:

The study underscores the urgent need for

accurate data and stronger enforcement to combat child labor. Without proper reporting, the scale of the problem remains hidden, delaying effective solutions. By improving data collection, strengthening laws, and prioritizing education, India can make significant progress in eradicating child labor and protecting its children's future.

Odisha Launches Unified Health Insurance Scheme to Expand Healthcare Access

Context:

The Government of Odisha has recently unveiled a comprehensive health insurance initiative by integrating the Centre's Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) with the state-specific Gopabandhu Jan Arogya Yojana (GJAY). This unified scheme is designed to expand access to quality healthcare across the state, addressing long-standing gaps in coverage.

Key features of the scheme:

- The unified health insurance scheme is expected to benefit approximately 3.5 crore residents from over 1.03 crore families in Odisha.
- Each family is entitled to Rs.5 lakh in annual health coverage. To address gender disparities in healthcare access, additional Rs.5 lakh coverage is provided for women beneficiaries in each family.
- **Senior Citizen Provisions:** A key feature of the scheme is the Ayushman Vayo-Vandana Card, offering Rs.5 lakh in annual coverage to all citizens aged 70 years and above, regardless of income or social status. Families that include at least one senior citizen will be eligible for a total annual health coverage of Rs.15 lakh.
- **Cashless Treatment Facilities:** The unified scheme significantly expands access to medical services. Beneficiaries can now avail of cashless treatment at over 29,000 empanelled hospitals across India, up from

only 900 hospitals under the earlier state-only scheme. This enhancement ensures greater geographic coverage and improved service delivery.

- **Financial Allocation:** To support the implementation and sustainability of the scheme, the Odisha Cabinet has approved a financial outlay of Rs.27,019 crore over five years. This budget will fund both the central and state components of the programme, ensuring its long-term viability.

About Ayushman Bharat scheme:

- Ayushman Bharat, the Government of India's flagship health scheme, recently marked 1.5 crore treatments and completed two years of operation. Launched under the National Health Policy 2017, Ayushman Bharat comprises two components:
 - » **Health and Wellness Centres (HWCs):** aimed at upgrading 1.5 lakh primary health centres to offer comprehensive care, including child and maternal health, NCDs, and diagnostics.
 - » **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** launched in 2018, offers Rs. 5 lakh annual health coverage per family, based on SECC 2011 (Socio Economic and Caste Census 2011) data, making it the world's largest health insurance scheme.

About Gopabandhu Jan Arogya Yojana:

- The GJAY is a trust-based health assurance scheme with additional coverage of Rs 5 lakh for women beneficiaries, the other is an insurance model having equal annual coverage limit of Rs 5 lakh for both men and women.

Conclusion:

The unified health insurance scheme represents an administrative effort to streamline healthcare coverage and enhance service delivery in Odisha. By integrating state and central schemes, the initiative seeks to provide comprehensive, accessible, and financially supported healthcare for a large section of the population

Kannadippaya

Context:

Kannadippaya, a unique tribal handicraft from Kerala, has received the Geographical Indication (GI) tag, granting it market protection and global recognition. The GI tag has been awarded to two organizations in Idukki district:

- Unarvu Pattikavargha Vividodesha Sahakarana Sangam, Venmani
- Vanasree Bamboo Craft & Vanavibhava Shekarana unit, Moolakkad, Uppukunnu

Unique Features of Kannadippaya:

- Kannadippaya gets its name from its reflective surface (Kannadi = Mirror, Paya = Mat). The soft inner layers of reed bamboo are used to make this mat, giving it a natural cooling effect in summer and warmth in winter.
- The highest-quality kannadippaya is woven from reed bamboo (*Teinostachyum wightii*), known locally as Njoonjileetta, Njoojoora, Ponneetta, Meieeta, and Neytheetta.
- Other bamboo species, such as *Ochlandra* sp. (Kareetta, Pereetta, Velleeta, Chitoora, and Kanjoora), are also used.

Cultural and Historical Significance:

- Kannadippaya is primarily crafted by tribal communities in Kerala, including:
 - » Oorali, Mannan, Muthuva, Malayan, and Kadar
 - » Ulladan, Malayarayan, and Hill Pulaya
- These artisans are located in the districts of Idukki, Thrissur, Ernakulam, and Palakkad.
- Historically, kannadippaya was offered to kings as a mark of honor by tribal communities. Its revival through the GI tag helps preserve Kerala's indigenous cultural heritage.

Challenges and Future Opportunities:

- **Market Challenges:** Despite its GI recognition, kannadippaya artisans struggle to find a structured market for their craft. A lack of proper marketing channels limits their economic growth and outreach.
- **Government Support and Promotion:**

Artisans have urged State and Central governments to:

- » Promote kannadippaya through official trade fairs, exhibitions, and online platforms.
- » Provide financial and technical support to help expand its market reach.
- **Global Demand for Eco-Friendly Products:** With growing interest in sustainable and eco-friendly products, kannadippaya has the potential to attract international buyers. The GI tag enhances its credibility, making it a valuable handcrafted product in the global market.



Impact of the GI Tag on Kannadippaya Artisans:

- Empower tribal artisans by helping them transition from traditional weavers to entrepreneurs.
- Encourage younger generations to take up the craft, preventing its decline.
- Create employment opportunities in rural areas through increased demand.

Conclusion:

The GI tag for Kannadippaya is a big step in preserving Kerala's tribal heritage and traditional craftsmanship. This achievement will help uplift indigenous communities and showcase their skills globally.

Polity & Governance

Judicial Activism and Overreach: Constitutional Dignity and Democratic

Judicial overreach is a term used to describe instances where the judiciary exceeds its boundaries, interfering with the functions traditionally carried out by the executive or legislature. In India, the fine line between judicial activism and judicial overreach has been a subject of extensive debate. While judicial activism is seen as a means to protect citizens' rights and ensure justice, judicial overreach is often viewed as a threat to the separation of powers, an essential pillar of democratic governance.

Recent developments—such as the Supreme Court's directive imposing a three-month timeline on the President for deciding on state Bills reserved by Governors—have intensified the debate over judicial overreach.

Separation of Powers in the Indian Constitution

- ❖ The Indian Constitution is based on a structural separation of powers, where:
 - » The Legislature formulates laws.
 - » The Executive implements them.
 - » The Judiciary interprets laws and adjudicates disputes.
- ❖ Although India does not follow a strict separation as in the U.S. model, a functional division ensures that no branch oversteps its constitutional limits. Judicial overreach occurs when the judiciary intervenes in matters of governance or policy-making, thus straying beyond its interpretive and adjudicative roles.

- ❖ The judiciary's mandate is to ensure that laws and executive actions align with the Constitution. However, when it begins issuing directions to other constitutional authorities—particularly without enabling legislation or democratic deliberation—it may distort the principle of institutional balance.

Supreme Court's Directive on Reserved Bills: A Case in Point

- ❖ A recent example highlighting these constitutional complexities is the Supreme Court's 2024 judgment prescribing a three-month deadline for the President to decide on state Bills reserved by Governors. The Court declared that any delay beyond this period must be justified with recorded reasons and invalidated the act of reserving Bills for Presidential consideration after they had been passed again by a state legislature.
- ❖ While the intent was to uphold federal efficiency and prevent legislative stagnation, the judgment raised serious concerns about judicial intervention in executive timelines and discretionary powers. The directive was interpreted by many in the executive as a classic case of judicial overreach for the following reasons:
 - » The President is a constitutional authority with defined discretionary powers that cannot be easily constrained by judicial timelines.
 - » Issuing binding directives to the

President may disrupt the delicate balance between constitutional functionaries.

- » The judiciary, by prescribing timelines, ventured into the executive's functional domain without a statutory framework to support such action.
- ❖ This ruling invites deeper reflection on how far judicial review can go before it becomes interference—a central concern in debates about overreach.

Aspect	Judicial Activism	Judicial Overreach
Objective	To ensure justice	Overstepping boundaries with hyper-activism
Legitimacy	As per the Constitution	Violation of constitutional limits
Examples		Interference in policy-making
Impact	Positive	Threat to democratic balance

Other Key Instances of Judicial Overreach:

- ❖ **Shyam Narayan Chouksey v. Union of India (2018):** The Supreme Court's directive mandating the playing of the national anthem in cinema halls was criticized for infringing upon personal liberties and interfering with cultural policy—an executive function.
- ❖ **National Judicial Appointments Commission (NJAC) Judgment (2015):** By striking down a constitutional amendment that aimed to reform judicial appointments, the Court was seen as protecting institutional interests at the cost of broader accountability.
- ❖ **Liquor Ban on Highways (2016):** The Supreme Court banned liquor vends within 500 meters of highways, a decision that significantly affected state revenue and policy autonomy, based on tenuous connections with road safety.
- ❖ **Jolly LLB II Case (2021):** The Bombay High Court's appointment of a committee

to censor the film despite certification by the Central Board of Film Certification was criticized as judicial overstepping into regulatory authority.

The Role of Article 142 and Institutional Accountability:

- ❖ The use of Article 142—which empowers the Supreme Court to pass orders necessary for “complete justice”—has played a significant role in expanding the Court's functional reach. While often justified in exceptional situations, repeated reliance on Article 142 raises structural concerns:
 - » It may bypass legislative or executive frameworks, allowing the Court to act without statutory constraints.
 - » It risks creating binding norms without democratic debate or institutional checks.
- ❖ Additionally, questions of judicial accountability have emerged in recent years. The judiciary's relative immunity from external oversight, especially concerning internal inquiries and ethical standards, creates an accountability deficit. Critics argue that for judicial independence to be meaningful and legitimate, it must be accompanied by transparent institutional mechanisms.

Federalism and Governance:

- ❖ The Supreme Court's directive on Presidential assent can also be viewed through the lens of federalism. Governors delaying assent to state Bills has been a recurring issue, often resulting in governance paralysis. In this context, the judiciary's intervention may be seen as reinforcing state legislative authority and curbing central encroachment.
- ❖ However, setting rigid timelines for the President, who functions based on Cabinet advice, potentially centralizes power in the judiciary and erodes the executive's discretionary space. It also risks transforming judicial review from a constitutional safeguard into a supervisory mechanism, altering the balance of power among the branches of government.

Judicial Restraint: The Antidote to Overreach

- ❖ Judicial restraint emphasizes the judiciary's obligation to exercise self-discipline and avoid encroachment on policy domains. The doctrine is not about judicial passivity, but about respecting institutional roles and avoiding governance by judiciary.
 - » Landmark cases like the Ayodhya judgment (2019), where the Court chose to base its verdict on evidence rather than emotion, and Indian Medical Association v. Union of India (2011), where it avoided interfering in regulatory decisions about medical education, highlight instances of appropriate restraint.
 - » Such approaches preserve the judiciary's credibility while allowing democratic processes to function.

Conclusion

Judicial overreach remains a contentious

and evolving issue in India's constitutional landscape. The recent directive mandating timelines for Presidential assent reflects the judiciary's proactive stance in addressing governance inefficiencies but also raises pressing concerns about constitutional boundaries and federal equilibrium. While judicial review is integral to the protection of constitutional values, it must operate within a framework of mutual respect and restraint. As India's democracy matures, the need for institutional accountability across all branches—including the judiciary—becomes paramount. A deeper and more transparent dialogue is essential to ensure that judicial interventions are balanced, democratically grounded, and aligned with the spirit of the Constitution. Only then can the judiciary preserve its role as the guardian of constitutional morality without overshadowing the foundational principles of democratic governance.

Towards a Humane Prison System: Evaluating Policy, Practice, and Constitutional Mandates in India

The prison system in India, a vital component of the criminal justice framework, continues to grapple with persistent challenges such as overcrowding, understaffing, inadequate healthcare, and disregard for basic human rights. Recent interventions by the National Human Rights Commission (NHRC) and data from the Ministry of Home Affairs and Prison Statistics India underscore the urgent need for systemic reforms. In April 2025, the NHRC took suo motu cognisance of the grave difficulties faced by inmates—particularly women and children—across various jails, prompting a nationwide request for detailed reports from all states and union territories.

NHRC Intervention: A Step Towards Accountability

- ❖ The NHRC directed Chief Secretaries of all states and UTs to submit comprehensive

data within four weeks, including:

- » The number of women inmates, including those living with children
- » The count of convicted and undertrial women prisoners
- » Statistics on male and female undertrials incarcerated for over a year
- ❖ This move aims to promote transparency and uphold inmates' rights to dignity, safety, and well-being. Women prisoners, many of whom live in unsanitary conditions without access to clean water, proper food, or legal aid, face compounded hardships. Additional concerns such as mental distress, exposure to violence, lack of vocational training, and limited rehabilitation opportunities have also been flagged.

Legal Framework and Prison Administration:

- ❖ The Prisons Act of 1894 defines a prison

as any facility designated by a state government for the detention of prisoners. Indian prisons are classified into:

- » Sub-jails at the Taluk level
- » District jails at the District level
- » Central jails at the Zonal or Range level

❖ Despite this hierarchical structure, inconsistencies in administration and the uneven implementation of welfare measures remain pressing concerns.

130-year-old colonial-era Prison laws revised

The MHA has prepared a new 'Model Prisons Act 2023'



Lays emphasis on the safety of women & transgender prisoners



Ensures rehabilitation of inmates in society after completion of sentence



Brings about transparency in prison management by using technology



Focuses on vocational training & skill development of prisoners and their reintegration into the society

inmates' overall well-being.

- » **Sanitation and Healthcare:** Overcrowded prisons suffer from poor sanitation and a lack of mental healthcare facilities, turning them into hotspots for both physical and psychological illnesses. Women, especially pregnant and lactating mothers, face heightened risks due to insufficient nutrition and medical care.
- » **Discriminatory Treatment:** Inmates from socio-economically disadvantaged backgrounds often face biased treatment. Corruption and neglect frequently deny them even basic services, making them more susceptible to exploitation.
- » **Unnatural Deaths:** Reports of unnatural deaths further highlight systemic flaws. In 2020, of the 189 such deaths, 156 were suicides, while others were attributed to murder, accidents, and assaults—revealing the psychological toll of incarceration and inadequate monitoring.

❖ **Undertrial Dominance and Judicial Backlogs:**

- » As per Prison Statistics India 2020, undertrials constitute nearly 75% of the prison population, marking an 11.7% increase from 2019. Most undertrials are held in district jails (50%), followed by central jails (36.1%) and sub-jails (11.9%).
- » The judiciary's backlog exacerbates this issue. As of May 2022, over 4.7 crore cases were pending across Indian courts, primarily at the subordinate level. Delays in trial completion result in prolonged undertrial incarceration, further aggravating overcrowding.

❖ **Infrastructural Gaps and Lack of Rehabilitation Focus:** India's prison system continues to lack a reformatory vision. The absence of vocational and skill-building programs leaves most inmates ill-equipped to reintegrate into society post-release. Staffing shortages worsen the problem. While the sanctioned strength of

Key Issues Plaguing Indian Prisons:

❖ **Overcrowding and Substandard Living Conditions:** Overcrowding is one of the most acute issues. As of 2022, the national average occupancy rate stood at 118%, with 21 states and UTs exceeding the 100% threshold. The situation for transgender inmates is particularly alarming, with an occupancy rate of 636.4%. This strain impacts not only infrastructure but also

prison staff in 2020 was 87,961, the actual number stood at only 61,296, placing an enormous burden on existing personnel and undermining effective inmate management.

Government Measures and Reform Strategies:

- ❖ **Model Prison Manual, 2016:** Introduced to standardize prison management, it emphasizes:
 - » Undertrial Review Committees
 - » Legal aid and empanelment of jail visiting advocates
 - » Women-friendly infrastructure
 - » Legal literacy programs and annual audits
- ❖ **Modernisation of Prisons Scheme (2002–03):** A central initiative aimed at renovating jail infrastructure, improving sanitation, and enhancing staff training to foster holistic prison development.
- ❖ **E-Prisons Project:** Digitisation under the Ministry of Home Affairs, including the Prisoner Information Management System (PIMS), enhances data management and judicial coordination.
- ❖ **Bail Reforms for Undertrials:** The 268th Law Commission Report (2017) proposed that undertrials who have served one-third of the maximum sentence (for offences punishable up to seven years) be granted bail.
- ❖ **Special Courts for Petty Offences:** Fast-track courts have been introduced to expedite cases involving minor offences (punishable up to three years), reducing judicial burden and easing prison congestion.
- ❖ **Training for Prison Staff:** The Supreme Court has stressed the need for regular, sensitivity-based training to promote humane and non-discriminatory inmate engagement.
- ❖ **Skill Development for Inmates:** Rehabilitative programs aim to equip inmates with employable skills. There have also been calls to revise prison wages in line with global standards to ensure dignity in labor.
- ❖ **Open Prisons:** These facilities allow well-behaved convicts to engage in agricultural or vocational work with minimal supervision, proving effective in rehabilitation.
- ❖ **Mulla Committee Recommendations:** The All India Jail Reforms Committee proposed:
 - » Establishment of a National Prison Commission
 - » Separate facilities for juveniles
 - » Legislation focused on the care and rehabilitation of vulnerable inmates
- ❖ **Use of ICT Tools:** Technological interventions like video conferencing for trials and the FASTER (Fast and Secured Transmission of Electronic Records) system have improved the speed and reliability of legal communication.
- ❖ **Model Prisons Act, 2023:** Aims to modernize prison operations with key features such as:
 - » Special provisions for women and transgender safety
 - » Emphasis on vocational training and rehabilitation
 - » Electronic monitoring during parole or furlough
- ❖ However, concerns regarding privacy and social stigma—especially among marginalized groups—persist.
- ❖ **Judicial Directive on Caste-Based Labor:** In 2024, the Supreme Court declared caste-based labor allocations in prisons unconstitutional, citing violation of Article 15(1). This historic judgment marked a significant step towards dismantling institutionalized discrimination.

Conclusion:

India's prison system mirrors broader socio-legal shortcomings. The NHRC's proactive intervention marks a pivotal moment in pushing for accountability. Yet, lasting reform demands not just policy but consistent implementation, infrastructural investment, and judicial synergy. A system rooted in dignity, rehabilitation, and fairness must replace punitive and neglectful practices. Only then can incarceration truly serve its purpose—as a means of reformation rather than mere punishment.

Judicial Accountability and Justice Reforms: A Step towards Transparency and Efficiency

The Supreme Court's decision to publicly declare judges' assets marks a crucial step in strengthening judicial transparency and accountability. This decision, taken in a full court meeting on April 1, 2025, aligns with the long-standing principles set out in the 1997 Restatement of Values of Judicial Life. Seen as the judiciary's moral compass, this document sets ethical guidelines for judges, reminding them that maintaining public trust depends on their fairness and integrity.

But judicial reforms in India aren't stopping there. Alongside efforts to improve accountability, major changes are being made to speed up justice delivery, modernize court infrastructure, and make legal proceedings more accessible. From digitizing courts to setting up Fast Track Courts and strengthening mediation mechanisms, India's judicial system is undergoing a transformation aimed at reducing delays and making justice more inclusive.

The 1997 Ethics Code: The Foundation of Judicial Integrity

- ❖ Judges hold one of the most respected positions in society, and with that comes the responsibility to maintain absolute impartiality. The 1997 Restatement of Values of Judicial Life was introduced to ensure that judges adhere to the highest ethical standards.
- ❖ Some key principles from the code include:
 - » Judges must not only be fair and impartial but must also appear to be so in the eyes of the public.
 - » They must avoid close associations with lawyers to prevent conflicts of interest.
 - » Judges' family members who practice law should not appear before them or use their residence for professional work.

- » They should stay away from political matters and not express views on cases that may come before them.
- » They must refrain from speculative investments in the stock market and avoid financial dealings that could raise questions of bias.
- » Judges should let their judgments speak for themselves rather than giving media interviews.
- » The recent decision to publicly declare assets builds upon these values, reinforcing the idea that judicial transparency is essential to maintaining public confidence in the system.

Judicial Modernization: Digitization and Infrastructure Boost

- ❖ Judicial accountability is more than just about ethics, it's also about making the system work efficiently. When cases drag on for years, people start losing faith in justice itself. To tackle this, the National Mission for Justice Delivery and Legal Reforms was launched in 2011. This mission has been working to speed up case resolution and improve how courts function.
- ❖ Additionally, one of the biggest game-changers has been the e-Courts Project, introduced in 2007 as part of the National e-Governance Plan. By bringing technology into the courtroom, this initiative has helped make justice more accessible and efficient.

Key Achievements of e-Courts:

- ❖ By December 2024, 99.5% of court complexes were connected under the Wide Area Network (WAN) Project.
- ❖ This has enabled video conferencing facilities in 3,240 courts and 1,272 jails, reducing unnecessary delays.
- ❖ To help people navigate the digital transition, 1,394 e-Sewa Kendras in District Courts

and 36 in High Courts have been set up, offering online court services to litigants and lawyers, especially in remote areas.

- ❖ Additionally, through the Centrally Sponsored Scheme, the government has invested ₹9,755 crore in improving court infrastructure, ensuring better facilities for both legal professionals and the public.

Fast-Tracking Justice: Special Courts and Alternative Dispute Resolution

- ❖ A major challenge facing the Indian judiciary is the massive backlog of cases. Courts across the country are burdened with millions of pending cases, some dragging on for decades. To address this issue, the government has expanded the Fast Track Special Courts (FTSCs).

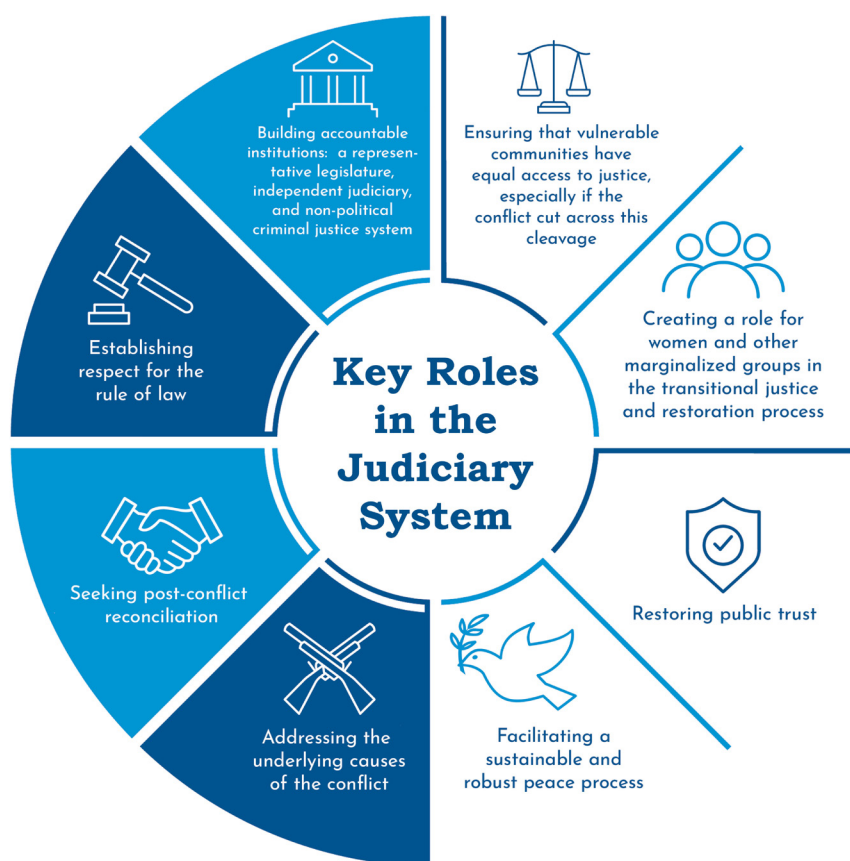
» As of January 2025, 754 FTSCs, including 404 exclusive POCSO Courts, are operating in 30 States/UTs.

» These courts have already disposed of over 3.06 lakh cases, ensuring quicker justice in cases involving serious crimes.

- ❖ At the same time, efforts have been made to promote out-of-court settlements through mediation. The Mediation Act, 2023, provides a legal framework for resolving disputes before they reach court, reducing the burden on the judiciary. The success of these efforts was seen in the 3rd National Lok Adalat of 2024, where an astonishing 1.14 crore cases were settled in a single day.

Judicial Sensitization: Addressing Gender and Social Bias

- ❖ Justice isn't just about speed, it's also about fairness. To help judges stay free from subconscious biases, training programs on gender, caste, and disability sensitivity are being conducted.
- ❖ The Handbook on Combating Gender Stereotypes has also been introduced to help judges identify and remove biased language and reasoning from their judgments. These efforts aim to create a more inclusive judiciary that understands social inequalities and ensures fair justice for all



The Significance of Public Asset Declaration:

- ❖ For decades, judges have been required to declare their assets to the Chief Justice, but these declarations were kept confidential.

The decision to now make this information public marks a major shift in judicial transparency.

- ❖ In the past, similar moves were considered, such as in 2009, when judges voluntarily disclosed their assets, and again in 2018, when a Constitution Bench ruled that judicial asset declarations were not "personal information" under the RTI Act. However, the recent decision formalizes this process, making judicial financial transparency an institutional norm rather than an individual choice.
- ❖ Public disclosure of assets serves two key purposes:
 - » **Building public confidence:** When people see that judges are financially transparent, they are more likely to trust the judiciary.
 - » **Preventing conflicts of interest:** If judges have financial stakes in companies

or properties linked to cases they are hearing, the public has a right to know.

Conclusion:

Judicial accountability and efficiency are two sides of the same coin. While the Supreme Court's move to publicly declare judges' assets is a major step towards transparency, it is part of a larger transformation in India's justice system. From digitizing courts and modernizing infrastructure to fast-tracking cases and promoting mediation, the Indian judiciary is undergoing a much-needed evolution. Additionally, efforts to eliminate gender and social bias in judicial reasoning ensure that justice is not just fast, but also fair. Ultimately, these reforms reflect a judiciary that is adapting to modern challenges while staying true to its core values of integrity, independence, and public service.

Short Issues

Waqf (Amendment) Act 2025

Context:

Recently, the Waqf (Amendment) bill 2025 became the Act after receiving approval from the President.

About Waqf:

- The concept of 'Waqf' is rooted in Islamic laws and traditions.
- It refers to an endowment made by a Muslim for charitable or religious purposes, such as building mosques, schools, hospitals, or other public institutions.
- A Waqf is inalienable- which means it cannot be sold, gifted, inherited or encumbered.
- Once a property is divested from the waqf, i.e., the creator of a waqf, it vests in God and as per Islamic belief since God is ever lasting, so is the 'waqf property'.

Need of the Waqf (Amendment) Act:

The Waqf (Amendment) Act aims to address issues such as:

- Lack of transparency in waqf property management.
- Incomplete surveys and mutation of waqf land records.
- Insufficient provisions for women's inheritance rights.
- Large number of prolonged litigations including encroachment.
- Irrational power of the waqf boards in declaring any property as waqf land based on their own inquiry.
- Large number of disputes related to government land declared as waqf.
- Lack of proper accounting and auditing of waqf properties.
- Administrative inefficiencies in waqf management.

- Improper treatment to trust properties.
- Inadequate representation of stakeholders in Central Waqf Council and State Waqf Boards.

Understanding Waqf (Amendment) Bill, 2025

Waqf Act, 1995	Waqf (Amendment) Bill, 2025
→ Constitutes Central Waqf Council to advise Central & State Governments & waqf boards → All council members must be Muslims, with at least 2 women members	→ Provides that 2 members must be non-Muslims → MPs*, former judges & eminent persons appointed to the council as per the Act need not be Muslims → Representatives of Muslim organisations, scholars in Islamic law, chairpersons of waqf boards must be Muslims → Of the Muslim members, 2 must be women

About the Waqf (Amendment) Act:

- The Waqf (Amendment) Act, 2025 aims to streamline the management of Waqf properties, with provisions to safeguard heritage sites and promote social welfare.
- **Declaration of Non-Muslim properties as waqf:** The Waqf (Amendment) Act 2025 aims to streamline Waqf property management while safeguarding heritage sites and individual property rights. Various states have seen disputes over Waqf property claims, leading to legal battles and community concerns.
- **Muslim women & legal heirs rights:** The Act also seeks to improve the economic and social status of Muslim women, particularly widows and divorced women, by promoting self-help groups and financial independence programs.
- **Tackling the administrative challenges:** The Waqf (Amendment) Act 2025 aims to improve governance by:
 - » Enhancing transparency in property management.

- » Streamlining coordination between Waqf Boards and local authorities.
- » Ensuring stakeholder rights are protected.

- **Empowerment of backward classes & other sects of muslim communities:** The Act aims at making the Waqf Board more inclusive having representation from different Muslim sects for better Waqf governance and decision-making.

Conclusion:

The Waqf (Amendment) Act 2025 establishes a secular, transparent, and accountable system for Waqf administration. By introducing checks and balances, empowering stakeholders, and improving governance, the Act sets a progressive and fair framework for Waqf administration in India.

Telangana became first state to sub-categorize of SC

Context:

The Telangana government has officially notified the implementation of the Telangana Scheduled Castes (Rationalisation of Reservations) Act, 2025, becoming the first Indian State to operationalise the sub-categorisation of Scheduled Castes (SCs) following the Supreme Court's landmark judgment on August 1, 2024. This development marks a significant advancement in the reservation framework, aiming to ensure equitable distribution of benefits among SC sub-castes based on their relative socio-economic conditions.

Categorisation Structure

- As per the government notification effective April 14, 2025, Telangana has divided its 59 Scheduled Caste sub-castes into three groups for reservation purposes:
 - » **Group-I (Most Backward SCs):** Comprises 15 sub-castes, considered the most socio-economically backward. This group is allocated 1% reservation, even though they constitute only 0.5% of the SC population, to promote access

to education and employment.

- » **Group-II (Marginally Benefited SCs):** Includes 18 sub-castes that have received limited benefits under existing policies. They are assigned a 9% reservation share.
- » **Group-III (Relatively Better-Off SCs):** Consists of 26 sub-castes who have historically had greater access to opportunities. This group receives 5% reservation.

Supreme Court's Verdict on Sub-Classifications:

- The Supreme Court ruled that states are constitutionally permitted to sub-classify SCs and STs within the existing reservation quotas to address varying levels of backwardness.
- This means that SCs can be internally stratified within the 15% reservation quota based on empirical evidence and historical disadvantage. The Chief Justice of India distinguished between “sub-classification” and “sub-categorisation,” emphasising that such measures must not be used for political appeasement but should aim at genuine upliftment.
- The Court also extended the 'creamy layer' principle—previously applicable only to Other Backward Classes (OBCs)—to SCs and STs. Consequently, economically and socially advanced individuals within SCs and STs may be excluded from reservation benefits to ensure that only the truly disadvantaged benefit.
- Importantly, the judgment stated that 100% reservation for any sub-group is not permissible, and any sub-classification must be subject to judicial review. Furthermore, reservation benefits are to be limited to the first generation; subsequent generations who have already availed the benefits and attained higher status would not be eligible again.

Implementation and Impact:

Of the total 59 SC sub-castes, 33 remain in their existing categories, while 26 sub-castes (3.43%

of the SC population) have been reclassified. The policy will guide future recruitment to government jobs, though it will not apply to vacancies already notified.

Conclusion

Telangana's sub-categorisation of SC reservations marks a pioneering step in addressing intra-caste disparities, ensuring that the benefits of affirmative action reach the most disadvantaged groups. This initiative could serve as a model for other States aiming to enhance the effectiveness and fairness of reservation policies.

India Justice Report 2025

Context:

The India Justice Report (IJR) 2025, released on April 15, 2025, provides a comprehensive assessment of the state of justice delivery across Indian States and Union Territories. Initiated by Tata Trusts and supported by several civil society organizations and data partners, the report evaluates the performance of States across four key pillars: Police, Judiciary, Prisons, and Legal Aid.

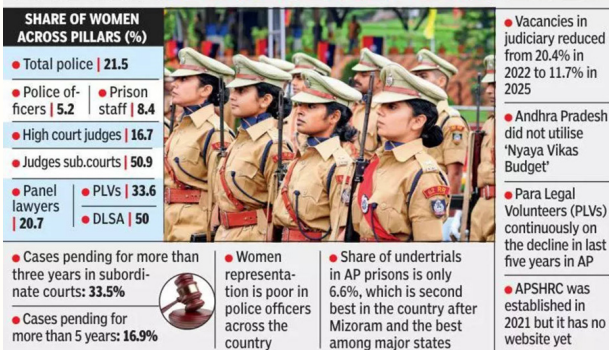
Key highlights of the Report:

- **Gender Representation in Police Forces:** A key finding of the IJR 2025 is the underrepresentation of women in senior police roles—fewer than 1,000 among 20.3 lakh personnel. No State or UT has met its reserved quota for women in the police. Bihar has the highest share of women in its State police, though such representation remains uneven nationwide.
- **Torture and Infrastructural Gaps:** The report highlights that torture remains a persistent issue within India's policing system. It notes that 17% of police stations lack CCTV surveillance and nearly 30% lack women help desks, indicating shortcomings in infrastructural and gender-sensitive mechanisms. Although the police receive the highest per capita justice expenditure at Rs.1,275, there are only one civil police

personnel for every 831 people, pointing to an inadequate police-to-population ratio.

- **Judicial Vacancies and Budget Allocation:** India faces significant judicial vacancies, with Gujarat recording the highest in both High Court Judges and staff. In Uttar Pradesh, over half the High Court Judges' posts remain unfilled. Bihar shows severe delays, with 71% of trial and district court cases pending for over three years. Nationally, the per capita judiciary expenditure is Rs.182, yet no State allocates more than 1% of its annual budget to it.

INDIA JUSTICE REPORT 2025



- **Prison Conditions:** As per the Report, Uttar Pradesh has the most overcrowded prisons, while in Delhi, undertrials make up 91% of inmates. In contrast, Tamil Nadu leads in prison management with high budget use, low staff vacancies, and the best officer workload—22 inmates per officer.
 - » However, Tamil Nadu's overall justice performance has declined. Its police ranking dropped from 3rd in 2024 to 13th in 2025 due to weak budget and training. In legal aid, it fell from 12th to 16th because of low funding and fewer paralegal volunteers.
- Nationally, per capita prison spending is Rs.57. The average spend per prisoner rose from Rs.38,028 in 2021–22 to Rs.44,110 in 2022–23. Andhra Pradesh spent the most—Rs. 2,67,673 per prisoner—showing wide disparities across States.
- **Legal Aid:** The national per capita spending on legal aid remains alarmingly low at ₹6

per annum, reflecting the persistent neglect of this critical pillar.

Conclusion:

The IJR 2025 highlights the urgent need for reforms and better investment across all parts of the justice system. Issues like gender gaps, poor infrastructure, underfunding, and staff shortages continue to block access to fair and timely justice. While States like Tamil Nadu and Karnataka show progress in some areas, a coordinated, all-round effort is needed to create a strong and inclusive justice system.

Supreme Court on Time for Assent

Context:

The Supreme Court of India criticized Tamil Nadu (TN) Governor R.N. Ravi for delaying assent to several important bills passed by the Tamil Nadu Legislative Assembly. The Court declared that the Governor's action of reserving 10 bills for the President was unconstitutional. These bills had already been passed a second time by the State Assembly after the Governor had initially returned them. The Supreme Court's intervention led to the direct grant of assent to these bills under article 142 of the Indian constitution.

- The Supreme Court has, for the first time, set a specific time frame of three months for the President to decide on state bills referred by the Governor under Article 201.

Key Points of the Supreme Court's Judgment:

- **Unconstitutional Reservation of Bills:**
 - » The Governor's act of reserving the 10 bills for the President after the State Assembly had passed them again was ruled unconstitutional by the Supreme Court.
 - » Under Article 200 of the Constitution, a Governor can reserve a bill for the President only at the first instance of presentation. If the bill is returned to the Assembly and passed again, the Governor must either grant assent

or withhold it; re-sending it to the President is not allowed unless there are substantial changes to the bill.

▪ **Violation of Article 200:**

- » The Governor's decision to reserve the bills after the Assembly reconsidered them violated the first proviso of Article 200. This article outlines the Governor's duties and powers in relation to bills passed by the State Legislature.

▪ **Presidential Action Invalid:**

- » Since the referral of the bills to the President by the Governor was unconstitutional, the Court also ruled that any decision taken by the President based on that referral was invalid.

▪ **Use of Article 142 to Grant Assent:**

- » The Court invoked Article 142, which allows the Supreme Court to pass any order it deems necessary for "complete justice." Given the undue delay by the Governor, the Court directly granted assent to the 10 bills to end the constitutional deadlock, ensuring the proper functioning of the state government and legislature.

▪ **Governor's Role in Parliamentary Democracy:**

- » The Court emphasized that the Governor should act as a facilitator of parliamentary democracy, not as an obstructionist. The Governor is expected to uphold the constitutional conventions and show due deference to the will of the elected legislature.

About Article 201 of the Constitution:

- Article 201 allows the Governor to reserve a bill passed by the state legislature for the President's consideration. The President then has the option to:
 - » Grant assent to the Bill, or
 - » Withhold assent
- However, the Article does not specify a deadline for this decision, which has led to prolonged delays in the past.

Implications for Future Governance:

- **Time-bound Action Framework for Governors:** To avoid future delays,

the Court suggested that a clear, time-bound framework should be established for Governors to act on bills. The Court introduced time limits for Governors to act on Bills:

- » **One month:** If a Governor withholds assent on the advice of the State Cabinet.
- » **Three months:** If the Governor withholds assent against the Cabinet's advice and returns the Bill with a message.
- » **Three months:** If the Governor reserves a Bill for the President's consideration contrary to the State Cabinet's advice.
- » **One month:** If a Bill is re-passed by the State Legislature, the Governor must grant assent within this period.

▪ **Institutional Clarity and Accountability:**

The Court recommended that the powers and role of Governors be revisited to ensure there is clarity and to prevent misuse of discretion. This could involve creating clear communication protocols between the Governor's office and the state government.

▪ **Strengthening Democratic Governance:**

By taking this action, the Supreme Court reaffirmed the importance of smooth functioning in state governance and the role of Governors in promoting democratic values. Governors must adhere to constitutional principles and should not act in ways that undermine the legislature's will.

Unravelling the order: What the SC said on...

TOP COURT'S AUTHORITY

Apex court established its authority to review constitutional functions, defending its prescription of timelines. It said that such a measure balances the need for expedient decision-making with the right of states in a federal system to fulfil their mandate to voters.

"It is clear as a noon day, that no exercise of power under the Constitution is beyond the pale of judicial review."

TIMELINE FOR PRESIDENT

It extended the timeline discipline to the central government and held that the President must decide within three months of receiving a bill from a governor. If there is any delay beyond this period, the President's office will be required to convey reasons to the state concerned.

"We prescribe that the President is required to take a decision on the bills reserved for his consideration by the Governor within a period of three months."

GOVERNOR'S POWERS

Verdict clarified the constitutional role of governors, stressing that they must act on the advice of the council of ministers as they do not have discretionary powers under Article 200.

"Governor cannot be vested with such a power...which would enable him to collude with the Union cabinet and ensure the death of any and all legislation initiated by the state."

GOING FORWARD...

- President can obtain SC's advisory opinion on a bill received from gov, which appears to be "patently unconstitutional".
- States should consider entering into pre-legislation consultation with Centre before introducing bills that might require Presidential assent.
- Governors should respect the will of the people expressed through the legislature.

Time frame for Presidential Assent:

- The President must decide within 3 months of receiving a Bill from the Governor.
- If there is any delay beyond 3 months, reasons must be recorded and conveyed to the concerned state.
- Courts can intervene if constitutional authorities delay actions unreasonably.
- The President's decision to withhold assent must be backed by "sound and specific reasons"—they cannot exercise an "absolute veto."

Conclusion:

The Supreme Court's judgment serves as a reminder of the importance of adhering to constitutional processes and conventions. It also emphasizes the necessity of ensuring that Governors act in a manner that respects the legislative process and promotes democratic governance. By directly granting assent to the 10 bills, the Court resolved the impasse and restored balance in the relationship between the executive and legislative branches of government in Tamil Nadu.

Panchayat Advancement Index

Context:

To localize Sustainable Development Goals (SDGs) and empower grassroots governance, recently, the Ministry of Panchayati Raj has launched the Panchayat Advancement Index (PAI) — a transformative tool to measure the progress of over 2.5 lakh Gram Panchayats (GPs) across India.

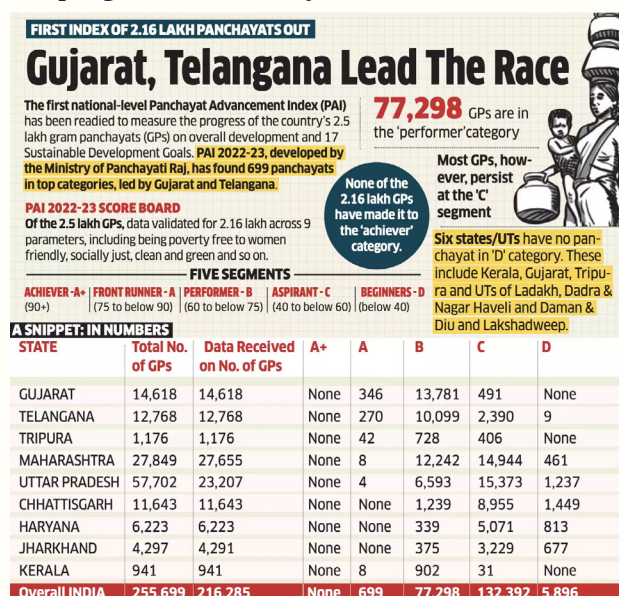
About Panchayat Advancement Index:

- Panchayat Advancement Index (PAI) is a composite Index. It has been compiled based on 435 unique local Indicators (331 mandatory & 104 optional) consisting of 566 unique data points across 9 themes of LSDGs (Localization of Sustainable Development Goals) aligned with National Indicator Framework (NIF) of the Ministry of Statistics and Programme Implementation (MoSPI).

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

Aim of Panchayat Advancement Index:

- Panchayat Advancement Index aims to assess and measure the progress made by grassroots-level institutions in achieving localized SDGs, thereby contributing to the attainment of SDG 2030.
- The Panchayat Advancement Index (PAI) is a multi-domain and multi-sectoral index that is intended to be used to assess the overall holistic development, performance & progress of Panchayats.



Score of the Panchayats:

- Based on the PAI scores & thematic Scores achieved by different Gram Panchayats, these GPs are grouped into one of the categories of performance – Achiever: (90+), Front Runner: (75 to below 90); Performer: (60 to below 75); Aspirant: (40 to below 60) and Beginners (below 40).
- **Themes of Localized SDGs**
 - » Poverty-Free and Enhanced Livelihoods in Panchayat,
 - » Healthy Panchayat,
 - » Child-Friendly Panchayat,
 - » Water-Sufficient Panchayat,
 - » Clean and Green Panchayat,

- » Panchayat with Self-Sufficient Infrastructure,
- » Socially Just and Socially Secured Panchayat,
- » Panchayat with Good Governance
- » Women-Friendly Panchayat.

Implications:

- The outcomes of the PAI, over time, will reflect incremental progress based on the scores achieved by Panchayats, highlighting their advancement toward realizing the LSDGs. The first ever baseline Panchayat Advancement Index (PAI) FY 22-23, will play a vital role in setting local targets, identifying actionable points, and facilitating the preparation of evidence-based Panchayat Development Plans aimed at achieving the desired goals.

State-wise panchayats Highlights:

- **Front Runner Gram Panchayats:**
 - » Gujarat: 346 (highest)
 - » Telangana: 270
- **Performer Gram Panchayats:**
 - » Gujarat: 13,781
 - » Maharashtra: 12,242
 - » Telangana: 10,099
 - » Madhya Pradesh: 7,912
 - » Uttar Pradesh: 6,593
- **Aspirant Gram Panchayats (indicating need for focused development):**
 - » Bihar
 - » Chhattisgarh
 - » Andhra Pradesh
- **Overall PAI 2022-23 Data (across India):**
 - » Total Gram Panchayats: 2,55,699
 - » Validated Data Submitted: 2,16,285 Panchayats
- **Categorization:**
 - » Front Runners: 699 (0.3%)
 - » Performers: 77,298 (35.8%)
 - » Aspirants: 1,32,392 (61.2%)
 - » Beginners: 5,896 (2.7%)
 - » Achievers: 0 (None qualified)

Conclusion:

The index resonates with the needs of rural India making them contextually meaningful at the grassroots level. The PAI serves as a tool for

assessment and promotes healthy competition among Panchayats.

Senior Citizens' Right to Evict Children from Their Property

Context:

Recently, Supreme Court rejected a suit filed by a senior couple to evict their son from their home by invoking the Maintenance and Welfare of Parents and Senior Citizens Act, 2007 (Senior Citizens Act).

Reasons for denying the eviction:

- Supreme Court dismissed their case, stating there was no evidence that their son had mistreated them after the tribunal's temporary order. The court clarified that eviction orders are not mandatory in every case, and there needs to be sufficient evidence of neglect or mistreatment for such orders to be passed.
- Supreme Court has clarified that senior citizens have the right to receive maintenance from their children or relatives. If there is a breach of this obligation, a tribunal under the Senior Citizens Act can order eviction of the child or relative from the property, but this depends on the specific facts and circumstances of the case, including whether there is evidence of neglect or mistreatment.

About Senior Citizens Act:

- The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 was enacted to provide financial security, welfare and protection for senior citizens.
- It requires children to provide maintenance for their parents, and the government to provide old age homes and ensure medical care for senior citizens.
- It sets up Administrative Tribunals and Appellate Tribunals to ensure maintenance.

Definition of Senior Citizens:

- According to the Act, senior citizens are individuals who are above the age of 60

years.

Maintenance of Parents and Senior Citizens:

- The Act mandates that children or heirs have a legal obligation to provide for the maintenance of their elderly parents or senior citizens who are unable to maintain themselves.
- If the senior citizen is unable to support themselves, they can approach a Maintenance Tribunal for seeking financial support from their children or relatives.

Punishment for Abandonment:

- Due to the Act, abandonment of senior citizens by their children or relatives a punishable offense.
- Anyone found guilty of abandoning a senior citizen can be fined up to Rs. 5,000 or imprisoned for a term of up to 3 months, or both.

Right to Inheritance:

- The Act gives senior citizens the right to seek maintenance from their children, including the right to claim part of the property.
- If a senior citizen is deprived of their property or inheritance, they can file a case under this Act.

Conclusion:

This decision reflects the Court's approach to carefully balancing the interests of both the parents and their son. The ruling highlights the importance of using proportionate measures and ensuring decisions are based on sufficient evidence before taking drastic actions like eviction.

Coastal Shipping Bill, 2024

Context:

Lok Sabha recently passed the Coastal Shipping Bill, 2024. This landmark legislation is poised to revolutionize coastal trade, providing a dedicated legal framework for the efficient, cost-effective, and sustainable movement of goods via India's vast coastline.

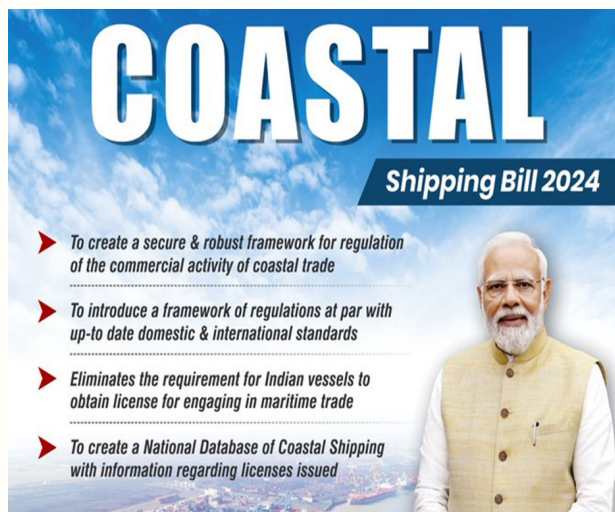
Key provisions of Coastal Shipping Bill,

2024:

- The Bill applies to all types of vessels operating within India's territorial waters (up to 12 nautical miles) and adjacent maritime zones (up to 200 nautical miles). This includes ships, boats, sailing vessels, and mobile offshore drilling units.

Licensing Requirements:

- **Indian-owned Vessels:** Vessels that are wholly owned by Indian entities do not require a license to operate in coastal shipping.
- **Foreign-owned or Chartered Vessels:** Vessels hired by Indian entities, NRIs, or OCIs for operation between Indian and international ports must acquire a license from the Director General of Shipping.



Regulations and Penalties:

- The Bill establishes stringent rules regarding compliance and introduces severe penalties for violations:
 - » **License Revocation:** The Bill outlines clear grounds for revoking the license of non-compliant vessels.
 - » **Fines:** Non-compliance could lead to substantial fines, up to Rs 15 lakh or four times the gains derived from the violation.
 - » **Civil Penalties:** Civil penalties for offenses such as unauthorized coasting trade can be as high as Rs 5 lakh or two times

the gains.

Strategic Planning:

- The Central Government is mandated to prepare a National Coastal and Inland Shipping Strategic Plan within two years. This plan will focus on:
 - » Improving route planning to make coastal shipping more efficient.
 - » Forecasting traffic to help stakeholders anticipate demand.
 - » Integrating coastal shipping with inland waterways, promoting a more cohesive and streamlined logistics ecosystem.

Exemptions and Compounding:

- The Central Government can grant exemptions for certain types of vessels or specific provisions under the Bill.
- **Compounding Offenses:** Only specific offenses, like engaging in coastal trade without a license or breaching detention orders, are eligible for compounding, where penalties can be settled without a formal trial.

Objectives of the Coastal Shipping Bill, 2024

- The key objectives of the Bill are:
 - » Modernizing coastal shipping regulations to provide a framework for the next 25 years.
 - » Reducing logistics costs by promoting coastal shipping as a cost-efficient and sustainable alternative to road and rail transport.
 - » Unlocking India's coastal shipping potential and boosting economic growth by creating jobs in shipbuilding, port services, and seafaring.

Conclusion:

The Coastal Shipping Bill, 2024 is a vital step toward revitalizing India's maritime sector. By modernizing regulations, introducing stringent compliance measures, and laying out strategic plans for growth, the Bill not only aims to streamline coastal trade but also contributes to the sustainable development of India's logistics and transportation networks.

Railways (Amendment) Bill, 2024

Context:

The Parliament of India has recently passed the Railways (Amendment) Bill, 2024, which seeks to amend the Railways Act, 1989 to enhance the powers and autonomy of the Railway Board. By streamlining railway operations, the Bill aims to improve governance, ensure greater accountability, and enhance efficiency in the functioning of Indian Railways.

Key Features of the Railways (Amendment) Bill, 2024:

- The Bill introduces significant changes in the governance structure of Indian Railways, particularly regarding the Railway Board.
- **Repeal of the Indian Railway Board Act, 1905:**
 - » The Bill repeals the Indian Railway Board Act, 1905 and incorporates its provisions into the Railways Act, 1989 to simplify the legal framework.
 - » This consolidation reduces bureaucratic complexity, making governance more streamlined and effective.
- **Enhanced Role of the Central Government in the Railway Board:**
 - » The central government is empowered to invest powers and functions related to Indian Railways into the Railway Board via notification.
 - » This provision grants flexibility in administration, enabling efficient decision-making.
- **Structure and Appointment of the Railway Board:**
 - » The Bill authorizes the central government to define the number of Board members, their qualifications, experience, and terms of service.
 - » It also specifies the manner of appointment for the Chairman and other members to ensure a competent and transparent administrative structure.

About Indian Railways:

- Indian Railways operates over 68,000

kilometers of track, making it the 4th largest railway network globally, after the United States, Russia, and China.

- Indian Railways is a crucial part of India's daily life, serving approximately 23 million passengers daily.
- Indian Railways has made substantial progress in electrification, with 97% of broad-gauge lines electrified.
- The government of India has set an ambitious target to increase the freight share in the railway sector from 27% (2022) to 45% by 2030.

Suggestions for Further Reforms:

- **Independent Regulator:** Experts recommend the creation of an independent regulator to oversee crucial aspects of the railway sector, such as tariffs, safety, and competition. This would help ensure that the interests of consumers are protected, and the sector remains competitive and efficient.
- **Autonomy to Zones:** The decentralization of powers to railway zones is also a key recommendation. By granting more autonomy to individual zones, decision-making can be made more efficient, and each zone can be held accountable for its own performance.
- **Corporatization:** There is also support for the corporatization of Indian Railways. This would allow the organization to function more like a corporation, improving its financial management, accountability, and long-term sustainability.

Conclusion:

The Railways (Amendment) Bill, 2024 marks a major step toward modernizing Indian Railways, streamlining governance, and paving the way for future structural and operational reforms.

Supreme Court on Child Trafficking Case

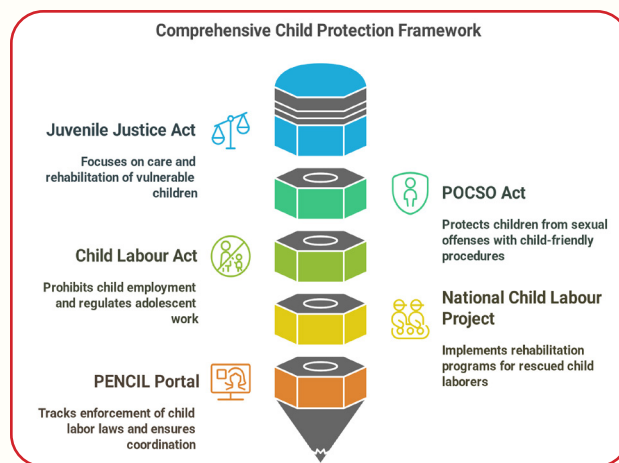
Context:

The Supreme Court of India has issued a

strong advisory to parents across the country, emphasizing the need for increased vigilance regarding their children due to the rising concerns over child trafficking networks. In the case of *Pinki v. State of Uttar Pradesh and Anr.*, the Court overturned the bail orders previously granted by the Allahabad High Court to 13 individuals accused of participating in an inter-state child trafficking racket.

Case Background:

- The Supreme Court was hearing criminal appeals challenging the Allahabad High Court's orders granting bail to several individuals accused under Sections 363 (kidnapping), 311 (repeated offender), and 370(5) (trafficking of minors) of the Indian Penal Code, 1860.
- The case involves a suspected large-scale child trafficking network allegedly engaged in the kidnapping, purchase, and sale of minors, particularly from economically disadvantaged backgrounds.



Judicial Directions and Outcome:

- The Supreme Court set aside the High Court's bail orders and directed all accused to surrender before the Committal Court for immediate judicial custody.
- The Court issued the following directions:
 - » Trial to be completed within six months.
 - » Appointment of Special Public Prosecutors.
 - » Provision of witness protection for victim families.

- » Police to trace and apprehend absconding accused within two months.
- Further, to address child trafficking linked to healthcare institutions, the Court ruled that hospitals found negligent in safeguarding newborns will face immediate suspension of license and legal action.

Other Key Directions by the Supreme Court:

- **Presumption of Trafficking or Abduction:** All missing children's cases must be treated as potential abduction or trafficking cases until proven otherwise.
- **Mandatory Reporting:** Police and Anti-Human Trafficking Units (AHTUs) must report every human trafficking case promptly.
- **Establish State-Level Anti-Human Trafficking Bureaus:** Each state capital must have a Bureau dedicated to coordinating anti-trafficking efforts.
- **Strengthen Child Welfare Committees (CWCs):** Ensure the presence of well-functioning CWCs in every district with trained personnel.
- **Set Up Child-Friendly Courts:** States are encouraged to replicate the successful models of Telangana and West Bengal to create safe environments for child victims.
- **Enhance Victim Support Systems:** Implement trauma-informed care, legal aid, and rehabilitation services for rescued children.
- **Encourage Community Policing:** Promote community involvement in surveillance, early detection, and reporting of child trafficking cases.
- **NGO Collaboration:** Foster coordination with NGOs for rescue, rehabilitation, and awareness campaigns at the grassroots level.

Legal Frameworks and Government Schemes in Force:

- **Juvenile Justice (Care and Protection of Children) Act, 2015:** Focuses on the care, protection, and rehabilitation of vulnerable or trafficked children.
- **POCSO Act, 2012:** Provides a comprehensive legal framework for protecting children from

sexual offenses, with special child-friendly procedures.

- **Child and Adolescent Labour (Prohibition and Regulation) Act, 1986:** Prohibits employment of children under 14 and restricts hazardous work for adolescents aged 14–18.
- **National Child Labour Project (NCLP):** Implements district-based rehabilitation programs for rescued child labourers.
- **PENCIL Portal:** A centralized platform to track enforcement of child labour laws and ensure inter-departmental coordination.

Andhra SC sub-categorisation ordinance gets Cabinet nod

Context:

The Andhra Pradesh Cabinet has approved the draft ordinance proposal made by the Social Welfare Department to implement sub-categorisation among Scheduled Castes in the state. This means that the state government wants to give 'reservation within reservation' to communities based on their backwardness.

About the ordinance:

- In the backdrop of the Supreme Court's verdict allowing states to sub-classify Scheduled Castes, the Andhra Pradesh government on November 15, 2024 formed a commission to study SC sub-categorisation in the state.
- After gathering public feedback across all districts of Andhra Pradesh the commission, led by Rajeev Ranjan Mishra, submitted a comprehensive report on March 10, 2025.
- The report was adopted unanimously in the Legislative Council and Legislative Assembly and the ordinance has been drafted.

The purpose of SC sub-categorisation:

- It is important to provide reservations based on the numerical strength of the various sub-castes, rather than give a consolidated quota for all of them based on their overall population. Reservations in education, government employment, local elected bodies, etc. should be provided based on

the backwardness, social, and financial condition of each sub-caste.

Key Features of the Ordinance:

SC Sub-Categorization into 3 Groups:

- **Group 1 (Most Backward):**
 - » 2 sub-castes
 - » 1% reservation
- **Group 2 (Backward - Madiga sub-groups):**
 - » 18 sub-castes
 - » 6.5% reservation
- **Group 3 (Less Backward - Mala sub-groups):**
 - » 29 sub-castes
 - » 7.5% reservation

Purpose:

- To distribute reservation benefits based on numerical strength, and social and economic conditions of individual SC sub-castes.

Legal Backing:

- Backed by a Supreme Court verdict allowing state-level classification within SCs.

Impact on Reservation:

- **Equitable Distribution:** The sub-categorization aims to ensure that reservation benefits are distributed fairly among SC sub-castes, addressing concerns

of underrepresentation.

- **Increased Representation:** The ordinance will provide better representation for marginalized communities within the SC category in education, government jobs, and politics-
- **Implementation:** The sub-categorization will be implemented after the 2026 census, allowing for district-wise classification based on updated data.

Conclusion:

The Andhra Pradesh SC Sub-Categorisation Ordinance represents a significant step toward addressing long-standing disparities within the Scheduled Castes by ensuring more equitable distribution of benefits among historically marginalized sub-groups. While the move has sparked legal and political debate, it underscores the state government's intent to pursue social justice and inclusive development. The effectiveness of this ordinance will depend on its constitutional sustainability, proper implementation, and continued efforts to balance equity with unity among SC communities.



International Relations

From Panchsheel to Power Politics: 75 Years of India-China Engagement

As India and China mark 75 years of diplomatic relations in 2025, the milestone is not merely ceremonial. It arrives amid shifting geopolitical currents in Asia and globally. What began in 1950 with mutual recognition and the promise of Asian solidarity has now evolved into a multi-layered relationship defined by unresolved territorial disputes, deep economic interdependence, strategic competition, and selective cooperation. This dynamic, often described as “competitive coexistence”, is the defining paradigm of 21st-century India-China engagement.

Historical Context and Evolution:

- ❖ India was among the first non-communist nations to recognize the People’s Republic of China in 1950, and both countries initially espoused principles of Pan-Asianism and non-alignment. The Panchsheel Agreement of 1954 sought to establish peaceful coexistence. However, the optimism was short-lived. The Sino-Indian War of 1962, triggered by disputes over the Aksai Chin and Arunachal Pradesh (South Tibet in Chinese terminology), ruptured trust and remains a foundational trauma in bilateral ties.
- ❖ Tensions have persisted over the Line of Actual Control (LAC)—the de facto border—especially in regions like Eastern Ladakh and Arunachal Pradesh. The deadly Galwan Valley clash in 2020, which claimed the lives of 20 Indian and at least

four Chinese soldiers, marked a watershed moment, triggering a major doctrinal shift in India’s China policy. Engagement is now conditioned by the realities of military preparedness, sovereign assertiveness, and long-term strategic competition.

The Strategic Centrality of China in Indian Foreign Policy:

- ❖ Today, China is arguably the most influential external variable shaping Indian strategic planning. Every major foreign policy and defence decision—whether infrastructure development in the Himalayas, naval presence in the Indian Ocean, or participation in regional multilateral platforms—is influenced by China’s actions and posture.
- ❖ **Military Dimension:** Over 60,000 Indian troops are now permanently deployed along the Eastern Ladakh sector of the LAC. Both sides have undertaken massive infrastructure upgrades—China via the Western Theater Command and India through strategic roads, bridges, and advanced logistics along the border.
- ❖ **Border Dispute Status:** Despite numerous rounds of corps commander-level talks and diplomatic engagements, the status quo remains precarious. China continues to resist disengagement at key friction points, while India insists on a return to pre-April 2020 positions for normalcy to resume.

Economic Interdependence:

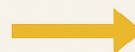
- ❖ Despite strategic tensions, bilateral trade has remained resilient, reflecting the structural nature of economic interdependence:
 - » **Trade Volume:** In FY 2024–25, bilateral trade stood at over \$115 billion, with a trade deficit of nearly \$100 billion in China's favour.
 - » **Sectoral Dependencies:** India remains heavily dependent on China for:
 - » **Pharmaceuticals:** 60–70% of active pharmaceutical ingredients (APIs) are sourced from China.
 - » **Electronics:** Nearly 80% of India's smartphone components and consumer electronics imports originate from China.
 - » **Solar Panels:** China supplies around 80–90% of India's solar module requirements.
- ❖ While India has taken steps under the Production Linked Incentive (PLI) Scheme to boost domestic manufacturing in key sectors, complete economic decoupling is unfeasible in the near term. Instead, the government is promoting supply-chain diversification and risk mitigation, particularly in strategic sectors.

South Asia as the New Battleground:

- ❖ China's growing footprint in South Asia poses a direct challenge to India's traditional sphere of influence:
- ❖ **Strategic Infrastructure Projects:**
 - » **Sri Lanka:** Lease of Hambantota Port for 99 years under China's Belt and Road Initiative (BRI).
 - » **Nepal:** Development of Pokhara International Airport and other BRI-linked infrastructure.
 - » **Maldives:** Major investments in housing and connectivity.
- ❖ **India's Countermeasures:**
 - » Increased development assistance and capacity-building.
 - » Emergency response leadership (e.g., earthquake and pandemic relief).
 - » Enhanced defence cooperation and concessional credit lines.
- ❖ However, China's chequebook diplomacy

and information influence campaigns have made it essential for India to move beyond episodic, reactive engagement to a more institutionalised, people-centric regional strategy.

REBALANCING INDIA-CHINA TRADE AMID THE TRUMP-BEIJING TARIFFS



CURRENT SCENARIO



Trade deficit with China over \$66 billion
Dependence on Chinese imports in key sectors

OPPORTUNITY FOR INDIA



Expand exports in pharmaceuticals, electronics, etc.
Leverage production-linked incentives
Pursue trade agreements, bilateral rest

BENEFITS FOR CHINA



Access to Indian market, economic diversification, cooperation in manufacturing and technology

The Bangladesh Factor and Geopolitical Spillover:

- ❖ Recent developments with Bangladesh have highlighted the sensitive nature of India's neighbourhood strategy:
 - » **Controversial Remarks:** Interim leader Mohammad Yunus referred to India's Northeast as "landlocked" while in Beijing—geographically correct but diplomatically provocative.
 - » **Strategic Risk:** Bangladesh has allowed Chinese investment near the Lalmonirhat airbase, close to the Siliguri Corridor, a narrow, strategically vital strip that connects India's mainland

with its northeastern states.

- » **Economic Retaliation:** India suspended transshipment support critical for Bangladesh's Ready-Made Garment (RMG) exports, which contributed US\$0.5 billion in 2024, affecting 4,000 factories and over 4 million workers.
- ❖ This also impacts the BBIN (Bangladesh-Bhutan-India-Nepal) Corridor and BIMSTEC Master Plan on Transport Connectivity worth \$124 billion, undermining regional trade momentum (which is already low at 5% intra-regional trade, compared to ASEAN's 25%).

The Water Security Challenge:

- ❖ China's plans to build a dam on the Yarlung Tsangpo (Brahmaputra) near the Arunachal Pradesh border have raised alarms in India:
 - » **No Water-Sharing Treaty:** Unlike with Pakistan (under the Indus Waters Treaty), India and China lack any binding water-sharing framework.
 - » **Risk of Weaponisation:** Concerns of unilateral diversion, data opacity, and

ecological damage persist.

- » **Recent Progress:** Expert-Level Mechanisms on hydrological data-sharing were resumed in 2025, but trust remains minimal.

Conclusion:

The 75th anniversary of India-China diplomatic ties is a moment not for sentiment, but strategic clarity. In an era of geopolitical uncertainty, the bilateral relationship remains a defining element of Asia's stability—or its volatility. China will continue to challenge India structurally, but it also reflects the need for India to build internal capacity, secure strategic autonomy, and define a long-term vision for regional leadership. As India steps into this role, it must act not just as a regional balancer but as a custodian of Asian order, investing in institutions, infrastructure, and ideas that can shape the continent's future. The road ahead lies in managing rivalry without magnifying risk, engaging without conceding, and building guardrails that turn friction into a framework for coexistence.

India-Thailand Relations: Elevation to a Strategic Partnership and BIMSTEC Engagement

The diplomatic relations between India and Thailand have entered a new phase of cooperation and strategic engagement, with the elevation of their bilateral ties to a Strategic Partnership. Indian Prime Minister Narendra Modi, on an official visit to Thailand from April 3–4, 2025, to attend the 6th BIMSTEC Summit, met Prime Minister of Thailand Paetongtarn Shinawatra. India and Thailand share a deep historical connection rooted in cultural, religious, linguistic, and economic exchanges spanning centuries. The two nations have maintained strong diplomatic ties for over 78 years, and their partnership has evolved into a comprehensive engagement covering multiple sectors, including trade, defense, security, technology, connectivity, education, and people-to-people exchanges. The establishment of the

India-Thailand Consular Dialogue and the signing of several Memoranda of Understanding (MoUs) during this visit reflect a commitment to deepening cooperation at all levels.

Strategic Partnership: A New Era of Cooperation

Recognizing the potential for enhanced collaboration in the evolving global geopolitical landscape, both countries agreed to elevate their ties to a Strategic Partnership. This move underscores a shared vision for regional peace, stability, and prosperity and provides a framework for both nations to jointly address emerging global challenges.

- ❖ **Political and Diplomatic Cooperation:** Political cooperation forms the foundation of the Strategic Partnership, aiming to enhance diplomatic engagement and align foreign

policy objectives. The key agreements under this domain include:

- » **Regular High-Level Exchanges:** Both nations will conduct frequent bilateral dialogues at the leadership and ministerial levels, ensuring continuous engagement in matters of regional and global significance. These discussions will also take place on the sidelines of major multilateral summits.
- » **Foreign Office Consultations:** Strengthening institutional frameworks through the Joint Committee for Bilateral Cooperation and the Foreign Office Consultations at senior officials' levels.
- » **Parliamentary Exchanges:** Establishing mechanisms for legislative dialogue to enhance policy alignment and cooperation on legal and governance matters.



❖ **Defense and Security Cooperation:** India and Thailand recognize the increasing complexities of global and regional security challenges, including traditional and non-traditional threats such as maritime security, cybersecurity, transnational crimes, and counterterrorism. The Strategic Partnership seeks to enhance defense ties through:

- » **Strengthened Defense Mechanisms:** Expansion of military collaboration in defense technology, research, training, joint exercises, and industry partnerships.

- » **Security Dialogues and Intelligence Sharing:** Regular strategic dialogues at the Deputy National Security Adviser level, focusing on countering cyber threats, organized crime, human trafficking, drug smuggling, and money laundering.
- » **Maritime Security and Law Enforcement:** Greater engagement between naval forces and coast guards to address illegal fishing, piracy, and maritime border security concerns.

❖ **Economic, Trade, and Investment Cooperation:** Economic cooperation remains a key pillar of the India-Thailand partnership, with bilateral trade reaching \$15 billion in 2023-24. Both sides aim to expand and diversify economic engagement in the following ways:

- » **Review of Trade Agreements:** Expedited review of the ASEAN-India Trade in Goods Agreement (AITIGA) to facilitate trade liberalization and improve market access.
- » **Promotion of Future-Oriented Industries:** Increased collaboration in renewable energy, electric vehicles, biotechnology, digital technology, artificial intelligence, and space research.
- » **Trade Facilitation and Investment Linkages:** Strengthening economic integration through India's Make in India initiative and Thailand's Ignite Thailand vision, supported by enhanced investment policies, industrial corridors, and Special Economic Zones (SEZs).
- » **Financial Cooperation:** Exploring the implementation of a local currency-based trade settlement mechanism to reduce dependency on international currencies and improve trade efficiency.

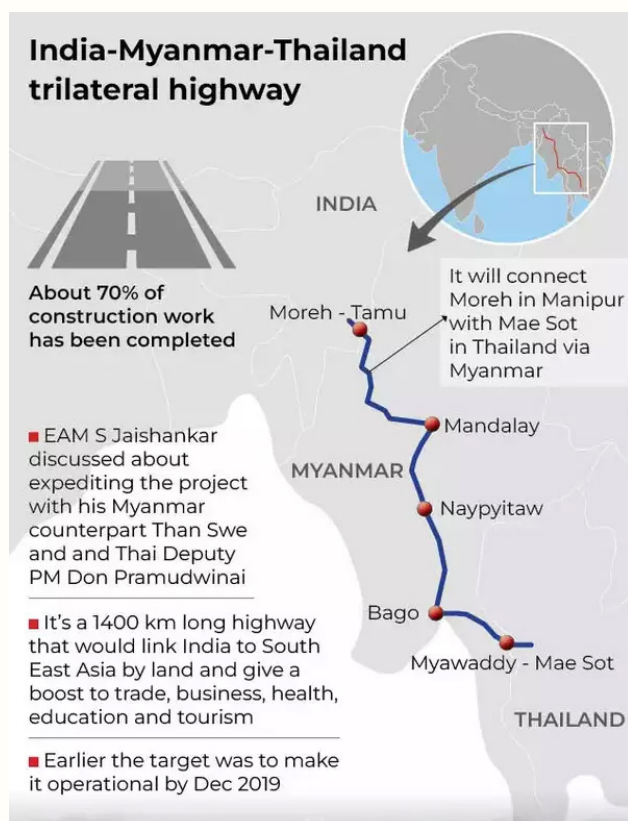
Connectivity and Infrastructure Development:

❖ Improving connectivity is central to fostering economic, trade, and cultural exchanges between the two nations. Key initiatives include:

- » **India-Myanmar-Thailand Trilateral**

Highway: Fast-tracking the construction and expansion of this crucial land corridor to enhance trade and mobility across South and Southeast Asia.

- » **Maritime Connectivity:** Establishing coastal shipping agreements and port-to-port linkages to facilitate trade and reduce logistical bottlenecks.
- » **Aviation Cooperation:** Engaging civil aviation authorities to increase direct flights and improve air connectivity for business and tourism.



Cultural, Educational, and People-to-People Exchanges:

- ❖ Recognizing the shared cultural and historical heritage, both countries agreed to strengthen educational, cultural, and tourism-related engagements:
 - » **Academic and Research Cooperation:** Expanding student exchange programs, scholarships, and joint research initiatives in science, technology, engineering, mathematics (STEM),

humanities, and vocational training.

- » **Promotion of Traditional Medicine:** Encouraging collaboration in Ayurveda and Thai traditional medicine, along with pharmaceutical research and healthcare exchanges.
- » **Tourism and Heritage Promotion:** Leveraging historical and religious ties, particularly related to Buddhism, to promote cultural tourism and increase visitor exchanges.

BIMSTEC Summit and Regional Cooperation:

- ❖ During the 6th BIMSTEC Summit, both nations reaffirmed their commitment to strengthening multilateral cooperation in the Indo-Pacific region. Key areas of focus include:
 - » **Regional Connectivity Initiatives:** Strengthening the BIMSTEC Master Plan for Transport Connectivity, which aims to improve infrastructure and trade routes across the Bay of Bengal region.
 - » **BIMSTEC Economic Integration:** Promoting sustainable trade, investment, and economic collaboration under BIMSTEC agreements.
 - » **ASEAN-India Cooperation:** Implementing the ASEAN-India Joint Statement on Cooperation on the ASEAN Outlook on the Indo-Pacific (AOIP), with Thailand co-leading the Maritime Ecology Pillar of the Indo-Pacific Oceans Initiative (IPOI) alongside Australia.
 - » **Multilateral Engagement:** Strengthening cooperation under regional and international frameworks such as ASEAN, Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS), Mekong-Ganga Cooperation (MGC), Indian Ocean Rim Association (IORA), and the Asia Cooperation Dialogue (ACD).

Conclusion:

The elevation of India-Thailand relations to a Strategic Partnership signifies a significant

transformation in their diplomatic engagement. This partnership is not only beneficial for bilateral growth but also contributes to regional stability and multilateral cooperation in the Indo-Pacific. The commitments made during this visit—ranging from defense and economic partnerships to connectivity and cultural cooperation—highlight the strategic depth and future-oriented nature of India-Thailand relations. By reinforcing trade, security, infrastructure, and multilateral engagements,

both nations are poised to play a leading role in regional integration. The BIMSTEC Summit further strengthens India's influence in the Bay of Bengal region, cementing its position as a key driver of regional development and strategic cooperation. This new chapter in India-Thailand ties is expected to yield long-term economic, security, and diplomatic benefits while strengthening their role in the evolving geopolitical and economic landscape of Asia.

Nepal's Political and Economic Landscape: Challenges and Prospects

Nepal is currently experiencing a significant wave of protests, highlighting deep-seated public discontent with corruption and governance under its republican system. Recent violent street demonstrations reflect growing frustration, with an increasing number of people rallying behind former King Gyanendra Shah. This movement has gained traction amidst allegations of corruption against political leaders and the perceived failure of the republic to address socio-economic crises. The country's political transformation since the abolition of the monarchy in 2008 has been marked by instability, fragile coalitions, and governance challenges. Alongside political uncertainty, Nepal's economy faces structural difficulties, relying heavily on tourism, remittances, and agricultural exports. Its foreign relations remain strategically complex, balancing engagements with India, China, and the United States.

Nepal's Political Turbulence:

- ❖ Historically, Nepal functioned as an absolute monarchy, occasionally sharing power with a constitutional parliament. However, the country's political landscape changed dramatically in the early 21st century. The royal massacre of 2001, in which the crown prince assassinated King Birendra and other royal family members, triggered severe political instability. King Gyanendra Shah's attempt to consolidate power in

2005 further deepened the crisis, leading to mass protests that ultimately forced his abdication.

- ❖ In 2008, Nepal abolished its monarchy and became a federal republic. However, rather than fostering stability, partisan politics and coalition struggles have dominated governance. Since the end of the civil war in 2006, Nepal has seen frequent government changes, with thirteen different administrations in power over the past sixteen years. The intense rivalry between the Communist factions and the Nepali Congress has resulted in fragile coalitions, hampering policy implementation and economic reforms.

The Current Political Scenario:

- ❖ The aftermath of the 2022 parliamentary elections saw Communist Party of Nepal-Maoist Centre (CPN-MC) leader, Pushpa Kamal Dahal (Prachanda), initially assuming the role of Prime Minister in alliance with the Communist Party of Nepal-United Marxist and Leninist (CPN-UML). However, this coalition collapsed, and in July 2024, K.P. Sharma Oli, the leader of CPN-UML, became Prime Minister for the fourth time, this time in alliance with the Nepali Congress. Under the coalition agreement, Oli and Nepali Congress leader Sher Bahadur Deuba are set to alternate as Prime Minister until the

next general elections in 2027.

- ❖ Despite this arrangement, Nepal's political future remains uncertain. The frequent formation and dissolution of coalitions have left the government vulnerable to instability, hindering long-term policy execution. Additionally, unresolved issues of transitional justice, human rights violations, and political accountability continue to challenge Nepal's democratic progress.

Economic Challenges and Progress:

Nepal's economy has faced numerous obstacles, exacerbated by political instability, natural disasters, and external dependencies. While the COVID-19 pandemic severely affected key sectors, recent years have shown signs of recovery.

❖ **Economic Growth and Key Sectors:**

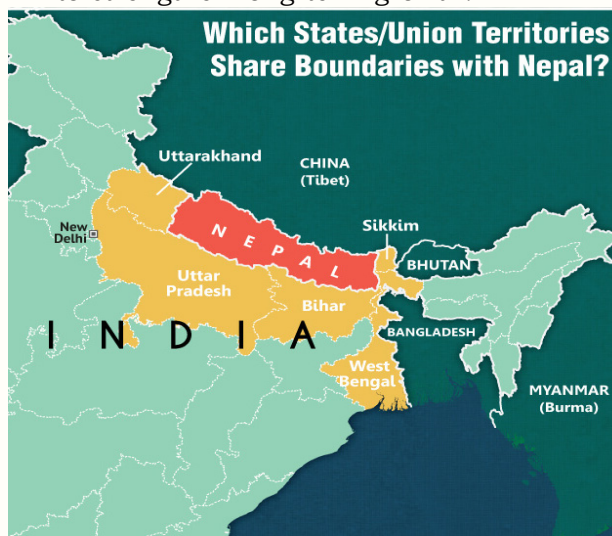
- » **GDP Growth:** Nepal recorded a 4% economic growth rate in 2024, driven primarily by a 32% increase in tourism revenue and a revival in agricultural exports.
- » **Hydropower Expansion:** The country added 450 megawatts (MW) of hydropower capacity, strengthening its potential for electricity exports.
- » **Remittances:** The inflow of remittances reached a nine-year high in 2023, fueling private consumption and supporting household incomes.
- ❖ Despite these improvements, Nepal faces persistent economic difficulties. The World Bank has warned of declining private and public investment, indicated by reduced imports of capital goods and lower government capital expenditures. Similarly, the International Monetary Fund (IMF) has expressed concerns regarding the stability of Nepal's banking system, particularly in the public sector.

Fiscal and Monetary Challenges:

- » **Fiscal Deficit:** Nepal's fiscal deficit has dropped to a seven-year low, but poor revenue collection remains a concern.
- » **Inflation:** The inflation rate fell to 5.4%

in 2024, down from 7.7% in 2023, primarily due to reduced prices of non-food and service sectors.

- » **External Debt:** Nepal has relied on IMF assistance nine times since 1976 to manage balance of payments crises. The most recent \$372 million Extended Credit Facility, initiated in 2022, is set to expire this year.
- ❖ A key concern for Nepal's economy is the inefficient execution of capital projects, which limits infrastructure development and economic stimulation. The IMF has urged Nepal to accelerate capital investment to strengthen long-term growth.



India-Nepal Relations:

- ❖ India had a dominant role in Nepal's political, economic, and cultural landscape. The two nations share deep historical and religious ties, with Nepal being the only country that has a visa-free travel arrangement with India.
- » **Trade Relations:** India accounts for 64% of Nepal's total external trade, with bilateral trade reaching \$8.85 billion in 2023. Nepal's exports to India totaled \$850 million, while imports from India—mainly petroleum products and manufactured goods—make up the rest.
- » **Hydropower Cooperation:** India has assisted Nepal in harnessing its hydroelectric potential, with agreements

in place for Nepal to export 10,000 MW of electricity to India over the next decade.

- » **Development Assistance:** India is one of Nepal's largest providers of humanitarian aid and infrastructure investments, particularly in connectivity projects like airports, pipelines, and power grids.
- ❖ However, relations between the two countries have often fluctuated. Nepal's communist factions favor stronger ties with China, whereas the Nepali Congress traditionally advocates closer relations with India and the United States. Some Nepali politicians have also expressed concerns about India's economic dominance and cultural influence over Nepal.

Nepal's Engagement with China:

- » **Trade with China:** Nepal's bilateral trade with China stands at approximately \$2 billion, with \$1.78 billion in imports from China.
- » **Belt and Road Initiative (BRI):** Nepal joined China's BRI in 2017, proposing 35 infrastructure projects worth \$10 billion. Of these, nine have been approved and seven have started, including road upgrades, hydroelectric plants, and an

electricity transmission line.

- » **Infrastructure Investments:** In December 2024, Prime Minister Oli signed agreements for ten new BRI projects, further deepening Nepal's economic cooperation with China.
- ❖ Despite these developments, Nepal has expressed concerns about China's loan-heavy investment model, particularly after observing Sri Lanka's debt crisis in 2022. This has led to hesitation in pursuing large-scale borrowing from China.

Conclusion:

Nepal remains at a critical juncture, balancing political instability with economic development. While recent economic indicators suggest a slow but steady recovery, governance challenges persist, fueled by corruption allegations and public discontent. The country's strategic position between India and China makes its foreign policy complex, requiring careful diplomacy to maintain beneficial trade relations. As Nepal approaches the 2027 elections, the durability of the current coalition and its ability to implement effective economic policies will be crucial in shaping the nation's future.

Short Issues

India's First Digital Threat Report 2024

Context:

The Ministry of Electronics and Information Technology (MeitY), in collaboration with CERT-In, CSIRT-Fin, and global cybersecurity firm SISA, has launched Digital Threat Report 2024 to enhance cybersecurity in India's Banking, Financial Services, and Insurance (BFSI) sector.

- This report provides a comprehensive analysis of emerging cyber threats, sector-wide security gaps, and defense strategies, equipping financial institutions to build

long-term cyber resilience.

The Need for a Unified Cybersecurity Framework:

- As the BFSI sector undergoes rapid digital transformation, its interconnected nature amplifies the risk of systemic cyberattacks. A single security breach can have cascading effects across multiple institutions, necessitating a coordinated cybersecurity approach.
- The report underscores the need for a national and sectoral-level strategy integrating regulatory compliance, proactive

threat intelligence, and technological advancements.

Cybersecurity as a Pillar of Financial Stability:

- With digital payments projected to generate \$3.1 trillion by 2028—accounting for 35% of total banking revenues—the sector faces heightened cyber risks. The report highlights the urgency of securing digital transactions, as Cybersecurity is no longer an optional safeguard but a fundamental pillar of financial stability. A proactive defense strategy is crucial to protecting economic integrity and maintaining public trust.

Key Insights from Digital Threat Report 2024:

- The report presents a holistic view of the evolving cybersecurity landscape in the BFSI sector. It integrates intelligence from forensic investigations, financial sector incident response teams, and national cybersecurity oversight to identify:
 - » Sector-wide security gaps and vulnerabilities in financial institutions.
 - » Adversarial tactics and evolving cyber threats impacting banking operations.
 - » Critical attack vectors, including AI-driven threats and sophisticated fraud schemes.
 - » Actionable cybersecurity recommendations focusing on people, processes, and technology.

Collaborative Cyber Defense Strategies

- Recognizing the dynamic nature of cyber threats, the report emphasizes collaboration between regulators, financial institutions, and cybersecurity agencies. It advocates for intelligence-sharing and real-time threat mitigation to preemptively counter cyberattacks. This initiative reinforces India's commitment to setting global benchmarks in financial cybersecurity, ensuring the resilience of digital transactions.

About SISA:

- SISA is a global forensics-driven

cybersecurity solutions company for the digital payments industry, trusted by leading organizations for securing their businesses with robust preventive, detective, and corrective cybersecurity solutions.

- SISA's problem-first, human-centric approach helps businesses strengthen their cybersecurity posture. SISA applies the power of forensic intelligence and advanced technology to offer true security to over 2,000 customers across over 40 countries.

Conclusion:

Digital Threat Report 2024 serves as a strategic blueprint for BFSI institutions, providing them with the necessary insights to anticipate vulnerabilities and strengthen cyber defenses. As financial services face increasing threats from AI-driven attacks and regulatory complexities, this report offers a proactive roadmap for safeguarding India's financial backbone in the digital age.

Dubai's Crown Prince visits India

Context:

India and the United Arab Emirates (UAE) have reaffirmed their bilateral relationship, taking their Comprehensive Strategic Partnership to new level during the recent India-UAE Joint Commission Meeting (JCM). The high-level meeting was co-chaired by India's External Affairs Minister Dr. S. Jaishankar and UAE Foreign Minister Sheikh Abdullah bin Zayed Al Nahyan. It marked a major step forward in cooperation across a wide spectrum of sectors including trade, energy, defence, science, and education.

Outcomes of the meeting:

The two sides decided positively on the following six outcomes:

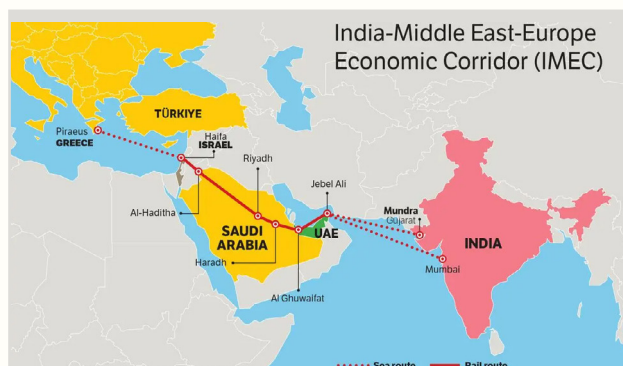
- Setting up of a campus of IIM, Ahmedabad in Dubai and commencement of first MBA programme in September 2025;
- Setting up of the first overseas campus of Indian Institute of Foreign Trade at the

India Pavilion in Expo City Dubai;

- Starting construction work of Bharat Mart and the launch of a 3-D rendering of the Bharat Mart complex;
- Grant of land for UAE-India Friendship Hospital in Dubai;
- Development of ship-repair clusters at Kochi and Vadinar and
- Opening of an India Office of Dubai Chamber of Commerce.

About India UAE Relations:

- **Strategic Partnership:** In 2017, both nations elevated ties to a Comprehensive Strategic Partnership, signaling deeper cooperation in security, economy, and defense.
 - » Both are collaborating in BRICS, G20, and I2U2.
 - » Joint efforts focus on global sustainability, regional peace, and development goals.
 - » The India-Middle East-Europe Economic Corridor (IMEEC) is a key connectivity initiative for regional growth.



- **Trade:**
 - » The Comprehensive Economic Partnership Agreement (CEPA) has boosted bilateral trade to USD 85 billion.
 - » There's optimism about hitting USD 100 billion in non-oil trade soon.
 - » New digital platforms like the Virtual Trade Corridor (VTC) and Maitri Interface are set to streamline and digitize trade.
 - » **India exports:** Petroleum products, food items, machinery, textiles, gems, and jewelry.

- » **UAE exports:** Crude oil, petrochemicals, precious metals.
- » **Strategic Oil Reserve:** India stores UAE oil in underground strategic reserves
- » **Green Energy:** Joint projects in hydrogen, solar, and waste-to-energy under the IRENA framework and ISA (International Solar Alliance).

- **Space Collaboration:**

- » ISRO and UAE Space Agency signed MoUs on satellite launches and data sharing.

- **AI & Fintech:**

- » India and UAE collaborate on fintech regulation, digital payments, and AI innovation.

- **Education:**

- » Indian curriculum schools (CBSE, ICSE) are widespread in UAE; student exchanges and MoUs between universities are growing.

- **Defence and security ties:**

- » The Desert Cyclone military exercise in 2024 marked a milestone.
- » Launch of a Defence Partnership Forum to deepen strategic and operational cooperation.
- » Both countries reaffirmed commitments to regional stability, especially in West Asia.

Conclusion:

The outcomes of the Joint Commission Meeting underscore the multi-dimensional growth of the India-UAE partnership. With tangible progress across trade, energy, defence, science, and education, the strategic ties between the two nations are poised for even deeper cooperation in the years ahead.

India-Sri Lanka Bilateral Talks

Context:

Indian Prime Minister Narendra Modi and Sri Lankan President Anura Kumara Dissanayake recently held bilateral discussions at the Presidential Secretariat in Colombo on Saturday. The high-level meeting resulted in the signing of

several key agreements, reinforcing cooperation in defence, energy, digital transformation, health, and economic development.

Landmark Defence Pact and Key Agreements

- A historic defence cooperation pact was signed, marking a major advancement in bilateral security relations. This first-ever framework agreement focuses on:
 - » Formalising joint military exercises for enhanced interoperability.
 - » Expanding training programmes for Sri Lankan defence personnel in India.
 - » Facilitating high-level exchanges between military officials.
- This agreement represents a significant strategic shift, nearly four decades after the deployment of India's Peace Keeping Force (IPKF) in Sri Lanka.



Other Key Agreements:

- **Energy and Infrastructure:** A tripartite MoU with the UAE was signed to develop Trincomalee as an energy hub, including a multi-product energy pipeline. The Sampur Solar Power Plant was inaugurated, alongside a grid interconnectivity agreement to enable Sri Lanka to export electricity.
- **Digital Transformation:** An MoU was signed to facilitate India's digital solutions in supporting Sri Lanka's digital transformation.
- **Debt Restructuring and Economic**

Assistance: India announced a 2.4 billion Sri Lankan rupee support package to aid economic development in the Eastern Province.

- **Renewable Energy:** India committed \$17 million to supply solar rooftop systems to 5,000 religious institutions, benefiting Hindu, Buddhist, Christian, and Muslim places of worship, while generating 25 MW of green energy.
- **Health and Medicine:**
 - » An MoU was signed between the Indian Ministry of Health and Family Welfare and Sri Lanka's Ministry of Health & Mass Media to enhance medical training, healthcare services, and technology exchange.
 - » The Indian Pharmacopoeia Commission and Sri Lanka's National Medicines Regulatory Authority entered into an agreement to improve pharmacopoeial standards and regulatory cooperation.

India's Development Assistance to Sri Lanka

- Prime Minister Modi announced a comprehensive capacity-building programme that will train 700 Sri Lankans annually in India. Additionally, India has pledged grant assistance for the restoration and development of culturally significant temples, including:
 - » Thirukoneswaram Temple in Trincomalee.
 - » Sita Eliya Temple in Nuwara Eliya.
 - » Sacred City Complex in Anuradhapura.
- India will also facilitate the Exposition of Lord Buddha relics in Sri Lanka on International Vesak Day 2025.

Infrastructure and Energy Projects:

- » 5000 MT Temperature-Controlled Warehouse in Dambulla – Strengthening agricultural storage and supply chain management.
- » 5000 Solar Rooftop Units for Religious Places – Covering all 25 districts, promoting renewable energy adoption.
- » 120 MW Sampur Solar Project – A significant step towards sustainable

energy, launched through a virtual ground-breaking ceremony.

- Other major India-assisted projects inaugurated include:
 - » Upgraded Railway Track of the Maho-Omanthai Line – Improving rail connectivity and efficiency.
 - » Construction of Signalling System for the Maho-Anuradhapura Railway Line – Modernizing railway infrastructure for better operational safety.

Conclusion:

Prime Minister Narendra Modi's visit to Sri Lanka reaffirmed the deep-rooted historical, cultural, and economic ties between the two nations. The agreements signed and projects launched demonstrate India's proactive role in Sri Lanka's economic growth, energy security, and technological transformation.

Syria's Transitional Government

Context:

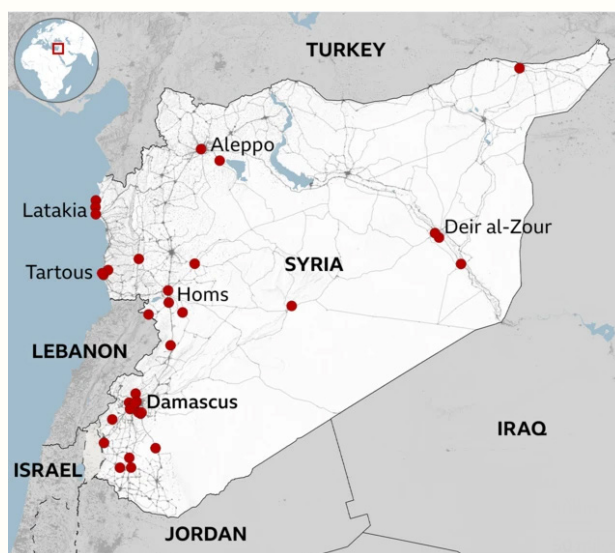
In a significant move towards the transition from decades of Assad family rule, Syrian President Ahmed al-Sharaa recently announced the formation of a transitional government. This new cabinet, which includes 23 ministers, is considered a key milestone in Syria's political transformation, aimed at fostering inclusivity and improving the country's relations with the West.

Composition of the Transitional Government:

- The newly formed cabinet reflects Syria's diverse ethnic and religious communities, addressing demands from Western and Arab countries for a more inclusive government. Although the government is led by Sunni Islamist authorities, it includes key appointments from minority groups to promote national unity.
- **Notable appointments include:**
 - » Yarub Badr, an Alawite, named

Minister of Transportation. The Alawite community, from which Bashar al-Assad hails, has faced tensions following recent violence along Syria's western coast.

- » Amgad Badr, a Druze, appointed Minister of Agriculture.
- » Hind Kabawat, a Christian woman and former opposition member who worked for interfaith tolerance, appointed Minister of Social Affairs and Labor.
- » Mohammed Yosr Bernieh as Finance Minister.



- Additionally, Murhaf Abu Qasra and Asaad al-Shibani retained their positions as Defense and Foreign Ministers, respectively.
 - » **New Ministries and Roles:** For the first time, Syria has established a Ministry of Sports and a Ministry of Emergencies. The head of the White Helmets, Raed al-Saleh, has been appointed Minister of Emergencies, reflecting a focus on disaster management.
 - » **Leadership and Transitional Goals:** Ahmed al-Sharaa, named interim president in January 2025, has committed to forming an inclusive government to restore Syria's institutions. The government will oversee the country until elections, which may take up to five years to organize. Notably, the government will

operate without a prime minister, with Sharaa leading the executive branch.

- » **Constitutional Framework:** Syria's constitutional declaration, issued recently, outlines the framework for the transitional period. It maintains the centrality of Islamic law while also guaranteeing women's rights and freedom of expression, striving to balance traditional values with modern reforms.

Conclusion:

The formation of Syria's new transitional government represents a significant step in rebuilding the country after the fall of the Assad regime. With its focus on inclusivity, the government aims to address national reconciliation, restore public institutions, and set the stage for elections. While challenges remain, the government's ability to implement reforms will shape Syria's future direction.

China and Bangladesh Relationship

Context:

Muhammad Yunus, Bangladesh's Chief Advisor, recently visited China. He spoke about Bangladesh's strategic location as a key access point to the ocean for South Asia. He highlighted the country's potential as a maritime gateway and its role in regional economic connections. His remarks come ahead of the BIMSTEC summit, where Bangladesh will assume the chair.

Key Points from Yunus' Visit to China:

- **Strategic Partnership:** Bangladesh's Chief Advisor invited China to invest in Bangladesh, leveraging its strategic location to tap into the regional economy and access the global market.
- **Economic Collaboration:** The two nations signed nine agreements covering economic and technical cooperation, infrastructure, media, culture, and health.
- **Free Trade Agreement:** China and

Bangladesh agreed to negotiate a Free Trade Agreement (FTA) to increase trade and economic cooperation.

Controversial Reference to India's Northeast:

- India's seven northeastern states, often called the "Seven Sisters," was also mentioned during the meeting describing them as landlocked and in need of better access to the ocean. It was suggested that Bangladesh could serve as a link for economic connections between China and India's northeast. This remark drew attention in India, as the region holds strategic importance due to its proximity to the China-India border.



Concerns for India:

- **Strategic Sensitivity of India's Northeast**
 - » The northeastern states of India—Assam, Nagaland, Manipur, Mizoram, Meghalaya, Tripura, and Arunachal Pradesh—are strategically crucial for national security and connectivity.
 - » These states are bordered by China, and any Chinese economic or infrastructural influence close to the border is perceived as a threat to India's security.
- **China's Expanding Influence in South Asia**
 - » India is wary of China's growing presence in South Asia, particularly through the Belt and Road Initiative (BRI).
 - » India fears that China's involvement in Bangladesh could translate into strategic military influence, heightening tensions between China and India over

territorial disputes.

- **The Siliguri Corridor: A Vulnerable Link**
 - » The Siliguri Corridor, also called the “Chicken’s Neck,” is a narrow landstrip connecting India’s northeastern states to the rest of the country.
 - » India is concerned that increased Chinese access to Bangladesh could jeopardize its control over this strategic link, potentially weakening the country’s defense posture in the region.
- **China’s Infrastructure Projects Near India’s Borders**
 - » China has been actively building infrastructure near India’s borders, including roads, dams, and villages in areas like Arunachal Pradesh, which India claims.
 - » These projects are seen as part of China’s strategy to assert its influence in the region, raising alarms in India.
 - » Any further Chinese involvement in Bangladesh, particularly near sensitive border areas, could lead to China strengthening its military or intelligence infrastructure close to India’s borders.

Conclusion:

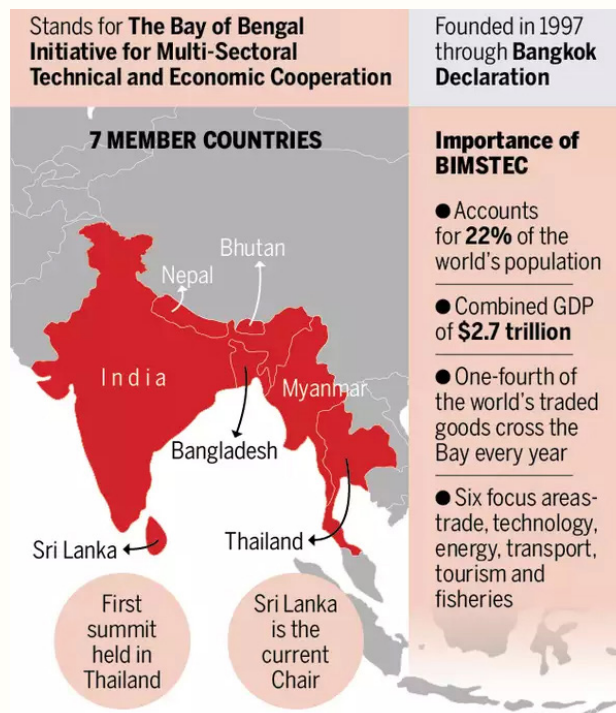
Yunus’ visit to China marks a significant moment in South Asia’s geopolitical landscape. While it presents Bangladesh with opportunities for economic growth through Chinese investment, it also adds complexity to its relationship with India, particularly concerning the strategic significance of the northeastern states. The evolving interactions among India, Bangladesh, and China will play a crucial role in shaping regional dynamics.

6th BIMSTEC Summit

Context:

Prime Minister Narendra Modi recently visited Thailand to attend the 6th BIMSTEC Summit, marking the first in-person meeting of BIMSTEC leaders since the 2018 Kathmandu Summit. The last summit, held virtually in Colombo (2022), formalized BIMSTEC’s institutional structure

with the adoption of its charter. The theme for the 6th Summit is “Prosperous, Resilient, and Open BIMSTEC (PRO BIMSTEC),” reflecting the region’s focus on economic integration, security, and connectivity.



Significance of BIMSTEC:

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional grouping that fosters economic and strategic collaboration among nations bordering the Bay of Bengal.
- Originally formed as BIST-EC (Bangladesh, India, Sri Lanka, and Thailand Economic Cooperation) in 1997, it expanded with Myanmar (1997), Nepal, and Bhutan (2004) to become BIMSTEC.
- BIMSTEC, home to 1.8 billion people (22% of the global population) with a combined GDP of \$3.6 trillion, serves as a bridge between South Asia and Southeast Asia. Unlike SAARC, which has been stagnated due to Indo-Pak tensions, BIMSTEC provides a more pragmatic platform for regional cooperation in trade, connectivity, and security.

India's Role and Strategic Interests:

- India prioritizes BIMSTEC under its Neighbourhood First and Act East policies. Following the 2016 SAARC deadlock, India shifted focus towards BIMSTEC, hosting a special outreach summit alongside the BRICS Summit (Goa, 2016).
- India follows the 4S approach in BIMSTEC:
 - » Samman (Respect)
 - » Samvad (Dialogue)
 - » Shanti (Peace)
 - » Samriddhi (Prosperity)

Key Proposals at the 6th BIMSTEC Summit (2024):

- **Economic and Digital Connectivity**
 - » Establishing a BIMSTEC Chamber of Commerce and an annual Business Summit.
 - » Linking India's UPI with BIMSTEC payment systems.
 - » Promoting trade in local currencies to reduce reliance on external economies.
- **Maritime and Transport Cooperation**
 - » Establishing a Sustainable Maritime Transport Centre for policy coordination.
 - » Strengthening regional electricity grid interconnection to enhance energy security.
- **Disaster Management and Climate Resilience**
 - » Setting up a BIMSTEC Centre of Excellence for Disaster Management in India.
 - » Hosting the 4th Joint Disaster Management Exercise in 2024.
- **Education, Health, and Skill Development**
 - » Launching the BODHI (BIMSTEC for Organised Development of Human Resource Infrastructure) initiative to train 300 youth annually from BIMSTEC nations.
 - » Expanding scholarships at Nalanda University and the Forest Research Institute.
 - » Establishing centers of excellence in agriculture, traditional medicine, and cancer care.

- **Space and Technology Cooperation**

- » Setting up a BIMSTEC ground station for satellite-based research and training.
- » Encouraging nano-satellite development and remote sensing collaboration.

- **Cultural and Sports Exchanges**

- » Hosting the BIMSTEC Traditional Music Festival and Young Leaders' Summit.
- » Organizing the BIMSTEC Athletics Meet (2024) and the first BIMSTEC Games (2027).

Conclusion:

BIMSTEC is evolving into a key regional organization, enhancing economic, security, and cultural ties. With India's proactive leadership, BIMSTEC can become a pillar of stability and prosperity in the Indo-Pacific. If institutional challenges are effectively addressed, BIMSTEC has the potential to serve as a model for regional integration in the 21st century.

President Droupadi Murmu's Visit to Slovakia

Context:

President Droupadi Murmu concluded her four-day state visit to Portugal and Slovakia, marking the first visit by an Indian President to Slovakia in 29 years. The visit was aimed at discussing diplomatic, economic, and cultural relations.

Significance of the Visit:

- This was the first Indian presidential visit to Slovakia since President Shankar Dayal Sharma's visit in 1996. The visit focused on bilateral trade, diplomatic training, technological cooperation, and cultural exchanges, strengthening historical ties between the two nations.

Diplomatic Engagements and Bilateral Discussions

- During her meeting with President Peter Pellegrini of Slovakia, key discussions included:
 - » Strengthening bilateral relations in

diplomatic, economic, and technological sectors.

- » Cultural and educational exchanges, highlighting Slovakia's increasing interest in Indian art and culture.
- » Slovakia's support for India's bid for permanent membership in the United Nations Security Council (UNSC).
- Both leaders also planted a Linden tree—Slovakia's national tree—as a symbol of friendship, and President Murmu introduced “Ek Ped Maa Ke Naam” initiative, which Slovakia showed interest in adopting.



Memorandums of Understanding (MoUs)

- Two MoUs were signed between India and Slovakia:
 - » **Cooperation in the MSME sector:** An agreement between National Small Industries Corporation Limited (NSIC) of India and the Slovak Business Agency.
 - » **Diplomatic training cooperation:** An agreement between Sushma Swaraj Institute of Foreign Service (SSIFS) and the Slovak Ministry of Foreign and European Affairs
- President Murmu and President Pellegrini inaugurated the India-Slovak Business Forum in Bratislava.

India-Slovakia Bilateral Relations:

- India and Slovakia have maintained diplomatic relations since 1993, following the peaceful dissolution of Czechoslovakia into the Czech Republic and Slovakia (known as the Velvet Divorce).
- **Trade Relations:** In 2024, bilateral trade was approximately €1.28 billion.
- **Trade Composition:**

- » **India's exports:** Mobile phones, footwear, garments, motor vehicle parts, and tires.
- » **India's imports:** Motor vehicles, machinery, mechanical appliances, pumps, wires, and cables.
- » **Emerging Areas of Collaboration:** Education, health & wellness, tourism, AI, cybersecurity, and space technology.

Conclusion:

President Murmu's visit to Slovakia covered bilateral trade, diplomatic training, technology, and cultural cooperation. The signing of MoUs, high-level diplomatic engagements, and industrial visits provided opportunities for further strengthening ties between the two countries. The visit added new dimensions to economic, technological, and diplomatic relations, laying the groundwork for continued collaboration.

India Ends Transshipment Facility for Bangladesh Exports

Context:

India has officially withdrawn the transshipment facility it had extended to Bangladesh, citing significant congestion at Indian ports and airports. The facility, in place since 2020, allowed Bangladesh to route its exports through Indian Land Customs Stations to reach final destinations via Indian logistics hubs.

- The decision took effect on April 8, 2025, following a notification from the Central Board of Indirect Taxes and Customs (CBIC), which ended the facility for Bangladesh's trade with Bhutan, Myanmar, and Nepal.

Impacts on Bangladesh's Export Sector:

- The transshipment facility was vital for Bangladesh's thriving ready-made garment sector, which depends on access to markets in Bhutan, Myanmar, and Nepal. With limited direct shipping access, Bangladeshi exporters relied heavily on Indian infrastructure for timely delivery of goods.

- The timing of the announcement — just ahead of New Year festivities in Dhaka — adds to the concerns of Bangladesh's trade and business communities, which are already grappling with delays in acquiring Indian visas for cross-border business travel.

Under the transshipment facility

Bangladesh exports up to **30,000 TONNES** of goods yearly

- Via Dhaka-Benapole-Petrapole-Delhi to EU, other destinations
- Comparatively low cost – as low as **70 CENTS** per kg

New alternative routes have emerged for export to eu, other countries

- Via Maldives
- Via Sri Lanka
- Via UAE

Buyers often nominate this arrangement as they bear the cost

Dhaka airport's yearly cargo handling capacity 250,000 TONNES

- ◆ Capacity to double after third terminal starts operating fully



Could India's move violate WTO rules?

- According to WTO rules, especially Article V of the GATT 1994 and Article 11 of the Trade Facilitation Agreement, member countries must allow freedom of transit for goods to and from landlocked countries. The Global Trade Research Initiative (GTRI) cautioned that this decision could raise questions about India's commitment to those principles.

Key Issues in India-Bangladesh Relations:

- **Border Disputes:** Despite the 2015 Land Boundary Agreement and enclave exchange, minor tensions remain along the border.
- **Water Sharing:** Disputes persist over Teesta and Ganges river water; Bangladesh fears negative impacts on agriculture.
- **Citizenship Amendment Act (CAA):** Criticized by Bangladesh as discriminatory and a threat to bilateral trust.
- **Border Killings:** Civilian deaths caused by Indian Border Security Forces have triggered public and diplomatic backlash.
- **Anti-India Sentiment:** Fueled by perceived Indian interference and the rise of Hindu nationalism.
- **Trade Issues:** Concerns over trade imbalance and the effect of Indian policies on Bangladesh's economy.

- **Diplomatic Tensions:** Recent political shifts and leadership changes have added strain to bilateral ties.

Conclusion:

While India maintains that the move is rooted in logistical necessity, the broader context suggests a complex interplay of trade, infrastructure, and regional diplomacy that could further strain ties between the two neighbors.

Italian Deputy PM visits India

Context:

External Affairs Minister S. Jaishankar recently met with Italy's Deputy Prime Minister Antonio Tajani during his two-day visit to India. The two leaders discussed bilateral cooperation in various areas such as defence, trade, investment, and energy. Tajani said that Italy and India are natural partners in the economic sector.

Highlights of the visit:

- In the delegation level talks, both countries reviewed the growing bilateral cooperation under the ambit of Joint Strategic Action Plan (JSAP) 2025-29, which included the areas of trade and investment, defence and security, space, science and technology, clean energy transition, culture, tourism and people to people ties.
- They noted the vast potential of cooperation between India and Italy in areas of AI, cyber, telecom, digital technologies, renewable energy, biofuels, education and academic collaborations, scientific research and mobility of youth and professionals, among others.
- Both countries reiterated their commitment to elevating the bilateral strategic partnership and ensuring concrete outcomes from the JSAP. Both countries renewed their commitment to take forward the strategic initiative, India Middle East Europe Economic Corridor (IMEEC).
- The inaugural India-Italy Business, Science and Tech Forum took place which seeks to

facilitate tech collaborations, innovation, academic and R&D partnerships, co-production and joint business ventures.

- The forum saw the participation of companies from four key sectors:
 - » Industry 4.0 and new technologies
 - » Infrastructure, transport and logistics;
 - » Clean energy transition
 - » Aerospace and defence.

India-Italy Relationship:

- **Strategic Partnership:** The elevation of bilateral relations to a Strategic Partnership in 2023 marked a significant milestone, in the history of India & Italy reflecting mutual trust and shared democratic values.
- **Multilateral Cooperation:** Both nations collaborate in various international forums, including the United Nations, G20, and the Global Biofuels Alliance, aligning on issues such as climate change, sustainable development, and counterterrorism.
 - » **Bilateral Trade:** Trade between India and Italy reached an all-time high of €14.56 billion in 2023–24, with Indian exports totaling €8.691 billion.
 - » **Investment Flows:** Italy is the 19th largest foreign investors in India, with cumulative FDI inflows of \$3.51 billion from 2000 to September 2024.
- **Defense Industrial Roadmap:** A comprehensive roadmap is being negotiated to promote co-production, co-development, and technology collaboration in defense platforms.

Conclusion:

India-Italy bilateral relations are acquiring diversity and depth, with regular Leaders level engagement and Ministerial dialogues. The visit and engagements of DPM Tajani were instrumental in taking forward the strategic partnership and diversifying bilateral cooperation across domains, as per JSAP 2025-29.

India–Saudi Arabia Strategic Partnership

Context:

Prime Minister Narendra Modi's recent visit to Jeddah, Saudi Arabia, marked a significant moment in India-Saudi Arabia bilateral relations, despite being shortened due to a terrorist attack in Jammu and Kashmir. The visit witnessed the co-chairing of the second meeting of the India-Saudi Arabia Strategic Partnership Council (SPC) by PM Modi and Crown Prince Mohammed bin Salman, alongside the signing of several Memoranda of Understanding (MoUs) in strategic and emerging sectors.



Key Outcomes of the 2025 Bilateral Engagement:

- Two new ministerial-level committees were established—one on Defence Cooperation and another on Tourism and Cultural Cooperation. With this addition, the SPC now functions through four core committees:
 - » Political, Consular & Security Cooperation
 - » Defence Cooperation
 - » Economy, Energy, Investment & Technology
 - » Tourism & Cultural Cooperation
- Saudi Arabia reaffirmed its commitment to invest USD 100 billion in India, spanning sectors such as energy, infrastructure, health, and technology. The High-Level Task Force on Investment (HLTF) has facilitated cooperation in taxation reforms and projects like the establishment of two major refineries in India.

Key MoUs and agreements signed:

- **Space Cooperation:** Between the Saudi

Space Agency and India's Department of Space, focusing on peaceful space activities.

- **Health Cooperation:** Between the two health ministries to strengthen healthcare systems.
- **Anti-Doping:** Between the SAADC and NADA for education and prevention.
- **Postal Cooperation:** Between Saudi Post and India's Department of Posts for inward surface parcel services.

Historical Context and Evolving Partnership of India and Saudi-Arabia:

- India-Saudi ties have grown across diplomacy, economy, defence, and culture. India is Saudi Arabia's second-largest trade partner, while Saudi Arabia ranks fifth for India.
- **Economy:** FY 2023–24, bilateral trade reached USD 42.98 billion, with Indian exports at USD 11.56 billion and imports at USD 31.42 billion. Indian investments in Saudi Arabia amount to USD 3 billion, while Saudi investments in India, led by the Public Investment Fund (PIF), total USD 10 billion.
 - » Saudi Arabia is the 20th largest FDI contributor to India with cumulative FDI of USD 3.22 billion (2000–2024).
- **Energy:** Saudi Arabia was India's third-largest crude oil supplier (14.3%) and LPG supplier (18.2%) in 2023–24.
- **Defence:** Defence cooperation also advanced through joint exercises like EX-SADA TANSEEQ (land) and Al Mohed Al Hindi (naval).
- **Cultural ties:** The Bilateral Haj Agreement 2024 allocated 1.75 lakh Indian pilgrims, also supporting women without a Mehram. Yoga's recognition in Saudi Arabia and the Padma Shri awarded to Nouf Al-Marwaai in 2018 reflect increasing cultural ties. The 2.6 million-strong Indian community remains the largest expatriate group in the Kingdom.

Major Challenges:

- Labour welfare remains a concern, with many Indian workers facing exploitation under restrictive systems like Kafala.

- The growing trade deficit, nearly USD 20 billion, stems from India's reliance on Saudi oil and fluctuating global prices.
- Additionally, Saudi Arabia's regional actions—such as in Yemen, the Qatar blockade, and its rivalry with Iran—pose diplomatic challenges for India, especially as Saudi ties with China and Pakistan deepen.

Way Forward:

Strategic connectivity projects like the India-Middle East Economic Corridor (IMEC) and engagement through GCC platforms can further secure India's regional interests. Strengthening cooperation in green energy, especially solar and hydrogen, aligns with Saudi Vision 2030. A Digital Silk Road through joint AI and FinTech labs can enhance technological innovation.

Suspension of the Indus Waters Treaty

Context:

India suspended the IWT in response to a terrorist attack in Pahalgam, Jammu and Kashmir, attributed to Pakistan-backed militants. This marks the first such action in the Treaty's history and may significantly reshape regional geopolitics and hydropolitics. Key accompanying diplomatic measures include:

- » Closure of the Attari land border post.
- » Cancellation of Pakistani visas.
- » Expulsion of Pakistani officials from India.

About the Indus Waters Treaty

- The IWT was signed on September 19, 1960, in Karachi after nine years of negotiation. It includes 12 Articles and 8 Annexures (A to H) and allocates the river waters of the Indus basin between the two countries:
 - » **Eastern Rivers (Sutlej, Beas, Ravi):** Allocated for India's unrestricted use.
 - » **Western Rivers (Indus, Jhelum, Chenab):** Reserved primarily for Pakistan, with India permitted limited use for hydropower, navigation, and irrigation under strict design and operational

constraints.

Strategic Implications of the Suspension:

- **Cessation of Hydrological Data Sharing:** India can stop the routine exchange of river flow data with Pakistan.
- **Autonomy in River Use:** India may remove self-imposed restrictions on design and operations of projects on the Western Rivers.
- **Storage and Diversion:** Though technically permissible under the Treaty to a limited extent, India may now pursue reservoir construction on Western Rivers, including Jhelum and Chenab.
- **Dam Management Freedom:** India may conduct reservoir flushing at hydroelectric projects like Kishenganga to enhance longevity and efficiency.



Legal Dimensions:

- The IWT lacks an exit clause, rendering unilateral withdrawal legally untenable. However, Article IX and Annexures F and G provide a dispute resolution mechanism, involving:
 - » **Permanent Indus Commission (PIC):** The first level of bilateral engagement.
 - » **Neutral Expert:** Appointed by the World Bank in cases of technical disagreements.
 - » **Court of Arbitration:** For more complex or political disputes.
- Yet, the efficacy of these mechanisms depends on both parties' willingness to

engage. In 2016, legal expert Ahmer Bilal Soofi noted that if India shuns the Treaty entirely, dispute mechanisms become ineffective. Furthermore, Pakistan is barred from filing a case against India at the International Court of Justice (ICJ) due to India's reservations under the ICJ statute.

Recent Bilateral Actions under the IWT:

- Tensions over two Indian hydroelectric projects in Jammu and Kashmir — the Kishenganga (on Jhelum tributary) and Ratle (on Chenab) — have intensified. Pakistan alleges that project designs violate IWT norms, despite their run-of-the-river classification.
- In January 2023, India issued a formal notice to Pakistan citing Islamabad's intransigence, invoking Article XII(3) for possible Treaty modification. A second notice in September 2024 reiterated India's demand for review, signaling intent for potential renegotiation.
- In January 2025, the World Bank-appointed Neutral Expert, Michel Lino, ruled himself competent to adjudicate design disputes. India argued these fell squarely under Part I of Annexure F, while Pakistan contested their admissibility under this clause.

Conclusion:

India's unprecedented suspension of the Indus Waters Treaty signals a strategic shift in response to terrorism. While immediate water impacts on Pakistan may be limited, the move carries significant diplomatic and legal implications, casting uncertainty over the future of South Asian water diplomacy.

Attari Integrated Check Post

Context:

India has recently decided to shut down the Integrated Check Post (ICP) at Attari following the Pahalgam terror attack. This has cast a shadow on the already fragile trade relations between India and Pakistan. The closure is expected to halt bilateral trade worth Rs.3,886.53 crore,

directly affecting regional economic activities and livelihoods, especially in Punjab.

Evolution of Trade through the Attari ICP:

- The Attari-Wagah land route was opened for trade in 2005, with truck movements beginning in 2007. The Integrated Check Post (ICP) at Attari was formally inaugurated on April 13, 2012, under the UPA government.
- Spread over 120 acres, the ICP offers direct access to National Highway 1, making it a critical trade corridor between the two countries.
- Goods traded through this corridor reflected complementary needs:
 - » **India exported:** soya Bean, Poultry Feed, Vegetables, Red Chillies, Plastic Granules, Plastic Yarn and Straw Reapers.
 - » **India imported:** Dry Fruits, Dates, Gypsum, Cement, Glass, Rock Salt and Herbs From Pakistan.

Trade Trends and Political Tensions:

The Attari ICP saw substantial trade growth until bilateral tensions began affecting volumes:

Year	Trade Value (Rs. Crore)	Consignments
2018–19	4,370.78	49,102
2022–23	2,257.55	3,827
2023–24	3,886.53	Data not specified

- Trade volumes declined notably after India imposed a 200% duty on Pakistani goods in 2019 in response to the Pulwama terror attack.
- The duty hike nearly froze formal trade for several years. A partial rebound in 2023–24 suggested cautious optimism before the latest closure again suspended activity.
- In dollar terms, bilateral trade has been limited to around \$2 billion annually over the past five years, a small fraction of the \$37 billion trade potential estimated by the World Bank.

Impact on Punjab's Regional Economy:

- Punjab, particularly the regions around

Amritsar and Attari, has borne the brunt of trade suspensions. The local economy has developed a robust trade ecosystem centered around the Attari ICP, providing direct and indirect employment to thousands:

- » **Employment generated:** Transporters, Porters, Customs Agents, Shopkeepers, and Small-Scale Industrial Workers.
- » **Key export from Punjab:** Straw reapers, manufactured by small-scale units.
- The drop in exports due to trade restrictions caused significant financial losses for local manufacturers. Under normal trade conditions, 2020–21 could have marked a record year.

Pakistan's Economic Crisis:

- Post-pandemic high inflation, rising food and fuel prices.
- Violent protests in Pakistan-occupied Kashmir (PoK) in May 2023 against economic hardships led to civilian unrest and over 90 injuries.
- The International Monetary Fund (IMF) recently downgraded Pakistan's growth forecast to 2.6%, citing global trade tensions and high U.S. tariffs.

Conclusion:

The Attari ICP has historically functioned as a crucial bridge for India-Pakistan trade, particularly benefiting Punjab's economy. The recurring political tensions and consequent trade halts, however, underline the fragility of such engagements. While trade restrictions serve geopolitical and national security interests, they disproportionately affect local economies, small manufacturers, and bilateral economic potential. In light of the World Bank's \$37 billion trade estimate, the current annual figure of \$2 billion is a stark reminder of the opportunity cost of strained diplomatic ties. Restoring stable trade relations will require political will, confidence-building measures, and sustained dialogue.



Environment & Ecology



Impact of Rising Temperatures on Mountain Ranges: A UNESCO Report

Mountain ecosystems are among the most sensitive to climate change, acting as critical indicators of global warming. These towering landscapes serve as natural water towers, providing freshwater to nearly two billion people worldwide. However, their stability is increasingly threatened by rising temperatures, leading to rapid and largely irreversible transformations.

The United Nations World Water Development Report 2025 – Mountains and Glaciers: Water Towers, released by UNESCO on March 21, 2025, shed light on these alarming trends. Marking the first-ever World Day for Glaciers, the report presents compelling scientific evidence on the widespread impacts of climate change on mountain environments, particularly in terms of glacier melting, permafrost thawing, and shifting snowfall patterns.

Glaciers, which have long been considered a reliable source of freshwater, are now retreating at unprecedented rates. The past three years alone have recorded the highest levels of glacial mass loss in history. Similarly, permafrost—frozen ground that underpins many high-altitude regions—is thawing rapidly, releasing vast amounts of carbon into the atmosphere and increasing the risk of landslides and infrastructure instability. Snow cover, a crucial factor in maintaining mountain hydrology, is also diminishing, with snowfall patterns becoming increasingly erratic.

The consequences of these transformations extend far beyond the mountains themselves. Changes in freshwater availability threaten agriculture, hydropower generation, and drinking water supplies for millions living downstream. Additionally, glacial lake outburst floods (GLOFs) pose severe risks to communities, infrastructure, and livelihoods. With glaciers contributing significantly to global sea-level rise, the urgency to address these environmental changes has never been greater.

Key Observations by the Report:

❖ **Accelerated Glacier Melting:**

- » Glaciers are disappearing at an unprecedented rate, with the past three years witnessing the largest recorded loss of glacial mass. The World Glacier Monitoring Service (WGMS) reports that since 1975, glaciers (excluding the Greenland and Antarctic ice sheets) have lost over 9,000 billion tonnes of ice, equivalent to an ice block the size of Germany with a thickness of 25 meters.
- » In 2024 alone, global glaciers lost 450 gigatons of mass, with the Scandinavian glaciers, the Norwegian archipelago of Svalbard, and North Asian glaciers experiencing the most significant annual loss on record.
- » Beyond rising temperatures, other factors such as wildfires and dust storms contribute to accelerated melting. The deposition of black carbon and

particulate matter on glacier surfaces reduces their reflectivity, increasing heat absorption and thereby intensifying the melting process.

❖ **Permafrost Thaw and Its Consequences:**

- » Permafrost, which refers to ground that remains frozen for at least two consecutive years, is rapidly thawing due to increasing temperatures. This thawing is significant because:
 - **Carbon Emissions:** Mountain permafrost contains 4.5% of global soil organic carbon, which is released into the atmosphere upon thawing, further accelerating climate change.
 - **Geological Instability:** Permafrost plays a crucial role in stabilizing rock slopes, glacial moraines, and debris-covered surfaces. Its thawing increases the risk of landslides, rockfalls, and erosion, posing serious hazards to mountain ecosystems and human settlements.

Decline in Snow Cover and Erratic Snowfall Patterns

- ❖ The report highlights a significant decline in snow cover across almost all mountain regions, particularly during spring and summer. A study published in Nature (November 2024) found a 7.79% decline in persistent snow cover between 1979 and 2022.
- ❖ Additionally, snowfall patterns are becoming more erratic. Due to atmospheric warming, the altitude at which precipitation transitions from rain to snow is shifting upward. Consequently:
 - » Lower elevations are experiencing a decrease in snow cover depth and duration.
 - » More precipitation is falling as rain instead of snow, leading to earlier snowmelt and reducing the overall snow-covered area.

Why This Matters? The Broader Implications

- ❖ **Water Security and Hydrological Changes:**
 - » Mountains cover 33 million square

kilometers of the Earth's surface and serve as critical water sources for nearly 2 billion people worldwide. The rapid melting of glaciers threatens the stability of these water supplies.

- » **Erratic Water Flows:** With glacier shrinkage, the timing and volume of water flow from mountains are becoming unpredictable, leading to variability in freshwater availability for communities downstream.
- » **Increased Erosion and Sedimentation:** The loss of glacier mass leads to increased erosion and sediment deposits in rivers, affecting water quality and availability for agriculture, drinking water, and hydroelectric power generation.



❖ **Glacial Lake Outburst Floods (GLOFs):**

- » The melting of glaciers also raises the risk of glacial lake outburst floods (GLOFs)—sudden, catastrophic floods caused by the failure of natural glacial dams.

- » GLOFs have resulted in over 12,000 deaths in the past 200 years and have caused widespread destruction of farmland, homes, infrastructure, and hydropower facilities.
- » The increasing frequency of such disasters is forcing internal displacement and disrupting livelihoods in affected regions.

❖ **Rising Sea Levels:**

- » Melted glacial ice contributes 25-30% of the observed rise in global sea levels. Between 2006 and 2016, glaciers lost 335 billion tonnes of ice per year, leading to an annual sea level rise of nearly 1 mm.
- » Even a 1 mm rise in sea level exposes up to 300,000 people to annual coastal flooding, underscoring the far-reaching consequences of glacier loss.

Conclusion:

The UNESCO report serves as a critical warning about the long-term impact of climate change on mountain ecosystems. Rising temperatures are not just altering landscapes but also endangering global water security, increasing natural disasters, and contributing significantly to sea level rise. Addressing these challenges requires global policy interventions, enhanced monitoring, and resource mobilization to mitigate further damage. It is high time that we create awareness, change our policies, and mobilize resources to ensure effective climate action. The mountains are intricately linked to the environment and the future of billions of people. Immediate and sustained efforts are necessary to combat climate change and protect these crucial ecosystems from further degradation.

Short Issues

International Big Cat Alliance

Context:

Recently, India and the International Big Cat Alliance (IBCA) formally signed an agreement to establishing India as the official headquarters and secretariat of the Alliance. The agreement marks a significant step in India's leadership role in international efforts to conserve the world's most iconic and endangered big cat species.

About International Big Cat Alliance:

- The International Big Cat Alliance was launched in April 2023 during the golden jubilee celebrations of Project Tiger, a flagship conservation initiative that has significantly improved tiger populations across India. With the IBCA, India aims to take this success global.
- IBCA established through the National Tiger Conservation Authority (NTCA) under the Ministry of Environment, Forest & Climate

Change (MoEFCC).

- The IBCA focuses on the conservation of seven major big cat species:
 - » Tiger
 - » Lion
 - » Leopard
 - » Snow Leopard
 - » Puma
 - » Jaguar
 - » Cheetah
- These species face a growing range of threats including habitat loss, poaching, climate change, and human-wildlife conflict. IBCA's goal is to foster international collaboration, scientific research, knowledge sharing, and capacity building to ensure the long-term survival of these apex predators.

A Global Treaty-Based Organization:

- IBCA became a full-fledged treaty-based intergovernmental organization in early 2025 after the required number of ratifications. The first five countries to ratify

the framework agreement were:

- » India
- » Liberia
- » Eswatini
- » Somalia
- » Nicaragua
- With these ratifications, the IBCA came into legal existence, empowering it to act on conservation efforts globally and enter formal partnerships with governments, NGOs, and research institutions.



About Agreement Details:

- According to Ministry of External Affairs (MEA), the signed agreement outlines the necessary legal and logistical framework for India to host the IBCA's headquarters. This includes:
 - » Hosting privileges and immunities for IBCA personnel and premises
 - » Provision of infrastructure and operational support
 - » Visa facilitation and diplomatic privileges
 - » Entry into force and supplementary agreements for smooth governance
- India has committed Rs. 150 crore in budgetary support to the Alliance, covering the period from 2023-24 to 2028-29. These funds will go toward:
 - » Building permanent infrastructure
 - » Creating a financial corpus
 - » Covering recurring administrative and operational expenses

Looking Ahead:

- IBCA is expected to promote not just ecological initiatives, but also foster

diplomacy and collaboration between countries home to big cats. With India taking the lead, the alliance is poised to:

- » Facilitate joint research and monitoring programs
- » Share best practices in wildlife management
- » Develop transboundary conservation corridors
- » Strengthen anti-poaching and wildlife trafficking enforcement

Conclusion:

India's role as the host nation of the IBCA headquarters cements its status as a global leader in wildlife conservation. With strong government backing and a growing international coalition, the Alliance is positioned to become a transformative force for the protection of the planet's most majestic predators.

India's Push for the Baku to Belém Roadmap

Context:

At the 11th BRICS Environment Ministers' Meeting in Brasília, Brazil, India urged its BRICS partners to unite in advancing the Baku to Belém Roadmap, a crucial initiative aimed at mobilizing USD 1.3 trillion annually for supporting Nationally Determined Contributions (NDCs) and ensuring global sustainable climate action.

Baku to Belém Roadmap to 1.3T:

- The Baku to Belém Roadmap is an initiative under the United Nations Framework Convention on Climate Change (UNFCCC) that seeks to mobilize USD 1.3 trillion annually by 2035 to support climate action in developing countries. This funding is essential for helping nations achieve their NDCs and advance climate-resilient development pathways.

COP-29:

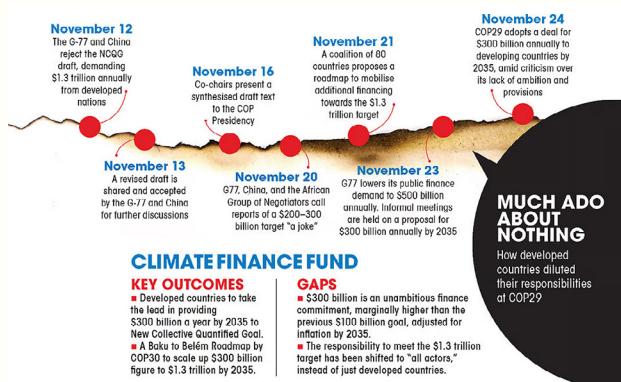
- At the 29th Conference of the Parties (COP-29) in Baku, developed countries committed

to providing USD 300 billion per year by 2035 to aid developing nations in their climate efforts.

- However, this pledge falls significantly short of the USD 1.3 trillion target sought by developing countries, highlighting the need for stronger financial commitments.

COP-30:

- The 2025 United Nations Climate Change Conference (UNFCCC COP 30) will be held in Belém, Brazil, from November 10 to 21, 2025. The summit will focus on strengthening international cooperation and enhancing climate action.
- India and other developing nations aim to push for increased climate funding at COP-30 to bridge the financial gap left by COP-29 commitments.



Nationally Determined Contributions:

- Nationally Determined Contributions (NDCs) are voluntary climate action plans submitted by countries to reduce emissions and adapt to climate change impacts.
- While not legally binding, countries are required to regularly update and report their NDC progress, in alignment with the Paris Agreement targets to limit global warming.

The Paris Agreement: A Global Climate Commitment

- Adopted at COP-21 in 2015, the Paris Agreement is a legally binding treaty aimed at limiting global temperature rise to well below 2°C, with an aspirational target of

1.5°C above pre-industrial levels.

Importance of NDCs

- NDCs play a vital role in:
 - » Translating global commitments into national action.
 - » Providing clear emissions reduction targets and tracking progress.
 - » Aligning national policies with sustainable development goals.
 - » Encouraging investment in clean energy and climate solutions.

Key Components of Strong NDCs

- Effective NDCs include:
 - » Clear emission reduction targets across sectors like energy and transport.
 - » Concrete projects and policies to drive climate solutions.
 - » Robust monitoring systems to track progress.
 - » Financial strategies for funding green initiatives and job creation.

Global Impact and Country-Specific Commitments

- NDCs are instrumental in measuring collective progress toward global climate goals. Ahead of COP-26, over 170 countries submitted their NDCs on time. Some nations, like Britain and Chile, have gone a step further by making their NDCs legally binding, ensuring stronger enforcement at the national level.

Conclusion:

The Baku to Belém Roadmap represents a significant step toward mobilizing adequate climate finance. With India and BRICS countries advocating for stronger commitments, COP-30 presents a critical opportunity to bridge the funding gap and secure the resources needed for a sustainable and resilient future.

Euphaea Wayanadensis

Context:

Euphaea wayanadensis was recently discovered species of damselfly. It is found in the Wayanad

region of Kerala and contributes to Kerala's 191st recorded odonate species and the 223rd in the Western Ghats.

About *Euphaea wayanadensis*:

- **Family:** Euphaeidae
- **Initial Sightings:** Discovered in 2013 along the Kalindi River, Thirunelli, Wayanad district.
 - » The species was initially mistaken for *Euphaea pseudodispar*, however, genetic and morphological studies confirmed it as a distinct species.
- **Identification Process:** The identification reflects the challenges of species recognition in the ecologically diverse Western Ghats.



Morphological Features of the species:

- **Hind Wing:** Features a longer black patch compared to related species.
- **Colouration:** Males display broader, uninterrupted humeral and antehumeral stripes.
- **Genital Structure:** The male genital vesicle exhibits unique structural traits distinguishing it from similar species.

Habitat and Distribution of the species:

- **Preferred Habitat:** Fast-flowing streams with rocky beds and aquatic vegetation in evergreen and semi-evergreen forests.
- **Distribution:** Found primarily along stream banks in the Western Ghats.
- **Activity Period:** Active year-round, except during the dry season (March-April).
- **Vulnerability:** Highly restricted distribution makes it susceptible to habitat loss and climate change.

Significance of the discovery:

- The discovery emphasizes the rich yet fragile biodiversity of the Western Ghats, recognized as a biodiversity hotspot.
- The limited distribution and vulnerability of *Euphaea wayanadensis* highlight the need for targeted conservation efforts.
- Protecting the habitats of such species is essential for preserving ecological balance in the region.

About Odonata Species:

- Odonata is one of the oldest and most fascinating insect groups, dating back millions of years. The group includes three main suborders: Anisoptera, Zygoptera, and Anisozygoptera.
- **Main Groups of Odonata:**
 - » **Anisoptera (Dragonflies):** These are typically larger and stronger fliers. They have larger eyes and a broader body compared to damselflies.
 - » **Zygoptera (Damselflies):** Smaller and more delicate, damselflies usually have a slimmer body and more slender wings that are often held together when resting.
 - » **Anisozygoptera:** This is a very small suborder with only two living species, making it the rarest among Odonata. They share characteristics of both dragonflies and damselflies.

Conclusion:

Euphaea wayanadensis serves as a reminder regarding the ongoing threats faced by unique species in the Western Ghats. It emphasises the significance of conservation to protect the region's rich natural heritage and biodiversity.

Migration of Painted Lady Butterflies

Context:

A recent study published in PNAS Nexus, led by evolutionary biologist Daria Shipilina, investigates the migration patterns of the

painted lady butterfly (*Vanessa cardui*). The research provides crucial insights into the genetic and environmental factors influencing one of the longest insect migrations in the world.

About painted lady butterfly:

- The painted lady butterfly (*Vanessa cardui*), also known as the thistle butterfly, is native to Canada but cannot survive in colder climates.
- It is a long-distance migrator, traveling up to 9,000 miles, often crisscrossing the Sahara between Europe and sub-Saharan Africa.
- The butterfly has orange wings with black tips, with white spots and black lines on its forewings. It closely resembles the American lady butterfly but can be distinguished by its four eyespots on the hindwings instead of two.
- Highly adaptable, *V. cardui* thrives in diverse habitats, from seashores and gardens to mountaintops. It is one of the most widely distributed butterflies, though it is absent from South America.



Multi-Generational Migration Cycle:

- Studying insect migration has been challenging due to their small size and tracking limitations. However, advances in genomics and miniaturized tracking now allow precise analysis.
- The painted lady butterfly (*Vanessa cardui*) migrates up to 15,000 km in a multi-generational cycle spanning 8–10 generations, with each butterfly living only two to four weeks.
- In spring, they migrate north from the

Sahara to breed in southern Europe, and by late summer and autumn, their offspring return southward. Their strong thoracic muscles enable long-distance flight, making them exceptional migrators.

Genomic and Isotopic Analysis:

- To track their migration, researchers used stable isotope analysis, examining hydrogen and strontium isotopes embedded in their wings. Since butterfly wings do not undergo metabolic changes, they retain isotopic signatures from the food and water consumed during the larval stage.
- By comparing isotope ratios with geographical isoscapes (maps of isotope distributions) from Europe and North Africa, scientists estimated the distances traveled by individual butterflies.
- Genetic analysis revealed that short- and long-distance migrants do not form distinct genetic groups. Instead, all painted lady butterflies belong to a single interbreeding population, indicating that environmental factors play a more significant role in migration than genetic differences.
- Additionally, wing size and shape did not significantly impact migration distances, and wing wear—a common indicator of travel length—was not always correlated with greater migration distances.

Conclusion:

The study challenges assumptions about migration genetics, highlighting the role of environmental conditions in butterfly movement. Future research will examine genetic variations in *V. cardui* across regions like the UK and Japan and explore migration in diverse environments. Understanding these factors is crucial for predicting climate change impacts on migration, advancing a comprehensive framework for insect migration studies.

Earthquakes in Myanmar

Context:

On March 29, 2025, a powerful earthquake with

a magnitude of 7.7 struck central Myanmar, causing widespread devastation and claiming at least 144 lives. The tremors were felt not only in Myanmar but also in neighboring Thailand and parts of Northeast India. While Myanmar is often affected by earthquakes, the causes behind this frequent seismic activity lie deep within the Earth's structure.

The Sagaing Fault:

- The Sagaing Fault is a major fault line running north to south through Myanmar, making the region highly susceptible to seismic activity.
- This fault line marks the boundary between the Indian Plate to the west and the Eurasian Plate to the east. The constant movement and tension between these plates make the Sagaing Fault an earthquake hotspot.
- The region's geological characteristics mean that earthquakes are a frequent occurrence, as seen in the 2025 earthquake.

Frequency of Earthquakes in Myanmar:

- Myanmar has experienced a number of significant earthquakes over the years due to the active nature of the Sagaing Fault. Since 1900, at least six earthquakes of magnitude 7 or greater have struck the region.

About Earthquake:

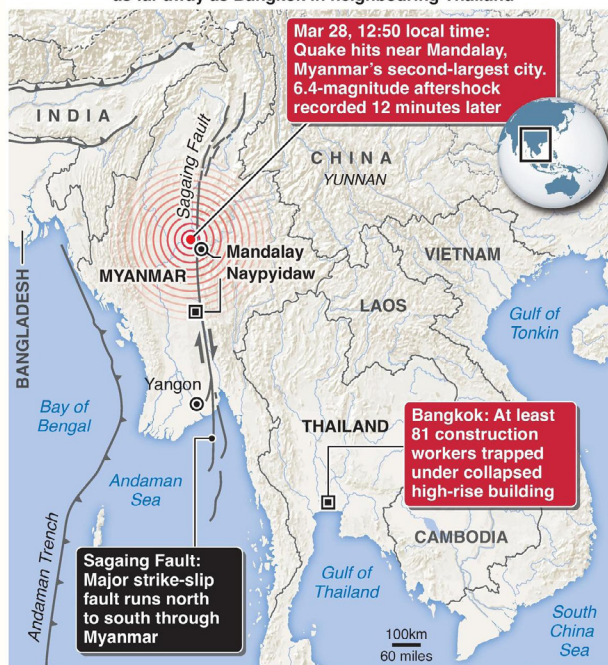
- An earthquake is the shaking or trembling of the Earth's surface caused by the sudden release of energy from the Earth's crust or upper mantle. This energy release generates seismic or earthquake waves that cause the ground to move.

The Cause of Earthquakes

- Earthquakes occur when there is a sudden release of energy stored in the Earth's crust due to the shifting of tectonic plates. In the case of the 2025 Myanmar earthquake, the seismic event was caused by "strike-slip faulting," which occurs when two tectonic plates move horizontally past one another.
- This particular earthquake resulted from the friction between the Indian Plate and the Eurasian Plate, causing the ground to shake as they slid against each other.

Powerful earthquake rocks Southeast Asia

A 7.7-magnitude earthquake strikes central Myanmar, killing several people, toppling buildings and bridges, and causing damage in cities as far away as Bangkok in neighbouring Thailand



About Focus and Epicenter of an Earthquake:

- **Focus (Hypocenter):** The point within the Earth where the energy is initially released during an earthquake. It is the source of the seismic waves.
- **Epicenter:** The point on the Earth's surface directly above the focus. It is the first place to experience the earthquake waves.

Conclusion:

Myanmar's vulnerability to frequent earthquakes is primarily due to its location along the Sagaing Fault. By understanding the movement of tectonic plates and the behavior of faults like the Sagaing Fault, steps can be taken to better prepare for future earthquakes and mitigate their impact.

Increased Monsoon Intensity in the Western Ghats

Context:

A recent study by researchers from the Central

University of Kerala (CUK) has revealed a significant increase in monsoon rainfall in the Western Ghats over the past 800 years. This study, which reconstructs Indian monsoon patterns over the last 1,600 years, provides crucial insights into long-term climate variations in the region, emphasizing the growing intensity of the monsoon cycle and its implications.

Key Findings of the Study:

- The study's findings highlight a consistent increase in monsoon rainfall in the Western Ghats over the last 800 years.
- The long-term intensification of the monsoon could be contributing to more frequent and severe rainfall events in recent years.
- As an example, the catastrophic floods and landslides that occurred in Wayanad and Kodagu in Karnataka in 2018 and 2019 may not be isolated incidents but rather part of a broader climatic trend.
- The increasing intensity of the monsoon cycle has the potential to exacerbate such extreme weather events in the future.



Implications for Disaster Preparedness:

- The research underscores the need for enhanced disaster preparedness in the Western Ghats, a region known for its ecological sensitivity and significant role in biodiversity conservation.
- Experts stress the importance of strengthening infrastructure and developing robust early warning systems to better cope with extreme weather events.
- Furthermore, the study highlights the need

for timely evacuation plans for vulnerable populations in areas prone to flooding and landslides.

The Need for Sustainable Land Use and Conservation

- In addition to disaster preparedness, the study calls for sustainable land-use planning and stronger conservation measures in the Western Ghats. With the increased intensity of rainfall, the risk of landslides, floods, and soil erosion is higher, which could threaten both human settlements and natural ecosystems.
- Therefore, the study advocates for the implementation of long-term environmental policies aimed at mitigating these risks. Sustainable land management practices, along with effective conservation efforts, are essential to protect the region's biodiversity and ensure the long-term health of its ecosystems.

Conclusion:

As the monsoon cycle continues to intensify, the need for proactive measures to address the associated challenges becomes more urgent. Enhanced disaster preparedness, sustainable land-use practices, and long-term environmental policies will be critical to mitigating the risks posed by an increasingly erratic monsoon. The findings from this study serve as a call to action for policymakers, environmentalists, and local communities to work together in ensuring the resilience of the Western Ghats against the impacts of climate change.

India's Renewable Energy Growth

Context:

India's renewable energy sector has witnessed remarkable growth, achieving its highest-ever capacity addition of 25 gigawatts (GW) in the last financial year. This marks a 35% increase from the 18.57 GW added in 2023-24.

- According to New and Renewable Energy Minister Pralhad Joshi, solar energy played

a pivotal role in this expansion, rising from 15 GW to nearly 21 GW—a 38% jump.

- Additionally, India's solar PV cell manufacturing capacity has tripled to 9 GW, reflecting the country's commitment to strengthening its clean energy infrastructure.

Understanding Renewable Energy:

- Renewable energy refers to energy derived from naturally replenishing sources that are sustainable over time. Unlike fossil fuels, which are finite and contribute to environmental pollution, renewable energy sources are continuously restored by natural processes.

Challenges in the Renewable Energy Sector:

- **High Costs:** The cost of materials, infrastructure, and land acquisition makes RE generation more expensive than fossil fuels.
- **Land Acquisition Issues:** Finding suitable land, converting it for RE use, and obtaining multiple clearances can be time-consuming.
- **Struggling DISCOMs:** Many power distribution companies (DISCOMs) are tied to Power Purchase Agreements (PPAs) for thermal power, limiting their ability to procure renewable energy and meet Renewable Purchase Obligations (RPOs).
- **Storage and Grid Management:** Intermittency in RE production due to weather fluctuations poses challenges for grid balancing and energy storage.
- **Environmental Impact:** Wind turbines can endanger birds and bats, while hydrogen production requires significant water resources.

Key Government Initiatives:

- 100% FDI is permitted under the automatic route to attract investment in the sector.
- **PM Surya Ghar:** Muft Bijli Yojana aims to install rooftop solar systems in one crore households with an investment of Rs.75,021 crore, running until FY27.
- **Green Energy Corridor (GEC):** Projects focus on strengthening renewable power evacuation and modernizing the grid.

- **Solar Parks Scheme:** Provides a plug-and-play model for solar developers, offering necessary infrastructure and statutory clearances.
- **National Green Hydrogen Mission (2023):** Targets the production of 5 million metric tonnes (MMT) of Green Hydrogen annually by 2030.

Conclusion:

India's renewable energy sector is expanding rapidly, driven by strong policy support and technological advancements. However, challenges like high costs, land constraints, and grid integration need to be addressed for sustained progress. With continued investment and innovation, India is well-positioned to become a global leader in clean energy transformation, paving the way for a sustainable future.

Balancing Aerosol Reduction and Climate Stability

Context:

Reducing aerosol emissions is crucial for air quality but poses a climate paradox: aerosols cool the atmosphere by reflecting sunlight. A 2024 Geophysical Research Letters study warns that rapid aerosol cuts without reducing greenhouse gases (GHGs) could accelerate warming, especially in polluted regions like India.

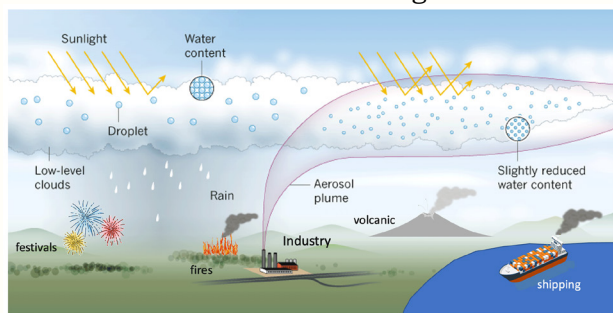
Greenhouse Gases vs. Aerosols:

- GHGs like carbon dioxide and methane trap heat, causing long-term warming. In contrast, aerosols—sulphates, nitrates, black carbon, and dust—scatter sunlight, creating a cooling effect.
 - » **Lifespan:** GHGs persist for decades to centuries, while aerosols last days to weeks.
 - » **Impact:** GHGs cause sustained warming; aerosols provide temporary cooling but worsen air pollution.
- Sudden aerosol reductions without cutting GHGs could lead to rapid temperature

increases in heavily polluted areas.

India's Industrial Dependence on Aerosols:

- India's reliance on coal-based thermal power (70% of electricity) produces high aerosol emissions. These emissions have offset about 1.5°C of warming since 1906, keeping observed warming at 0.54°C instead of 2°C.
- A 2020 Ministry of Earth Sciences report found India's temperature rose 0.7°C between 1901-2018, partially mitigated by aerosols and land-use changes.



Aerosols and Monsoon Variability:

- Aerosols weaken monsoon circulation by altering atmospheric temperatures. The IPCC estimates aerosol cooling at 0.6°C globally, but unevenly distributed:
 - Northern Hemisphere: 0.9°C cooling.
 - Southern Hemisphere: 0.3°C cooling.
- China's recent aerosol cuts intensified heat waves in the Pacific and North America. Similarly, India's aerosol reductions could disrupt monsoons, impacting agriculture and water resources.

Health vs. Climate Trade-offs:

- Aerosols offset warming but cause severe respiratory and cardiovascular diseases, with over 1 million pollution-related deaths annually in India. They also contribute to acid rain, smog, and weather instability.

Policy Challenges and Solutions:

- India must balance air pollution control with climate adaptation. The Indo-Gangetic plains, with high aerosol levels, risk severe heat stress if emissions drop without reducing GHGs.
- Key policy steps:**

- Integrate pollution control with climate adaptation.
- Strengthen heat action plans for vulnerable cities.
- Enhance climate modeling for better predictions.
- Phase out coal while expanding renewables.

Conclusion:

Reducing aerosols is vital for public health, but without GHG mitigation, it could accelerate warming and disrupt monsoons. Sustainable policies must balance air quality improvements with climate stability.

Long-Snouted Vine Snake

Context:

The rare long-snouted vine snake (*Ahaetulla longirostris*) was recently rediscovered in the Dudhwa Tiger Reserve, Uttar Pradesh. This sighting, the first of its kind in the state and only the second recorded instance in India, occurred unexpectedly during a rhino release operation in the Palia division.

Physical Characteristics and Habitat of long-snouted vine snake:

- The long-snouted vine snake is characterized by its elongated, slender body, which can be green or brown.
- Its most distinctive feature is the elongated snout (rostrum), an adaptation that enhances camouflage among tree branches and leaves. It is a mildly venomous species, but its toxin poses minimal risk to humans.
- As an arboreal species, long-snouted vine snake (*Ahaetulla longirostris*) primarily inhabits trees, allowing it to blend seamlessly into its surroundings.
- Its rediscovery in Dudhwa highlights the importance of tree-dominated ecosystems in supporting diverse wildlife, including lesser-known reptilian species.

Ecological Importance of Dudhwa Tiger Reserve:

- Dudhwa Tiger Reserve, located in the Terai region of Uttar Pradesh near the Indo-Nepal border, comprises Dudhwa National Park, Kishanpur Wildlife Sanctuary, and Katarnia Ghat Wildlife Sanctuary.
- Established under Project Tiger, the reserve serves as a critical habitat for the Royal Bengal Tiger, Indian rhinoceros, swamp deer, and a variety of bird and reptile species.
- The rediscovery of long-snouted vine snake underscores the ecological richness of the reserve and highlights the role of microhabitats, such as termite mounds, in supporting rare species. This finding reinforces the significance of sustained research and habitat conservation efforts in the region.

Conclusion:

The rediscovery of long-snouted vine snake provides new opportunities for studying its behavior, ecology, and distribution. Further research will help assess its population status, habitat preferences, and interactions with other species. The finding also emphasizes the need to preserve arboreal habitats to ensure the continued survival of lesser-known species within India's diverse ecosystems.

Joint Nilgiri Tahr Census by Kerala and Tamil Nadu

Context:

Kerala and Tamil Nadu will jointly conduct a Nilgiri Tahr census from April 24 to 27, 2025. This effort aims to assess the population and distribution of the Nilgiri Tahr (*Nilgiritragus hylocrius*), a vulnerable species found only in the Western Ghats.

About the Survey:

- The Nilgiri Tahr census is being conducted to commemorate the 50th anniversary of the establishment of Eravikulam National Park, which hosts the largest population of the species.
- The survey aims to generate scientific data on the population size, distribution, and genetic variation of the species, which will aid conservation planning and policy-making
- It will cover 265 census blocks—89 in Kerala and 176 in Tamil Nadu. Both states' forest departments will coordinate the survey across protected and non-protected areas.
- The data will be collected using the bounded count method, which estimates population sizes based on systematic observations in specific locations. The survey will also use camera traps to capture images of the animals and pellet sample collection for genetic analysis.
- About 1,300 people, including experienced forest officials and trained wildlife volunteers, will participate in the census. The survey will take place in 20 forest divisions across Kerala, from Thiruvananthapuram to Wayanad.
- The field director of the Periyar Tiger Reserve, has been appointed as the nodal officer to oversee the project.



Significance of the Nilgiri Tahr:

- The Nilgiri Tahr is an ecologically significant species, playing a crucial role in the montane grassland ecosystems of the Western Ghats.
- Due to habitat fragmentation, climate change, and human disturbances, the species is classified as 'Vulnerable' on the IUCN Red List.
- Conservation efforts, such as the upcoming

census, provide critical insights that can aid in habitat restoration and long-term species protection.

Impact of the Census:

- This synchronized census will provide valuable insights into the population trends and health of the Nilgiri Tahr. The findings will help in developing conservation strategies and policies to protect the species. The study will also strengthen cooperative efforts between Kerala and Tamil Nadu in wildlife conservation.

Conclusion:

By using scientific methods and teamwork, the Nilgiri Tahr census aims to improve conservation efforts. The results will guide future policies and habitat protection measures, ensuring the survival of this unique mountain species in the Western Ghats.

India's Renewable Energy Capacity

Context:

India has achieved a major milestone in its renewable energy journey, with the Ministry of New and Renewable Energy (MNRE) reporting a record-setting year for clean energy installations in the Financial Year 2024–25. The country added 29.52 GW of renewable energy capacity, bringing the total installed capacity to 220.10 GW as of March 31, 2025—up from 198.75 GW the previous year.

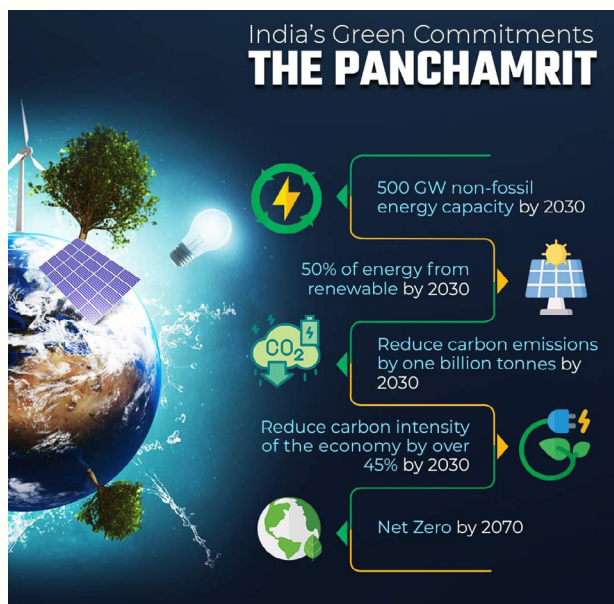
- This progress marks a significant step forward in India's pursuit of 500 GW of non-fossil fuel-based capacity by 2030, a key component of the nation's climate commitments under the 'Panchamrit' goals announced by Prime Minister Shri Narendra Modi at COP26.

Key components:

- **Solar Energy:** Solar energy was the primary driver of this year's growth, contributing 23.83 GW—a sharp rise from 15.03 GW added in FY 2023–24. India's total solar

capacity now stands at 105.65 GW, comprising:

- » 81.01 GW from ground-mounted projects
- » 17.02 GW from rooftop solar
- » 2.87 GW from hybrid project components
- » 4.74 GW from off-grid systems
- The expansion highlights India's growing reliance on solar energy, both in large-scale utility projects and decentralized rooftop systems.
- **Wind Energy:**
 - » India's wind energy sector also showed steady momentum, with 4.15 GW added during FY 2024–25—up from 3.25 GW the previous year. The country's cumulative installed wind capacity has now surpassed 50 GW, reaffirming its crucial role in the renewable energy mix.



- **Bioenergy and Small Hydro:** Supporting the solar and wind segments, bioenergy and small hydro power continued their contributions:
 - » **Bioenergy:** Reached 11.58 GW, including 0.53 GW from off-grid and waste-to-energy projects.
 - » **Small Hydro Power:** Totaled 5.10 GW, with 0.44 GW currently under implementation.
- These sectors are vital to India's decentralised

energy strategy, offering region-specific solutions and grid support.

About Panchamrit goals:

- India has put forward five key points, which are referred to as the "Panchamrit," regarding its climate action plan. These include:
 - » Achieving a non-fossil energy capacity of 500 GW by 2030.
 - » Sourcing 50% of its total energy needs from renewable energy sources by 2030.
 - » Reducing the country's total projected carbon emissions by one billion tonnes between the present day and 2030.
 - » Decreasing the carbon intensity of India's economy by 45% by 2030, based on 2005 levels.
 - » Achieving the goal of net zero carbon emissions by 2070.

Conclusion:

MNRE continues to implement progressive policies and frameworks to drive large-scale deployment of renewables. The FY 2024–25 performance reflects India's unwavering commitment to achieving its climate targets, enhancing energy independence, and transitioning toward a green economy.

Mantis Shrimp's Natural Energy Shield

Context:

Researchers from the US and France have recently discovered that the mantis shrimp's dactyl club contains a specialized microstructure that enables phononic shielding. This ability allows the mantis shrimp to blunt the flow of acoustic waves and weaken the recoil, protecting itself from the intense forces generated by its own strikes.

About mantis shrimp:

- The mantis shrimp is a marine crustacean, approximately 10 centimeters long, found in tropical and subtropical waters. It is known for its specialized appendages that

deliver rapid, forceful strikes, generating shockwaves in water.

- Despite the intensity, the organism remains unaffected, due to a complex microstructure in its appendages that functions as a natural energy-absorbing system.

Mechanics of the Strike:

- The mantis shrimp uses a hammer-shaped appendage called the dactyl club, which strikes at speeds of up to 23 meters per second. This rapid movement vaporizes water and releases high-frequency shockwaves, strong enough to break the shells of hard-shelled prey like clams and mussels. Remarkably, the shrimp itself remains unharmed.

Structural Adaptations for Impact Resistance

- The dactyl club has a hierarchical structure composed of mineral and organic materials arranged in three layers:
 - » **Impact Surface:** Made of hydroxyapatite, this hard outer layer distributes recoil and prevents force from concentrating in one area.
 - » **Impact Layer and Periodic Region:** Beneath the surface, biopolymer fibers are arranged in a helicoidal pattern, allowing the structure to endure repeated, high-intensity impacts without significant damage.

Phononic Shielding Mechanism:

- The internal structure of the dactyl club acts as a phononic bandgap, blocking or attenuating energy waves of certain frequencies. This shielding is achieved through the precise arrangement of materials, allowing the mantis shrimp to protect itself from the shockwaves generated by its own strikes.

Implications for Materials Science:

- The discovery of the mantis shrimp's natural energy shield has notable implications for materials science. Researchers are examining the potential to develop synthetic sound-filtering materials modeled after the microstructure of the mantis shrimp.

Such materials may have applications in protective equipment, including earmuffs for military personnel, and in strategies aimed at reducing blast-related injuries in both military and sports settings.

- The findings of this study also challenge the long-standing assumption that materials capable of directing energy flow in specific ways can only be engineered in laboratory settings. The mantis shrimp's natural energy shield demonstrates how biological systems can optimize material structures at multiple levels, offering potential inspiration for future materials design and development.

Conclusion:

The mantis shrimp's natural energy shield is a fascinating example of the incredible adaptations that have evolved in nature. By studying this remarkable creature, scientists can gain insights into the development of new materials and technologies that can benefit society in various ways.

Olive Ridley Turtle's Cross-Coast Nesting Behavior

Context:

A olive ridley turtle tagged as "03233" recently traveled 3,500 kilometers from Odisha to Guhagar beach in Maharashtra, challenging previous assumptions about the distinctness of nesting sites on India's east and west coasts. This discovery has opened new avenues for understanding the migratory patterns and reproductive strategies of these marine turtles.

About the Olive Ridley Turtle:

- The Olive Ridley turtle is a species of sea turtle known for its small size and distinctive heart-shaped, olive-colored shell.
- It is one of the most abundant sea turtle species, found in tropical and subtropical waters around the world. Olive Ridleys are best known for their mass nesting behavior, often referred to as "arribada," where thousands of females come ashore simultaneously to lay their eggs.
- Olive Ridley turtles typically nest between December and March at specific sites on India's east and west coasts. However, turtle "03233" marks the first recorded case of a turtle nesting on both coasts in the same nesting season.
- Researchers suggest that the turtle may have followed a migration route via Sri Lanka before reaching Ratnagiri on Maharashtra's coast. This raises important questions about the migratory routes and nesting behavior of these turtles.



Potential for Dual Nesting Strategy:

- It is speculated that the turtle may be using a dual reproductive strategy, potentially adjusting the sex ratio of her hatchlings, as temperature and moisture influence offspring sex. Nesting on different coasts may help her leverage varying environmental conditions for reproductive success.
- This contrasts with data from the 1990s and 2000s, which indicated that Olive Ridleys migrate to Sri Lanka and return to their original nesting sites. However, findings from turtle "03233" and recent flipper

tagging suggest greater interconnection between east and west coast populations, prompting a reassessment of conservation strategies to protect both regions.

Threats from Nearshore Fishing:

- Despite ongoing research and conservation efforts, Olive Ridley turtles remain threatened by human activities, particularly nearshore fishing. Operations near nesting beaches risk entangling turtles in nets, causing injury or death.
- Several coastal areas have been identified as key turtle congregation sites, prompting researchers to call for stricter fishing regulations during nesting periods, especially near river mouths and estuaries.
- So far, 64 turtles have been tagged in Maharashtra under the monitoring program, which aims to gather more data on their movements.

Conclusion:

The migration of Olive Ridley turtle provides valuable insights into the migratory behavior and reproductive strategies of Olive Ridley turtle, challenging earlier assumptions about the separation of nesting sites on India's east and west coasts. It highlights the need for further research to fully understand their migration patterns and underscores the importance of protecting both coasts, especially amid threats like nearshore fishing. Continued research and monitoring remain essential for the species' long-term conservation.

New Frog Species *Leptobrachium aryatium*

Context:

A new species of frog, *Leptobrachium aryatium*, has been recently identified in Assam's Garbhanga Reserve Forest. Belonging to the Megophryidae family, this species is characterized by its distinct appearance and potential ecological relevance.

About *Leptobrachium Aryatium*:

- **Nomenclature:** *Leptobrachium aryatium* was officially identified and described as a new species by Purkayastha and colleagues in 2025. The species name "aryatium" is derived from Arya Vidyapeeth College in Guwahati, acknowledging the institution's role in research.
- The genus *Leptobrachium*, commonly referred to as "Asian bullfrogs," includes species known for their flattened bodies and cryptic coloration.
- **Morphological Features:** Adult *Leptobrachium aryatium* individuals display a sturdy build with a slightly tapering body. The head is broad and flattened, featuring a rounded snout and large, prominent eyes. A black canthal stripe extends from the front corner of the eye to the nostril, while a well-defined supratympanic stripe runs from the rear corner of the eye to the angle of the mouth.
- **Coloration and Camouflage:** The dorsal surface is grayish-brown with three large, dark-brown blotches forming an inverted V-shape across the interorbital region. The ventral side ranges from white to bluish-white and is heavily reticulated with black confluent blotches, which become denser towards the posterior and groin areas. The limbs are dark-gray with distinct black bars. These markings aid in camouflage within the forest floor environment.
- **Habitat and Ecology:** *Leptobrachium aryatium* is endemic to the Garbhanga Reserve Forest, located near Guwahati, Assam. This forest is considered a biodiversity-rich area, home to a variety of flora and fauna. The species resides primarily on moist, leaf-littered forest floors, where its coloration helps in predator avoidance and in remaining concealed while hunting.
- **Conservation Status:** *Leptobrachium aryatium* has not yet been evaluated by the International Union for Conservation of Nature (IUCN). Given its restricted known distribution and reliance on a specific forest habitat, the species may face threats

from habitat loss and environmental disturbance. Continued monitoring and habitat conservation are important for its long-term survival.

Significance of the Discovery:

- The discovery of *Leptobrachium aryatium* underscores the rich, yet often overlooked, biodiversity of Northeast India. It highlights the importance of continued research and conservation initiatives in the region to protect its unique and diverse ecosystems.

About Garbhanga Reserve Forest:

- Garbhanga Reserve Forest is a wildlife sanctuary located on the outskirts of Guwahati, Assam, India, and bordering Meghalaya. It is known for its diverse wildlife, including elephants, tigers, and various bird species.

Conclusion:

Leptobrachium aryatium is a testament to the hidden natural treasures of Assam. With its fiery-eyed appearance and intricate coloration, it adds to the growing list of remarkable amphibian species in India. Protecting its habitat is crucial for the conservation of this unique species and the biodiversity of the region.

World Curlew Day and Curlew Conservation

Context:

World Curlew Day was recently observed on April 21, 2025. This day raises awareness about the plight of curlews—one of the world's most threatened bird groups. Founded by Mary Colwell in 2017, it's a global grassroots initiative encouraging communities to protect these remarkable birds from threats largely caused by human activities like habitat destruction and climate change.

Significance of Curlews:

- There are eight species of curlews, with the Eskimo Curlew and Slender-billed Curlew feared to be extinct or nearly so. These wading birds are keystone species,

playing vital roles in ecosystems. Their long, sensitive beaks are adapted to detect prey underground, making them both ecologically significant and evolutionarily unique. Most of the curlew species is in vulnerable position according to IUCN red list.



Major threats:

- The dramatic decline of curlews, especially the Slender-billed Curlew (*Numenius tenuirostris*), stems from:
 - » **Climate Change:** Drying breeding grounds in Siberia
 - » **Habitat Loss:** Disappearing Mediterranean wetlands
 - » **Pollution:** Contaminated feeding areas
 - » **Migration Hazards:** Hunting and lack of safe stopovers
- In former strongholds like Morocco, sightings have nearly ceased. No nesting or confirmed sightings have occurred since 1995.

Characteristics of curlews:

- They have a long, crescent-shaped beak, giving the genus name *Numenius* ("new moon").
- Their beaks are highly sensitive, acting like forceps to pick up food.
- Unable to reach food at the tip of their beak with their tongues, they toss food in the air to catch and eat it.

About the Slender-billed Curlew:

- The Slender-billed Curlew, a migratory bird once found from Siberia to the

Mediterranean, is likely extinct. Last seen in 1995, its decline is linked to habitat loss, hunting, and climate change. It marks the first known bird extinction from mainland Europe, North Africa, and West Asia.

Conclusion:

Saving curlews means safeguarding entire ecosystems. Their protection can rally conservation efforts globally. The loss of the Slender-billed Curlew reminds us: saving one species helps protect countless others—and the delicate web of life that sustains us all.

Colossal Squid sighting near South Sandwich Islands

Context:

On April 15, scientists aboard a research vessel in the South Atlantic released rare footage of a juvenile colossal squid. The squid, just a foot long, was recorded 2,000 feet below the ocean's surface near the South Sandwich Islands. This sighting offers new insights into one of the ocean's most mysterious creatures.

About the Colossal Squid:

- Despite their size, colossal squid are rarely seen due to their large, sensitive eyes that help them avoid bright and noisy research equipment. Because of this, scientists have limited knowledge of their diet, lifespan, or reproduction.
- Most information comes from specimens found in the stomachs of predators like sperm whales or from dead juveniles caught in trawl nets. The species was first discovered in 1925 through arm fragments found in a sperm whale. Until this recent sighting, no live colossal squid had been seen in their natural habitat.

Size and Shape:

- Colossal and giant squid differ in appearance and size. Colossal squid have massive bodies but shorter arms and tentacles. They can grow up to seven metres (23 feet) and weigh about 500 kg. Giant squid, on the

other hand, can reach up to 13 metres (43 feet) but typically weigh around 275 kg.

- Their large size helps them avoid predators and catch a wider variety of prey. Fully grown, they are only hunted by sperm whales.
- Their basketball-sized eyes help them detect threats in the deep ocean. These eyes are among the largest in the animal kingdom and are adapted for seeing in low-light conditions.
- Unlike most squid species that grow quickly and die young, giant and colossal squid take years to mature. Giant squid may live between two and twelve years, but scientists do not yet agree on the lifespan of the colossal squid due to a lack of data.

About the Myth of Kraken:

- The colossal squid is believed to be the inspiration behind the legendary Kraken, a sea monster feared by sailors during the Age of Sail. In Alfred Tennyson's 1830 poem *The Kraken*, the creature is described as sleeping in the deep sea, hidden from sunlight.
- Though long considered myth, scientists now believe these stories were likely based on sightings of giant and colossal squid—two of the largest known invertebrates on Earth.

Conclusion:

The new footage of a mid-sized juvenile squid fills a crucial gap in understanding the species' life history and helps answer many questions about its development. The sighting also highlights the need to protect deep-sea habitats, which face threats from human activities like deep-sea mining. Researchers say such discoveries can guide conservation efforts and inform sustainable ocean practices.

ICIMOD Report Warns of Impending Water Crisis in Hindu Kush region

Context:

According to a new report by the International

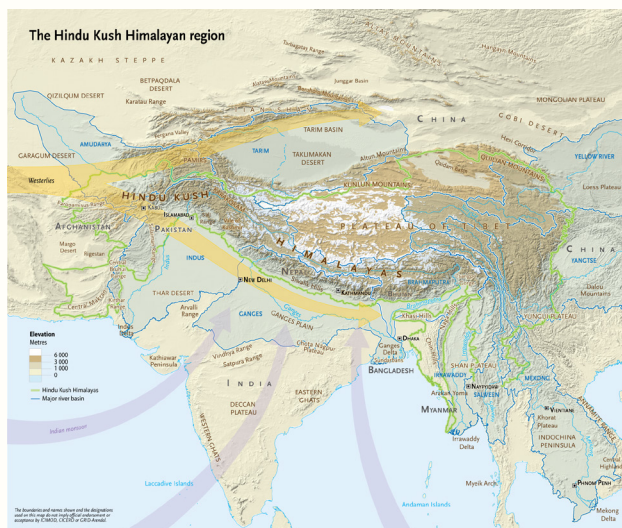
Centre for Integrated Mountain Development (ICIMOD), the Hindu Kush Himalayan (HKH) region is facing a significant threat due to declining snow persistence. It is affecting the water security of nearly 2 billion people across 12 major river systems, including the Ganga, Indus, and Brahmaputra river basins. The region has recorded its lowest snow persistence in over two decades, raising red flags for the water security of nearly two billion people across 12 major river systems.

About the report:

- The ICIMOD report, based on a 23-year satellite time series (2003–2025), reveals that average snow persistence across the HKH region during the November–March season has dropped to 23.6%—its lowest in 23 years.
 - » **Ganga Basin:** 24.1% below normal snow persistence.
 - » **Indus Basin:** 24.5% below normal.
 - » **Brahmaputra Basin:** Also facing significant snow deficits, though slightly less severe than Ganga and Indus.

What are the main causes of this crisis?

- The report attributes the persistent decline in snow to climate change, particularly:
 - » Warming temperatures across the HKH
 - » Carbon emissions that have already locked in long-term impacts
 - » Increased variability in precipitation patterns



Why This Matters:

- The Hindu Kush Himalayas are often referred to as the "Water Towers of Asia", feeding vital rivers that support agriculture, hydropower, biodiversity, and livelihoods across South Asia. Roughly 25% of river runoff in these basins comes from seasonal snowmelt, a share that increases from east (Ganga) to west (Indus).
- Without adequate snow accumulation and gradual melting, river flows in early summer will diminish, directly impacting:
 - » Irrigated agriculture across the Indo-Gangetic plains.
 - » Hydropower generation in Himalayan states and downstream countries.
 - » Drinking water availability in urban and rural areas.
 - » Wetland ecosystems and biodiversity hotspots that rely on consistent water flow.

Way Forward:

- Given the transboundary nature of South Asia's major rivers, addressing this crisis will require unprecedented regional collaboration. The report strongly advocates for the development of multilateral treaties and shared water governance mechanisms among countries like India, Pakistan, China, Nepal, Bhutan, and Bangladesh.
- Such agreements would not only focus on equitable water sharing but also include:
 - » Joint climate adaptation strategies
 - » Data and technology sharing
 - » Disaster risk mitigation, especially with increasing glacier lake outburst floods (GLOFs) and droughts.

Discovery of Two New Freshwater Fish Species in the Western Ghats

Context:

Researchers at the Centre for Peninsular Aquatic Genetic Resources, Kochi, under the National Bureau of Fish Genetic Resources

(NBFGR), have identified two new species of freshwater fish from the Western Ghats: *Labeo uru* and *Labeo chekida*. Their discovery also resolved a long-standing taxonomic confusion surrounding *Labeo nigrescens*, a species first described in 1870 but ambiguously classified for over a century.

Newly Identified Species

- **Labeo uru**
 - » **Habitat:** Found in the Chandragiri river.
 - » **Naming:** The species was named "uru" after the traditional wooden dhow, referencing its sail-like elongated fins.
 - » **Distinctive Features:** Elongated fins resembling sails, adapted to the river's flow conditions.
- **Labeo chekida**
 - » **Habitat:** Identified in the Chalakudy river.
 - » **Local Name:** Known among local communities as "kaka chekida".
 - » **Appearance:** A small, dark-bodied fish, distinctive within its ecosystem.
- Both species are endemic to their respective river systems, emphasizing the unique ecological character of the Western Ghats.

ICAR-NBFGR Discovers Two New Fish Species from the Western Ghats!



Labeo chekida, locally known as "kaka chekida," is a small, dark-bodied fish found in the Chalakudy

Labeo uru, named for its unique sail-like dorsal fin, was discovered in the Chandragiri River.



such as a kinked lateral line and distinct scale patterns, the team successfully distinguished *L. nigrescens* from related species. This clarification is significant for the taxonomy of Indian freshwater fish and for conservation biology.

Ecological Significance and Conservation Concerns:

- The discoveries reinforce the Western Ghats' status as a biodiversity hotspot. The research team highlighted that each river system may harbour unique, endemic species, many of which remain undiscovered.
- However, the study raised concerns about threats to freshwater biodiversity from dam construction, habitat destruction, and human encroachments.
- The researchers stressed the urgent need for collective conservation efforts to protect these fragile ecosystems. They also called for intensified scientific exploration to uncover and document more unknown species inhabiting these rivers.

Conclusion:

The discovery of *Labeo uru* and *Labeo chekida*, alongside the resolution of *Labeo nigrescens*' taxonomic status, marks a significant advancement in the understanding of freshwater biodiversity in the Western Ghats. It highlights the region's ecological richness and the pressing need for sustained conservation and scientific research to preserve these critical aquatic habitats.

Resolution of *Labeo nigrescens* Identity:

- The study also addressed the longstanding confusion surrounding *Labeo nigrescens*. Using unique morphological markers



Science & Technology



India's Deep-Sea Exploration: Challenges, Advancements, and Strategic Imperatives

India has recently made significant strides in deep-sea exploration with the successful wet testing of the Matsya-6000 submersible, a cutting-edge vehicle capable of diving up to 6,000 meters below the ocean surface. This landmark achievement is a crucial step toward launching India's first deep-sea manned mission, which will place the country among an elite group of nations with the capability to explore extreme ocean depths.

However, deep-sea technology is not just about scientific exploration—it is deeply intertwined with economic aspirations, security considerations, and geopolitical challenges. Countries like China, France, Japan, Norway, Russia, South Korea, and the United States have already established a strong foothold in deep-sea technology, leveraging it for both economic gain and national security. China, for example, has recently unveiled a compact deep-sea cable-cutting device that can be mounted on submersibles and used to sever heavily fortified undersea communication and power lines. This development signals the increasing militarization of the deep ocean, making it critical for India to accelerate its deep-sea capabilities to ensure security, economic progress, and scientific advancement.

The Strategic and Economic Importance of Deep-Sea Exploration:

❖ The ocean is a vast and largely unexplored domain, holding immense economic, scientific, and strategic value. The United Nations Convention on the Law of the Seas (UNCLOS) grants nations an Exclusive

Economic Zone (EEZ) extending 200 nautical miles (370 km) from their coastlines, where they have exclusive rights to explore and exploit marine resources.



❖ India's EEZ covers an average depth of 3,741 meters—a depth more than four and a half times the height of the Burj Khalifa, the world's tallest building. While this may seem extreme, it is relatively shallow compared to

the Challenger Deep in the Mariana Trench, which plunges more than 10 kilometers beneath the ocean surface, exceeding the cruising altitude of most aircraft.

India's deep-sea exploration is essential for:

❖ **Resource Extraction:**

- » **Living resources:** Marine biodiversity, fish stocks, and aquaculture.
- » **Non-living resources:** Gas hydrates, polymetallic nodules, rare earth minerals, oil, and natural gas.
- » **Nutraceuticals:** Bioactive compounds extracted from deep-sea organisms with potential applications in medicine, pharmaceuticals, and nutrition.

❖ **Scientific and Meteorological Research:**

- » **Climate change monitoring:** Studying deep-sea currents, carbon sequestration, and ocean temperatures can help predict climate patterns and mitigate environmental risks.
- » **Ocean mapping:** Understanding the geology of the seabed can assist in earthquake prediction, tsunami modeling, and disaster mitigation.

❖ **Underwater Infrastructure and Connectivity:**

- » **Undersea cables:** More than 95% of global intercontinental internet traffic relies on undersea fiber-optic cables, which support banking transactions, defense communications, and global trade.
- » **Oil pipelines:** Subsea pipelines transport energy resources, making them critical for the global economy.

❖ **Maritime Security and Strategic Interests:**

- » **Undersea surveillance:** Developing advanced deep-sea monitoring technologies is essential to detect foreign military activities in India's territorial waters.
- » **Cable security:** As seen with China's cable-cutting device, adversarial nations could target undersea infrastructure to disrupt communications and financial networks, making deep-sea security a national priority.

Challenges in Deep-Sea Exploration:

Despite its vast potential, deep-sea exploration is extremely challenging due to harsh

environmental conditions and high costs of technology development.

❖ **Pressure and Structural Integrity:**

- » Pressure increases by one atmosphere (atm) for every 10 meters of ocean depth.
- » At the ocean bed in India's EEZ, pressure exceeds 380 atm—or 380 times the atmospheric pressure at sea level.
- » Deep-sea vehicles must be constructed using specialized materials, such as titanium alloys and composite structures, to withstand this extreme pressure.
- » The OceanGate Titan submersible disaster in June 2023 serves as a reminder of the risks involved when deep-sea vessels are not designed with the highest safety standards.

❖ **Communication Limitations:**

- » Unlike air and space, where radio waves travel freely, water severely restricts electromagnetic waves.
- » Acoustic signals (sound waves) are the primary mode of deep-sea communication, but their transmission is affected by temperature, salinity, and pressure.
- » Very Low Frequency (VLF) and Extremely Low Frequency (ELF) sound technologies represent the frontier of deep-sea communication, requiring substantial investment and research.

❖ **High Costs and Technological Barriers:**

- » Developing deep-sea research vessels, robotic submarines, and communication systems demands a multi-billion-dollar investment.

India's Current Efforts and Gaps in Deep-Sea Development:

- ❖ Recognizing the strategic importance of the deep sea, India launched the Deep Ocean Mission (DOM) in 2018, under the Ministry of Earth Sciences. The Matsya-6000 submersible is a part of this initiative, and it represents a crucial step in developing India's capability to explore the deep ocean for economic, scientific, and strategic purposes.
- ❖ However, significant gaps remain:
 - » India lacks advanced deep-sea fishing capabilities, which limits its ability to

fully utilize marine resources.

- » Unlike leading maritime nations, India has not developed robust security mechanisms to protect undersea infrastructure.
- » Investments in deep-sea mining, robotics, and advanced communication systems remain insufficient.

Strategic Recommendations for India:

❖ **Institutional and Policy Reforms**

- » Upgrade the Department of Ocean Development to a full-fledged ministry, led by a cabinet-rank minister.
- » Establish dedicated research institutions for deep-sea exploration, similar to China's deep-sea research centers.
- » Foster public-private partnerships to encourage domestic industries to invest in deep-sea technology.

❖ **Technological Advancement and Research:**

- » Invest in advanced sonar and sensor technology for deep-sea mapping and surveillance.
- » Develop autonomous underwater vehicles (AUVs) and remotely operated vehicles (ROVs) for deep-sea exploration and maintenance.
- » Strengthen deep-sea mining capabilities to extract polymetallic nodules and gas hydrates.

❖ **Maritime Security and Infrastructure Protection:**

- » Implement surveillance networks to detect potential threats to India's underwater assets.
- » Develop countermeasures against hostile underwater activities, such as China's deep-sea cable-cutting device.
- » Expand undersea infrastructure projects, including communication cables, pipelines, and research stations.

❖ **Mission-Oriented Approach:**

- » Launch a 10-year strategic plan for deep-sea development, with time-bound goals and strict accountability measures.
- » Ensure high-level funding for deep-sea research and technology development.

Conclusion:

India's deep-sea initiatives, led by the Deep Ocean Mission, mark an essential step toward becoming a major maritime power. However, significant advancements in deep-sea research, security, and technology are needed to compete with established global players. Given the increasing importance of underwater resources, digital connectivity, and maritime security, India must treat deep-sea development as a national priority, ensuring that it is well-equipped to harness the vast potential of the deep ocean for economic growth and strategic security.

Short Issues

Signet Ring Cell Carcinoma

Context:

A new study from the Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Centre, has developed new ways to better understand and treat signet ring cell carcinoma (SRCC), a rare form of colorectal cancer (CRC), which starts in the colon or rectum. The study was published in Clinical Cancer Research and involved collaboration between oncologists, surgeons, pathologists, translational scientists, and students.

Understanding Signet Ring Cell Carcinoma:

- Signet Ring Cell Carcinoma (SRCC) is a rare and aggressive subtype of colorectal cancer (CRC), known for its distinct signet ring-like appearance under a microscope. It is typically diagnosed at advanced stages and shows resistance to conventional therapies.
- One of the major concerns is its rapid spread to the peritoneum, the lining of the abdominal cavity, which significantly worsens patient outcomes.
- Globally, SRCC accounts for only about 1% of all CRC cases. However, in India, particularly in central and northern regions,

this figure is disproportionately higher—almost 10 times more.

- Strikingly, it tends to affect younger individuals, and due to its rapid spread within the abdominal cavity, it has been particularly difficult to treat effectively using traditional approaches.

Key Findings and Drug Testing:

- The study introduced Patient-Derived Organoids (PDOs) and Patient-Derived Xenografts (PDXs) as tools to model human SRCC tumours.
- PDOs are miniaturised 3D versions of human tumours grown in petri dishes, while PDXs involve transplanting human cancer cells into mice. These models replicate the molecular characteristics of SRCC, allowing researchers to analyse the cancer's behaviour and response to treatments more effectively.
- Using these models, the researchers identified molecular features that explain why SRCC does not respond to standard chemotherapy.
- They were able to test multiple drug combinations and discovered a novel three-drug regimen that significantly reduced tumour growth and inhibited metastasis in preclinical trials. This opens up the possibility for future clinical trials and more effective, targeted treatments.

Conclusion:

Described as one of the first living biobanks for SRCC, this research provides a vital foundation for personalised medicine and drug development. It offers hope for improved treatment outcomes, particularly for patients in India where SRCC incidence is notably higher. Phase 1 clinical trials will be necessary to validate these findings and develop real-world therapies.

India's Genome India Project

Context:

The first part of India's ambitious programme

to map the genetic diversity of its people was completed. This database is set to expand in future recently years, creating a biobank that can revolutionize healthcare and disease prevention in India.

About the Genome India Project (GIP):

- The Genome India Project (GIP) is an ambitious initiative aimed at mapping the genetic diversity of India's population. The project seeks to catalog the genetic sequences of individuals from diverse ethnic, geographical, and linguistic backgrounds across the country.
- The data generated through this effort will provide valuable insights into precision health and contribute significantly to the growing field of personalized medicine.
- In the first phase, the GIP has sequenced the genomes of 10,000 individuals from 83 different population groups.

What is a Genome?

- A genome is the complete set of genetic material in an organism. In humans, it consists of around three billion base pairs of DNA that determine everything from physical characteristics to susceptibility to diseases.
- The GIP uses whole genome sequencing (WGS), a process that involves reading the entire genetic sequence of an individual to uncover not only common traits but also rare genetic variations that can influence health and disease.
- This is especially important for identifying the unique genetic markers present in the Indian population.

Significance of GIP in Understanding Genetics:

- The GIP collects germline sequences from blood samples, which are crucial for understanding inherited genetic traits. By analyzing these sequences, scientists can uncover genetic variations that contribute to diseases like cancer, diabetes, and hypertension.
- The project focuses on personalized

medicine, tailoring treatments to an individual's unique genetic makeup rather than using standard treatment methods. For instance, understanding specific genomic data may help identify which therapies are most effective for patients based on their genetic profile.

- Moreover, the GIP's data will aid in the development of population-specific drugs, taking into account the unique genetic characteristics of different Indian communities.

Why Is GIP Important for India?

- India's genetic diversity is immense, and the GIP serves as a crucial step in addressing health challenges unique to the country. Understanding these variations is essential for developing new therapies and personalized medicine tailored to the Indian population.
- The data generated by the GIP will contribute to a global repository of human genomic data, complementing international efforts like the Human Genome Project.
- The Biotech-PRIDE guidelines and FeED Protocol (Framework for ethical Data) will help ensure that data collection and use are done ethically, with respect for privacy and consent.

Conclusion:

The GIP will expand its database, refine genomic analysis, and address rare diseases in specific Indian communities, ultimately improving healthcare policies. By offering insights into the genetic basis of health, it will advance precision health in India and contribute to global genomic research. The ongoing collaboration between scientific institutions and the establishment of the Indian Biological Data Centre (IBDC) will ensure the GIP remains a valuable, long-lasting resource for researchers worldwide.

New Magnetic Nanoparticles for Cancer Treatment

Context:

A research team from the Institute of Advanced Study in Science and Technology (IASST), an autonomous institute under the Department of Science and Technology (DST), Government of India, in collaboration with NIT Nagaland, has developed an innovative magnetic system using nanocrystalline cobalt chromite magnetic nanoparticles. These nanoparticles have the potential to revolutionize cancer treatment through magnetic hyperthermia, a method that raises the temperature of tumor cells, leading to their destruction.

Challenges with Conventional Cancer Treatments:

- Cancer remains one of the most life-threatening diseases worldwide, and while multiple treatment options exist, each has significant limitations:
 - » **Chemotherapy and Radiation Therapy:** Often cause severe side effects, including nausea, exhaustion, hair loss, and an increased risk of infection.
 - » **Targeted Therapy:** Effective in some cases, but not suitable for all cancer types and may require specific biological conditions.
 - » **Stem Cell Transplant:** A complex and expensive procedure, making it inaccessible to many patients.
- Given these drawbacks, researchers are exploring alternative methods that offer higher precision, fewer side effects, and improved accessibility.

Magnetic Hyperthermia: A Novel Alternative

- Magnetic hyperthermia utilizes nanomagnets to generate targeted heat, selectively increasing the temperature of cancerous cells while minimizing harm to healthy tissues. This method offers several advantages:
 - » **Reduced Side Effects:** Heat application is localized, reducing damage to surrounding tissues.
 - » **External Control:** The process is guided by an external magnetic field, ensuring precise and targeted treatment.
 - » **Minimally Invasive:** Making it a potentially

safer and more patient-friendly option.

- However, a major challenge remains: developing bio-friendly, coated magnetic nanoparticles with high heating efficiency for practical medical applications.
- The IASST research team, led by Prof. Devasish Chowdhury, addressed this challenge by synthesizing nanocrystalline cobalt chromite magnetic nanoparticles with varying levels of rare-earth gadolinium (Gd) doping using the chemical co-precipitation method.

Key Findings of the Study:

- When suspended in fluid form, the nanoparticles generated heat upon exposure to an alternating magnetic field.
- This method successfully elevated cancer cell temperatures to 46°C, a threshold that induces necrosis (cell death) in tumor cells.
- Superparamagnetic nanoparticles acted as nano-heaters, demonstrating their potential for use in magnetic hyperthermia therapy.

Conclusion:

This breakthrough not only enhances targeted cancer therapy but also presents a more accessible and cost-effective alternative to conventional treatments. The research paves the way for future advancements in nanomedicine, particularly in hyperthermia-based cancer treatments. As research progresses, these magnetic nanoparticles could redefine oncology, offering a safer, more effective, and patient-friendly approach to cancer treatment.

First-Ever Reports on Fungal Infections

Context:

The World Health Organization (WHO) has recently released its first-ever reports that focus on the urgent need for better tests and treatments for invasive fungal infections. These reports highlight the critical shortages in medicines and diagnostic tools, underlining the importance of innovative research and development to address these gaps.

Key Findings of the report:

- **Fungal Diseases on the Rise:**
 - » Fungal infections, such as candida (which causes oral and vaginal thrush), are becoming a growing public health concern due to increasing resistance to treatment.
 - » These infections affect a wide range of people, especially those with weakened immune systems, including individuals undergoing cancer treatments, living with HIV, or those who have had organ transplants.
- **Vulnerable Populations at Higher Risk:**
 - » Invasive fungal infections disproportionately impact the most vulnerable populations, including patients with serious underlying conditions or those undergoing treatments that compromise their immune systems.
- **Diagnostic Gaps:**
 - » There is a significant diagnostic void, particularly in low- and middle-income countries (LMICs), where even district hospitals lack the necessary tools to accurately diagnose fungal infections.

Challenges in Developing Treatments

- **Limited New Antifungal Drugs:** Over the last decade, only four new antifungal drugs have been approved by regulatory bodies such as the U.S. Food and Drug Administration (FDA), the European Medicines Agency (EMA), and China's National Medical Products Administration (NMPA).
- **Insufficient Clinical Development:** Although there are nine antifungal drugs in clinical development, only three are in the final phase (Phase 3) of clinical trials.
- **Issues with Existing Treatments:** Many current antifungal treatments come with serious side effects, frequent interactions with other medications, and a need for prolonged hospital stays.

WHO's Recommendations for Addressing Fungal Infections:

- **Investing in Global Surveillance:** WHO urges greater investment in global surveillance to monitor the spread of fungal infections and their resistance patterns. WHO also calls for more funding for basic research to identify new targets in fungi that could lead to innovative treatments.
- **Developing Safer Antifungal Medicines:** WHO emphasizes the need for safer antifungal medicines that reduce the requirement for continuous monitoring.
- **Improving Diagnostics:** The WHO report calls for the development of faster, more accurate, and affordable diagnostic tools that can be used at or near the point-of-care, especially in resource-limited settings.

About Fungal Infections:

- Fungal infections, also known as mycoses, are diseases caused by fungi, ranging from mild to life-threatening.
- These infections can affect various parts of the body, including the skin, hair, nails, and internal organs.
- While many people may experience common fungal infections like athlete's foot or yeast infections, more serious infections can occur, particularly in individuals with weakened immune systems.

Conclusion:

WHO's emphasis on fungal infections highlights a significant public health challenge that is growing in severity. With limited treatment options and diagnostic tools, particularly in low-resource settings, WHO stresses the urgent need for investment in research, drug development, and diagnostics.

New Autism Therapy

Context:

A groundbreaking study by researchers at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) has identified a promising new therapy for autism spectrum disorder (ASD) and intellectual disability (ID). This innovative approach focuses on epigenetic

modifications to restore cognitive function and enhance independence in individuals affected by these conditions.

The Science behind the Therapy:

- The research explored the role of epigenetic modifications in ASD. The research team studied mice with a mutated Syngap1 gene (Syngap1^{+/-} mice), which mirrors mutations observed in autistic individuals.
- They discovered that these mice exhibited repressed acetylation of DNA-associated proteins, a crucial process for brain development and function.
- The enzyme KAT3B (p300) was identified as responsible for this acetylation. To counteract the deficiency, the researchers developed an activator, TTK21, which stimulates the enzyme's activity, potentially reversing the cognitive impairments associated with ASD/ID.

The Role of the Syngap1 Gene in Autism:

- The Syngap1 gene plays a vital role in brain function, particularly in learning, memory, and social interaction. Mutations in this gene are linked to autism and intellectual disabilities, leading to significant cognitive and behavioral challenges.
- **How the Therapy Works:** The therapy employs TTK21, a molecule designed to activate KAT3B (p300), an enzyme responsible for acetylating DNA-associated proteins (histones). These proteins provide structural support for chromosomes and regulate gene expression.
- To ensure effective delivery, TTK21 was conjugated with glucose-derived nanospheres (CSP-TTK21) and administered to the mutant mice. This resulted in increased acetylation in the brain, leading to the restoration of neuronal function, learning, memory, and even neuronal rearrangements—key improvements for cognitive abilities.

About Autism Spectrum Disorder (ASD):

- Autism spectrum disorder (ASD) is a complex developmental condition that affects social

behavior, communication, and language. It is characterized by a restricted range of interests and repetitive behaviors, which vary from person to person. Symptoms typically become noticeable within the first three years of life.

▪ **Causes of ASD:**

- » While the exact cause of ASD remains unclear, researchers believe it results from a combination of genetic and environmental factors. Ongoing studies aim to pinpoint the precise causes and contributing factors.

▪ **Common Signs and Symptoms of ASD:**

- » Difficulties in social communication and interaction
- » Restricted or highly specific interests
- » Repetitive behaviors (e.g., repeating actions, rituals)

Conclusion:

This pioneering research marks a significant advancement in ASD/ID therapy by leveraging epigenetic modifications. The findings suggest that CSP-TTK21 holds promise as a potential treatment for restoring cognitive function and fostering independence in individuals with ASD/ID. However, further studies and human clinical trials are essential to assess the long-term safety and efficacy of this innovative approach.

Fram2 Mission

Context:

SpaceX recently launched a crew of four private astronauts led by a crypto entrepreneur on a mission to orbit Earth from pole to pole, a novel trajectory in which no humans have traveled before. The mission is named Fram2.

About Fram2 mission:

- The Fram2 mission, is a pioneering private human spaceflight operated by SpaceX. This mission marked the first time humans have traveled in a polar orbit, flying over both the North and South Poles.

Mission Objectives:

- **Scientific Research:** Conduct 22 experiments, including:
 - » Growing oyster mushrooms in space for the first time.
 - » Performing the first human X-ray in space.
 - » Studying space motion sickness.
 - » Capturing images of auroras and phenomena like STEVE.



About polar orbit:

- A polar orbit is a satellite orbit that passes over or near both the Earth's poles on each revolution, characterized by an inclination angle of approximately 90 degrees to the Earth's equator.
- **Key Features of Polar Orbits:**
 - » **Inclination:** A polar orbit has an inclination close to 90 degrees to the equator. This means the spacecraft moves over the poles and orbits in a north-south direction.
 - » **Earth's Rotation:** As the Earth rotates beneath the spacecraft, it allows the satellite or spacecraft to observe different parts of the Earth during each orbit. Over time, the satellite will be able

to see the entire Earth's surface.

- » **Altitude:** Polar orbits are usually at lower altitudes, ranging from about 200 km to 1,000 km above the Earth's surface. This allows for better resolution in imagery and more frequent passes over areas of interest.
- » **Orbital Period:** A typical polar orbit has an orbital period of about 90 to 120 minutes, meaning it completes one full orbit around the Earth in this amount of time.

Common Uses of Polar Orbits:

- **Earth Observation Satellites:** Satellites like NOAA's weather satellites, NASA's Earth science satellites, and commercial imaging satellites like those from Planet Labs are often placed in polar orbits for continuous monitoring of Earth's surface.
- **Climate and Environmental Monitoring:** Polar orbits are especially useful for gathering long-term climate data, monitoring glaciers, forests, and changes in ecosystems.
- **Reconnaissance and Surveillance:** Some military satellites are placed in polar orbits for global surveillance and reconnaissance, allowing them to observe every part of the Earth over time.

Conclusion:

The Fram2mission represents a significant milestone in private space exploration, offering valuable insights into human health in space and enhancing our understanding of Earth's Polar Regions.

Bird Flu (H5N1)

Context:

The Andhra Pradesh government has officially declared an outbreak of bird flu (H5N1) in multiple districts. West Godavari, East Godavari, Kurnool, Eluru, NTR, and Kakinada were designated as infected zones and surveillance zones to contain the spread of the virus.

About H5N1 Virus:

- H5N1 is a highly pathogenic influenza

virus that primarily affects birds but can occasionally infect humans. The virus is not easily transmitted between humans, but when it does, the mortality rate can be as high as 60%. For comparison, the most severe COVID-19 variants had a mortality rate of around 3%.

- India has recorded only two confirmed human cases of H5N1 to date, both of which were fatal.

Global History of H5N1 in Humans:

- The first human infections of H5N1 were reported in 1997 in Hong Kong during a poultry outbreak. Since then, cases have been mostly confined to Asia, with occasional reports from Africa, Europe, and the Americas. Nearly all known cases resulted from direct contact with infected birds.

Government Response and Preventive Measures:

- **Statewide Fever Screenings:** All district medical officers have been directed to screen hospital and health center visitors for fever and related symptoms.
- **Poultry Culling:** Officials identified five affected poultry farms in Badampudi (Eluru district), Velpur and Kanur (West Godavari district), and Gampalagudem (NTR district) where dozens of chickens died, allegedly due to bird flu. Hundreds of chickens from these and nearby farms have been culled as a precaution.
- **Red Zone Restrictions:** A one-kilometer radius around infected sites has been declared a red zone. Movement and feeding of animals within these zones have been restricted.
- **Central Government Guidelines:** Guidelines for controlling the outbreak have been issued to local authorities to prevent further spread.

Conclusion:

The bird flu outbreak in Andhra Pradesh highlights the importance of vigilance, containment measures, and public awareness.

While human cases remain rare, the government's preventive actions, including poultry culling and red zone restrictions, aim to control the virus and prevent further spread. Continued monitoring and public cooperation will be crucial in mitigating the risks associated with H5N1.

Silicon Photonics

Context:

In a recent Nature study, scientists from the US and Europe successfully built the first miniaturized lasers directly on silicon wafers. This is a major step in silicon photonics, solving a long-standing problem in combining photonic (light-based) parts with silicon chips. It opens the door to faster, more energy-efficient computing and data transfer.

The Evolution of Silicon Chips:

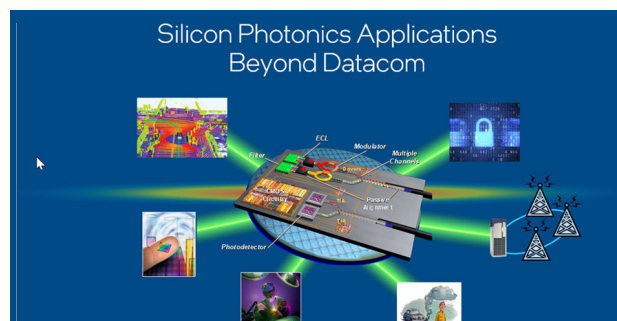
- Silicon chips changed how we communicate by moving data electronically. Now, the focus is shifting from electrons to photons—particles of light—which can carry more data at faster speeds with less energy loss.
- This shift has led to silicon photonics, with growing use in data centers, sensors, and future technologies like quantum computing.

Structure of a Photonic Chip:

- A silicon photonic chip has four main parts:
 - » A laser (creates the light),
 - » Waveguides (routes the light),
 - » Modulators (encode and decode data by changing light properties), and
 - » Photodetectors (turn light into electrical signals).
- The biggest challenge has been building lasers directly on silicon. Silicon isn't good at emitting light because of its indirect bandgap.
- Other materials like gallium arsenide (GaAs) are better since they have a direct bandgap, but combining them with silicon is hard due to mismatched atomic structures that cause defects and lower performance.

How researchers addressed this challenge?

- Researchers used a method that works with existing CMOS (complementary metal-oxide-semiconductor) chip-making technology.
- They etched very small trenches into a 300-mm silicon wafer, filled them with silicon dioxide, and added GaAs at the bottom. This setup trapped defects at the base, allowing a good-quality GaAs crystal to grow above.
- They then added indium gallium arsenide (InGaAs)—a GaAs variant with 20% indium—to make light emission more efficient. A protective indium gallium phosphide (InGaP) layer was added, and electrical contacts powered the device to generate photons (light).



Performance and Future Potential:

- Researchers embedded 300 working lasers on a standard 300-mm wafer. Each laser produced light at 1,020 nanometers, ideal for short-distance chip-to-chip communication. They used just 5 milliamps of current (like an LED) and gave off around 1 milliwatt of power. The lasers worked for 500 hours at room temperature (25°C).
- However, performance dropped above 55°C, showing that heat management is still a challenge—especially since some optical chips can handle up to 120°C.

Conclusion:

This is the first successful demonstration of fully integrating laser diodes on a large silicon wafer. The method is scalable, cost-effective, and fits current manufacturing processes. It could reshape how chips are built and improve

computing power while cutting energy use—especially in areas like AI systems, cloud computing, and advanced electronics. As photonics progresses, such innovations are key to meeting the needs of future technologies.

Google's Ironwood

Context:

Google recently launched a new computer chip called Ironwood. This chip is the company's seventh-generation TPU, or Tensor Processing Unit. It has been designed to run artificial intelligence (AI) models faster and more efficiently.

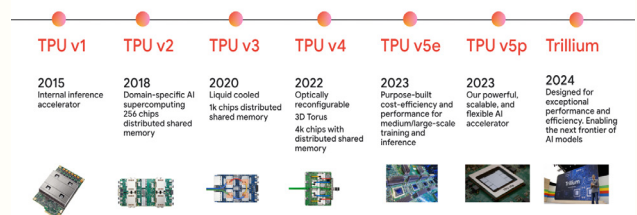
Processing Units: The Computational Core

- Processing units are essential hardware components that perform tasks ranging from basic arithmetic to complex data processing. Acting as the “brain” of a computer, they are comparable to how the human brain carries out different mental functions.
- **Central Processing Unit (CPU):** Developed in the 1950s, the CPU is a general-purpose processor that manages and coordinates various hardware components. It operates sequentially and executes a wide range of tasks.
 - » Modern CPUs have multiple cores—typically two to sixteen—each capable of executing instructions. More cores improve multitasking, though CPUs with two to eight cores suffice for most everyday tasks.
- **Graphics Processing Unit (GPU):** Unlike CPUs, GPUs are designed for parallel processing. Originally built for graphics rendering in video games and animations, GPUs now handle broader functions, especially in machine learning. They contain thousands of cores, allowing them to break down and process complex problems simultaneously. This makes them more efficient than CPUs for large datasets and repetitive tasks.
 - » However, GPUs haven't replaced CPUs. Instead, they serve as co-processors,

assisting CPUs in data-intensive applications where parallel computing offers an advantage.

- **Tensor Processing Unit (TPU):** Introduced by Google in 2015, TPUs are application-specific integrated circuits (ASICs), purpose-built for AI and machine learning. They are optimized for tensor operations, which are key to neural networks. TPUs process large data volumes rapidly, significantly reducing AI model training time—from weeks with GPUs to just hours with TPUs.

TPU AI accelerators



About Ironwood:

- Ironwood is Google's seventh-generation Tensor Processing Unit (TPU), launched at Google Cloud Next '25. It is the company's most powerful, scalable, and energy-efficient AI accelerator to date, and the first TPU specifically designed for AI inference—enabling proactive data interpretation rather than just responsive outputs.

Key highlights:

- Purpose-built for inferential AI in the "age of inference," where AI agents generate insights proactively.
- Scales up to 9,216 liquid-cooled chips with advanced Inter-Chip Interconnect (ICI) networking.
- Part of Google Cloud's AI Hypercomputer architecture, which integrates hardware and software for optimal AI performance.
- Compatible with Google's Pathways software stack, enabling developers to harness vast computing power easily.

Conclusion:

From general-purpose CPUs to highly specialized TPUs, the evolution of processing units reflects the growing demand for faster, more efficient computing. Google's Ironwood TPU represents a major advancement in this field, especially in AI and machine learning. As businesses and researchers continue to tackle increasingly complex AI challenges, processors like Ironwood will play a crucial role in shaping the future of intelligent computing.

Quantum Computers under National Quantum Mission

Context:

Recently, Bengaluru-based startup QpiAI has unveiled one of the country's most powerful quantum computers on World Quantum Day (April 14, 2025). The announcement marks a pivotal moment in India's efforts under the National Quantum Mission (NQM), spearheaded by the Department of Science and Technology (DST).

About QpiAI quantum computers:

- QpiAI, one of only eight startups selected under the prestigious NQM, introduced QpiAI-Indus — India's first full-stack quantum computing system equipped with 25 superconducting qubits. This powerful machine combines cutting-edge quantum hardware, scalable control systems, and optimized software, designed to deliver transformative hybrid computing capabilities.
- QpiAI-Indus integrates advanced quantum processors with next-generation Quantum-HPC platforms and AI-enhanced quantum software, placing India firmly on the global quantum map. The system is expected to drive deep-tech innovation across a spectrum of domains including:
 - » Life Sciences and Drug Discovery
 - » Advanced Materials and Mobility
 - » Logistics and Supply Chain Optimization
 - » Sustainability and Climate Action

About Quantum Computer:

- Unlike classical computers that rely on binary bits—which can be either 0 or 1—quantum computers operate using qubits (quantum bits). Qubits harness the laws of quantum mechanics, exhibiting phenomena like superposition and entanglement, which allow them to exist in multiple states simultaneously and interact in highly complex ways.
- This probabilistic behavior enables quantum computers to process and analyze massive datasets, solve intricate optimization problems, and simulate the behavior of matter at the atomic and subatomic levels—tasks that are virtually impossible for even the most powerful classical supercomputers, which follow deterministic rules.

About National Quantum Mission:

- The National Quantum Mission (NQM) is a visionary eight-year initiative (2023–2031) with a budget of Rs.6,000 crore, aimed at making India a global hub for quantum science and technology. The mission focuses on key verticals including quantum computing, quantum communication, quantum sensing, and quantum materials, with the dual objective of fostering economic growth and strengthening national security.
- **Objectives:**
 - » **Quantum Computing:** Developing intermediate-scale quantum computers with 50-1000 physical qubits in 8 years.
 - » **Quantum Communication:** Establishing secure quantum communication networks spanning 2000 kilometers.
 - » **Quantum Sensing & Metrology:** Developing magnetometers and atomic clocks for precision timing and navigation.
 - » **Quantum Materials & Devices:** Designing and synthesizing quantum materials for quantum device fabrication.

Conclusion:

The launch of QpiAI-Indus marks a significant milestone in India's quantum journey, celebrating the remarkable progress and possibilities unlocked by quantum science and

technology. QpiAI joins the global community of scientists, engineers, policymakers, and enthusiasts in envisioning a quantum-enabled future that transforms industries, accelerates scientific discovery, and empowers the next generation of innovators.

Type 5 Diabetes

Context:

Type 5 diabetes has recently received official recognition by the International Diabetes Federation (IDF). It is a distinct form of the disease primarily affecting lean and undernourished adolescents and young adults in low- and middle-income countries (LMICs). This acknowledgment marks a significant development in global health, as the condition has long been overlooked in research and often misdiagnosed in clinical settings.

Understanding Type 5 Diabetes:

- First reported in 1955 in Jamaica as “J-type diabetes,” the condition was later classified in 1985 by the World Health Organization (WHO) as “malnutrition-related diabetes mellitus.” However, due to insufficient evidence, the category was removed in 1999. Over the years, the condition has been observed in several countries, including India, Sri Lanka, Bangladesh, Uganda, Ethiopia, Rwanda, and Korea. An estimated 25 million people may currently be affected worldwide.
- Type 5 diabetes is characterized by inadequate insulin production due to prolonged undernutrition, particularly during critical periods of growth. Unlike Type 1 diabetes, which is autoimmune, or Type 2 diabetes, which involves insulin resistance, this type results from impaired beta-cell function in the pancreas caused by malnutrition.

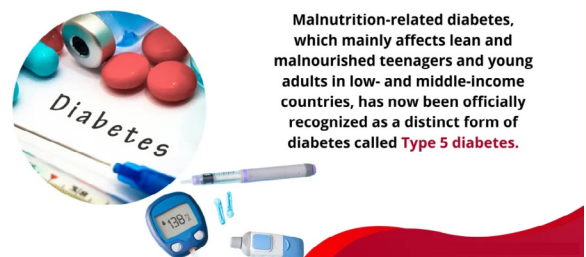
Clinical Features and Markers

- The condition is typically found in individuals with the following features:
 - » A body mass index (BMI) below 18.5 kg/

m².

- » Severely reduced insulin secretion, lower than in Type 2 diabetes and just above Type 1 levels.
 - » No autoimmune or genetic indicators.
 - » Reduced hepatic glucose production.
 - » Low levels of dietary protein, fibre, and essential micronutrients.
 - » A significantly lower percentage of body fat compared to individuals with Type 2 diabetes.
- These markers differentiate Type 5 from other forms of diabetes and are especially prevalent in undernourished populations in LMICs.

What is Type 5 diabetes?



Developmental Origins:

- The condition often originates in utero. Inadequate maternal nutrition can impair fetal development, including that of the pancreas, which may later result in reduced insulin production.
- If nutritional deficiencies persist after birth, the risk of developing this form of diabetes increases. In contrast, children who are undernourished at birth but later experience excessive weight gain may be more prone to developing Type 2 diabetes.

Treatment and Management:

- Management of Type 5 diabetes focuses on nutritional rehabilitation. A high-protein diet is critical, along with balanced intake of carbohydrates and fats to support healthy weight gain, particularly in individuals with low BMI and high physical activity. Anti-diabetic medications or insulin are

prescribed based on blood glucose levels and treatment response, evaluated on a case-by-case basis.

Conclusion:

The formal recognition of Type 5 diabetes addresses a long-standing gap in global health discourse. It highlights the relationship between chronic malnutrition and metabolic disorders, particularly in under-resourced settings. Strengthening maternal and child nutrition, along with expanding awareness and clinical capacity, is essential to tackling this under-recognised but significant public health issue.

Dual-Sided Superhydrophobic Laser-Induced Graphene

Context:

Researchers at the Indian Institute of Technology Bombay have developed a new material called Dual-Sided Superhydrophobic Laser-Induced Graphene (DSLIG). This material is designed to improve the efficiency of water desalination processes, which could play a role in addressing global freshwater scarcity.

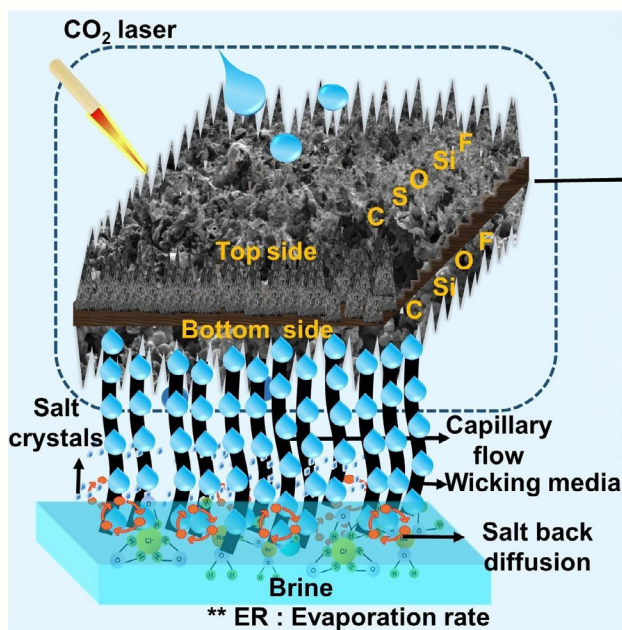
Freshwater Scarcity and Desalination:

- Despite water covering 71% of the Earth's surface, only 3% of it is freshwater, with less than 0.05% readily accessible for human use. Desalination, the process of removing salt from seawater, is increasingly seen as a key solution to water scarcity.
- However, current desalination methods face challenges, including high energy consumption, inefficiency, and environmental concerns such as the disposal of brine (concentrated salt solution).

Challenges with Traditional Desalination Methods:

- Solar desalination systems, including interfacial evaporation systems, have gained attention for their low environmental impact. These systems focus solar energy on a thin layer of water, improving energy efficiency.

- However, issues like inconsistent sunlight, particularly on cloudy days, and salt deposition on evaporator surfaces have hindered the performance of these systems.
- Salt crystals can accumulate on evaporator surfaces, reducing efficiency over time. Furthermore, fluctuations in solar radiation during the day affect the desalination process, with evaporation rates peaking around 2 pm, when solar intensity is highest.



About Dual-Sided Superhydrophobic Laser-Induced Graphene (DSLIG):

- Dual-Sided Superhydrophobic Laser-Induced Graphene (DSLIG) is made from a two-layer structure: Polyvinylidene Fluoride (PVDF) and Poly Ether Sulfone (PES). The PVDF layer provides hydrophobic properties, while PES offers mechanical stability.
- DSLIG Laser engraving technology is used to enhance the material's performance, enabling it to operate effectively under both solar and electric heating. It combines solar and electric (Joule) heating, ensuring consistent performance despite variations in sunlight.
- This dual heating approach allows the evaporator to maintain stable temperatures,

providing reliable desalination even when sunlight is unavailable.

- Additionally, DSLIG exhibits superhydrophobic properties, which prevent salt from adhering to the surface, reducing salt buildup and enhancing the long-term efficiency of the evaporator.

Future Potential:

- Laboratory tests have shown promising results, with DSLIG being effective for desalinating seawater, brackish water, and industrial wastewater.
- However, further field testing and funding are required for large-scale applications. Nonetheless, its low carbon footprint, cost-effectiveness, and ability to handle concentrated salt solutions suggest it could be an important tool in sustainable desalination and wastewater treatment in the future.

Conclusion:

The development of DSLIG represents a promising step in improving desalination efficiency. By addressing key challenges associated with traditional methods, it offers potential for more sustainable and reliable desalination processes to help mitigate freshwater scarcity worldwide.

Gene Therapy for Haemophilia

Context:

In a significant stride for medical science, Indian researchers have achieved ground breaking advancement in the treatment of Haemophilia A through gene therapy. This achievement not only marks a pivotal moment in the global fight against genetic disorders but also underscores India's growing prominence in the biotechnology sector.

About Haemophilia A

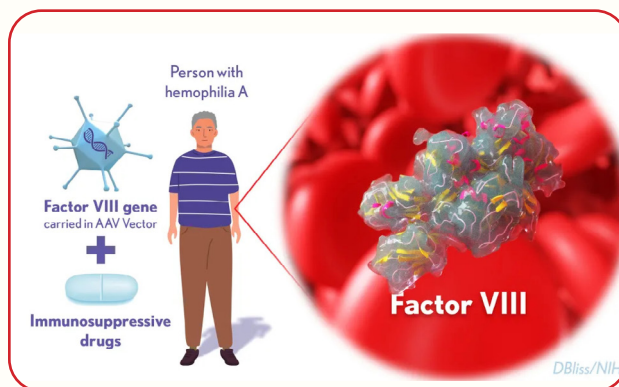
- Haemophilia A is a rare genetic disorder characterized by a deficiency in clotting Factor VIII, leading to spontaneous and prolonged bleeding episodes.
- This condition significantly impairs

the quality of life and poses treatment challenges, especially in resource-limited settings.

- India, with approximately 136,000 individuals affected, bears the second-highest global burden of Haemophilia.

Breakthrough Gene Therapy:

- Scientists at the Centre for Stem Cell Research (CSCR) at Christian Medical College (CMC), Vellore, in collaboration with the Biotechnology Research and Innovation Council's Institute for Stem Cell Science and Regenerative Medicine (BRIC-inStem) Bengaluru, have developed the country's first human gene therapy for Haemophilia A.
- This innovative therapy utilizes lentiviral vectors to introduce a functional copy of the Factor VIII gene into patients' blood stem cells. The modified cells are then transplanted back into the patients, enabling them to produce the clotting factor naturally.
- The trial involved participants aged between 22 and 41 years. Over a cumulative follow-up period of 81 months, all participants exhibited zero annualized bleeding rates and sustained production of Factor VIII, eliminating the need for regular infusions.



Significance and Implications:

- This development holds profound implications for public health and the biotechnology sector in India especially in nation-building and the transformative

potential of biotechnology in shaping India's economy and public health infrastructure.

- India's Biotechnology sector has witnessed remarkable growth, expanding 16-fold over the past decade to reach \$165.7 billion in 2024, with projections of \$300 billion by 2030.

Challenges and Future Prospects:

- Despite the promising results, challenges remain in scaling this therapy for widespread use. The high cost of gene therapy, limited access to specialized medical facilities, and the need for advanced infrastructure pose significant barriers.
- Addressing these challenges requires concerted efforts in policy-making, healthcare infrastructure development, and public-private partnerships.
- Looking ahead, the success of this gene therapy opens avenues for further research and development in the treatment of other genetic disorders. With on-going support from the Department of Biotechnology and other stakeholders, India is poised to become a global leader in biotechnology innovation, offering hope to millions affected by genetic diseases.

Conclusion:

This breakthrough in gene therapy for Haemophilia A is not just a scientific achievement but a testament to India's growing capabilities in biomedical research and its commitment to improving public health outcomes.

Paste Fill Technology

Context:

South Eastern Coalfields Limited (SECL) is set to become the first coal PSU in India to adopt paste fill technology for coal mining—marking a major step toward sustainable and environmentally friendly mining practices. To implement this innovative underground mining technology, SECL has signed a Rs. 7040 crore agreement with TMC Mineral Resources Private Limited.

About the agreement:

- Under this agreement, large-scale coal production will be undertaken using paste fill technology in the Singhali underground coal mine located in SECL's Korba area. Over a period of 25 years, the project is expected to produce approximately 8.4 million tonnes (84.5 lakh tonnes) of coal.
- The Singhali mine, operational since 1993, was originally developed using the Bord and Pillar method. However, conventional mining methods faced limitations due to dense surface infrastructure including villages, high-tension power lines, and PWD roads. Paste fill technology offers a non-invasive solution, allowing coal extraction to continue without disrupting life and infrastructure above ground.

What is Paste Fill Technology?

- Paste fill is a modern, eco-conscious method of underground mining where voids left after coal extraction are filled with a semi-solid paste.
- This paste is composed of fly ash, crushed overburden, cement, water, and binding agents—many of which are waste materials from other industrial processes.
- The technique not only ensures structural stability and prevents land subsidence, but also reduces the environmental footprint by recycling industrial by-products.

Key Features of Paste Fill Technology:

- Eco-Friendly:** Paste fill technology eliminates the need to acquire surface land, reducing environmental impact.
- Structural Stability:** The technology prevents land subsidence and ensures the structural stability of the mine by filling mined-out voids with a specially prepared paste.
- Utilization of Industrial Waste:** The paste is made from fly ash, crushed overburden from opencast mines, cement, water, and binding chemicals, promoting waste utilization.

Conclusion:

The adoption of paste fill technology in Singhali is not just a technological upgrade—it represents a broader shift toward green mining in India. The project sets a precedent for reviving other underground mines facing similar constraints and demonstrates how sustainable technologies can secure both economic output and environmental preservation.

India's First Indigenously Developed HPV Test Kits for Cervical Cancer

Context:

In a recent development, the Department of Biotechnology (DBT) has announced the successful validation of India's first indigenously developed Human Papillomavirus (HPV) test kits for cervical cancer screening. These kits are developed by Molbio Diagnostics Limited and Mylab Discovery Solutions and are expected to revolutionize the landscape of cervical cancer detection and prevention, offering an affordable, efficient, and accessible solution for millions of women across the country.

About Cervical cancer:

- Cervical cancer is a disease where abnormal cells grow in the cervix, the lower part of the uterus, and can spread to other parts of the body. Almost all cases are linked to infections with high-risk types of human papillomavirus (HPV). Early detection through Pap tests and HPV testing, along with HPV vaccination, substantially decreases the risk of developing cervical cancer.

Key Features of the HPV Test Kits:

- **Indigenously Developed:** The test kits are a result of innovative work by Indian companies, marking a significant milestone in the country's efforts to produce indigenous medical technologies.
- **Point-of-Care Testing:** A standout feature of these HPV test kits is their point-of-care testing capability. The kits use a chip-based RT-PCR test method that enables fast and

decentralized detection of eight high-risk genotypes of HPV.

- **Affordable and Efficient:** The affordability of these kits is another key strength. Since cervical cancer screening is often an expensive procedure, they hinder the impediment for early diagnosis in resource constrained environments. In such a situation these kits present an affordable way of filling the gap.

Impact on Cervical Cancer Screening:

- **High Prevalence of Cervical Cancer in India:** Cervical cancer remains one of the leading causes of cancer-related deaths among women in India. It accounts for nearly 25% of all global cases, with over 1,23,000 new diagnoses and around 77,000 deaths annually in the country. Early detection through effective screening methods is essential to reducing these numbers and preventing unnecessary deaths.
- **Global Efforts for Cervical Cancer Elimination:** The World Health Organization (WHO) has set a global target to eliminate cervical cancer as a public health problem by 2030. According to WHO's guidelines, by 2030, 70% of women aged 35–45 should undergo HPV testing, with 90% of women receiving treatment for precancerous lesions. India's validation of these HPV test kits is a significant step towards achieving this goal on a national scale.

Conclusion:

The successful validation of India's first indigenously developed HPV test kits for cervical cancer screening is a momentous achievement in public health. These kits provide an affordable, efficient, and accessible solution for widespread cervical cancer screening, offering hope for early detection and prevention of one of the most prevalent forms of cancer in women. With the backing of rigorous validation processes and international collaborations, these kits have the potential to save thousands of lives by empowering healthcare providers with the tools needed to fight cervical cancer effectively.

India's Progress in Poverty Reduction: An Analytical Overview

India has made significant strides in reducing poverty over the past decade, lifting 171 million people out of extreme poverty, as highlighted in the World Bank's Spring 2025 Poverty and Equity Brief. This achievement underscores India's commitment to inclusive development and reflects the impact of targeted government policies, welfare schemes, and economic reforms designed to uplift millions. Drawing upon data from the 2011–12 and 2022–23 consumption surveys, the report provides a comprehensive analysis of improvements in both monetary and multidimensional poverty indicators.

Key Findings:

- ❖ The World Bank's report emphasizes India's remarkable journey in poverty reduction, marking a steep decline in extreme poverty from 16.2 percent in 2011–12 to just 2.3 percent in 2022–23. Considering the global benchmark for extreme poverty—living on less than USD 2.15 per day—this reduction is particularly noteworthy.
- ❖ Furthermore, the report illustrates India's success in reducing poverty across both rural and urban landscapes, providing a holistic portrayal of the country's achievements.

Rural and Urban Poverty Trends:

- ❖ India's success story is spread across both rural and urban landscapes:
 - » **Rural Areas:** Extreme poverty reduced from 18.4% in 2011–12 to 2.8% in 2022–23.
 - » **Urban Areas:** Extreme poverty fell from 10.7% to 1.1% in the same period.

- ❖ Moreover, the rural-urban poverty gap narrowed substantially, from 7.7 percentage points in 2011–12 to 1.7 percentage points in 2022–23, reflecting a 16% annual decline. This convergence indicates the effectiveness of poverty reduction strategies across diverse demographic settings.

Lower-Middle-Income Poverty Reduction:

- ❖ Substantial progress has also been made at the lower-middle-income threshold (3.65 USD per day):
 - » The poverty rate dropped from 61.8% in 2011–12 to 28.1% in 2022–23.
 - » Approximately 378 million people moved out of poverty at this income level.
 - » In rural areas, poverty declined from 69% to 32.5%, and in urban areas, from 43.5% to 17.2%.
- ❖ The rural-urban gap at this level reduced from 25 percentage points to 15 percentage points, with a 7% annual decline observed between 2011–12 and 2022–23.

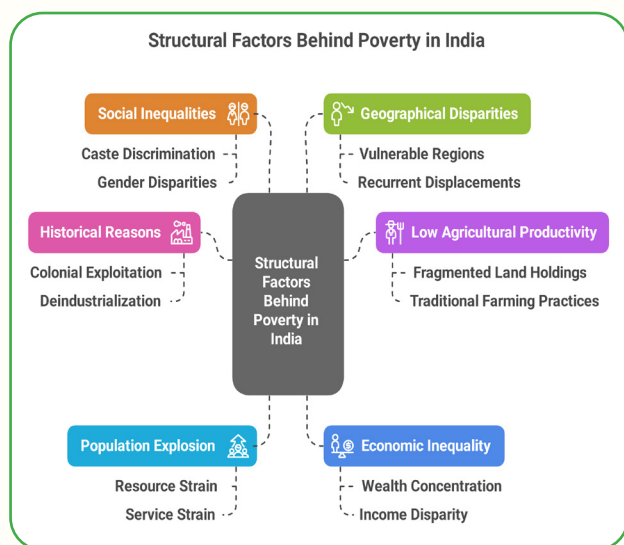
State-Level Contributions to Poverty Reduction:

- ❖ Certain key states have played an outsized role in India's poverty alleviation:
 - » Uttar Pradesh, Maharashtra, Bihar, West Bengal, and Madhya Pradesh accounted for 65% of India's extreme poor in 2011–12.
 - » These five states contributed to two-thirds of the total reduction in extreme poverty by 2022–23.
- ❖ This highlights the impact of targeted regional strategies and the importance of

state-level initiatives aligned with national development goals.

Multidimensional Poverty Reduction:

- ❖ India's progress extends beyond monetary dimensions, reflected in improvements in the Multidimensional Poverty Index (MPI), which includes indicators such as education, health, and living standards:
 - » MPI-based non-monetary poverty declined from 53.8% in 2005–06 to 16.4% in 2019–21.
 - » In 2022–23, the MPI figure further dropped to 15.5%, signaling continued enhancements in overall well-being.
- ❖ Such multidimensional gains are crucial as they reflect sustainable and broad-based human development, rather than income growth alone.



Income Inequality Trends:

- ❖ India also recorded improvements in income distribution, as reflected by the Gini Index:
 - » The consumption-based Gini index fell from 28.8 in 2011–12 to 25.5 in 2022–23.
- ❖ This decline indicates a modest but important reduction in income inequality, suggesting that economic gains have been relatively more evenly distributed compared to earlier periods.

Employment Growth and Shifting

Workforce Patterns:

- ❖ Since 2021–22, employment growth has outpaced the growth of the working-age population.
- ❖ The urban unemployment rate dropped to 6.6% in the first quarter of FY24/25, the lowest since 2017–18.
- ❖ Workforce shifts show male workers moving from rural to urban areas since 2018–19, reflecting urban economic dynamism.
- ❖ Rural female employment in agriculture has witnessed an upturn, highlighting the sector's continuing significance.

Key Terms

- **Absolute Poverty:** Severe deprivation of basic needs without regard to social context.
- **Relative Poverty:** Poverty measured relative to societal standards of living.
- **Poverty Rate/Incidence/Headcount Ratio:** The share of the population living below the poverty line.
- **Intensity of Poverty:** Measures the degree of deprivation among the poor.
- **Multidimensional Poverty Index (MPI):** A global measure capturing deprivations across education, health, and living standards.
- ❖ There has been a rise in self-employment, especially among rural workers and women, contributing to greater economic resilience and participation.

Historical Context of Poverty Estimation in India:

- ❖ Pre-Independence, early efforts by Dadabhai Naoroji (Poverty and the Un-British Rule in India), the National Planning Committee (1938), and the Bombay Plan (1944) laid the groundwork for understanding poverty.
- ❖ Post-Independence, the Planning Commission (1962), followed by the work of V.M. Dandekar and N. Rath (1971), Alagh Committee (1979), and Lakdawala Committee (1993), contributed to developing methodologies for poverty estimation.
- ❖ In the post-2000 era, the Tendulkar Committee (2009) introduced important methodological shifts, including moving

away from calorie norms, establishing a uniform all-India Poverty Line Basket (PLB) for rural and urban areas, and recommending the use of Mixed Reference Period (MRP) estimates over Uniform Reference Period (URP). The Rangarajan Committee (2014), formed in response to criticism of the Tendulkar methodology, reverted to separate rural and urban PLBs for more accurate poverty estimates, though its recommendations were not formally adopted by the government.

Structural Factors Behind Poverty in India:

- ❖ **Historical Reasons:** Colonial exploitation led to the destruction of indigenous industries, deindustrialization, and a drain of wealth. British policies converted India into a supplier of raw materials and importer of finished goods, impoverishing local farmers and artisans.
- ❖ **Low Agricultural Productivity:** Fragmented land holdings, lack of capital, and traditional farming practices have restricted yields, impacting farmers' incomes.
- ❖ **Population Explosion:** Rapid population growth has strained resources and services. India's population is projected to peak at 1.7 billion by the early 2060s and will remain the most populous country throughout the century (UNDESA).
- ❖ **Economic Inequality:** Wealth is highly

concentrated, with the top 10 percent of the population holding 77 percent of the national wealth (Oxfam).

- ❖ **Social Inequalities:** Caste discrimination and gender disparities limit access to education, employment, and resources. For instance, 53 percent of Indian women are outside the labor force due to care responsibilities (ILO).
- ❖ **Geographical Disparities:** Vulnerable areas such as dense forests, hilly terrains, and flood-prone regions like Assam and Bihar face recurrent displacements, perpetuating absolute poverty.

Conclusion:

India's achievements in reducing both extreme and lower-middle-income poverty reflect a well-rounded and sustained approach to inclusive development. The findings of the World Bank's Spring 2025 Poverty and Equity Brief showcase the pivotal role played by economic reforms, targeted welfare policies, and improved access to essential services. The narrowing rural-urban poverty gap, declining multidimensional poverty, and positive employment trends signal broader social and economic improvements. Building on this foundation, India can continue advancing towards a more equitable, resilient, and prosperous future.

India's Remittance Inflows: An Analysis of RBI's Latest Remittance Survey

India has long been one of the world's largest recipients of remittances, with millions of Indian migrants sending money back home. However, the latest Remittances Survey (2023-24) by the Reserve Bank of India (RBI) highlights a major shift in India's remittance inflows. For the first time, remittances from Advanced Economies (AEs)—including the United States, the United Kingdom, Canada, Singapore, and Australia—have surpassed those from the Gulf

Cooperation Council (GCC) nations (Saudi Arabia, the UAE, Qatar, Oman, Bahrain, and Kuwait). This shift is not merely a statistical change; it reflects broader transformations in global migration patterns, employment opportunities, and economic policies. The decreasing reliance on remittances from the Gulf and increasing inflows from high-income countries indicate a transition from low-wage, volume-driven remittances to high-value remittances from skilled professionals in AEs.

While this development strengthens India's economic resilience, it also raises critical policy questions regarding migration trends, labor market dynamics, and the sustainability of remittance inflows. A deeper understanding of these trends is essential for designing policies that support migrant workers and maximize remittance benefits for India's economy.

Declining Remittances from the Gulf: Causes and Implications:

Historically, the GCC nations have been the largest contributors to India's remittance economy, largely due to the significant number of Indian blue-collar workers employed in the region. However, recent data indicate a decline in remittance inflows from the Gulf. Several factors contribute to this trend:

- ❖ **Economic Disruptions Due to COVID-19:** The COVID-19 pandemic had a severe impact on the Gulf economies, leading to:
 - » Widespread job losses among Indian migrant workers.
 - » Salary reductions, limiting the disposable income available for remittances.
 - » Temporary return migration, as many workers were forced to return to India due to job losses.
- ❖ **Nationalisation Policies in the GCC:** Several GCC nations have introduced labor nationalisation policies aimed at reducing foreign worker dependency and increasing local employment.
 - » Saudi Arabia's "Saudisation" (Nitaqat) policy prioritizes Saudi citizens in private-sector jobs.
 - » The UAE's "Emiratisation" strategy has similarly encouraged businesses to hire local talent over foreign workers.
- ❖ These policies have significantly reduced employment opportunities for Indian migrants, leading to lower remittances from these regions.
- ❖ **Declining Share of GCC Remittances:** The shift in economic and labor policies has led to a noticeable decline in the share of remittances from GCC countries:
 - » UAE's share in total remittances

dropped from 26.9% (2016-17) to 19.2% (2023-24).

- » Saudi Arabia's share fell from 11.6% to 6.7%.
- » Kuwait's share declined from 6.5% to 3.9%.

Future Outlook for GCC Remittances:

- ❖ Despite these trends, remittance inflows from the Gulf could recover if economic conditions stabilize and labor policies evolve to accommodate skilled foreign workers. However, the overall trajectory suggests a shift away from low-skilled labor migration toward high-skilled professional migration to advanced economies.

Increasing Remittances from Advanced Economies (AEs): Causes and Impact

While remittances from the Gulf have declined, remittances from Advanced Economies (AEs) have been steadily increasing.

- ❖ **United States as the Largest Contributor:**
 - » In 2023-24, the US accounted for 27.7% of India's total remittances, up from 22.9% in 2016-17 and 23.4% in 2020-21.
 - » Although the total number of Indian migrants in the US is smaller than in the Gulf, they send higher per capita remittances due to higher wages and greater purchasing power.
- ❖ **Growth of Remittances from Other AEs:**
 - » UK's share increased from 3% (2016-17) to 10.8% (2023-24).
 - » Canada's share rose from 3% to 3.8%.
 - » Singapore's share grew from 5.5% to 6.6%.
- ❖ **Factors Driving Higher Remittances from AEs:**
 - » **Higher Incomes and Purchasing Power**
 - Indian professionals in STEM (Science, Technology, Engineering, Mathematics), finance, and healthcare earn significantly higher salaries in AEs compared to the Gulf.
 - Stronger exchange rates in AEs (especially the US dollar) increase

the real value of remittances.

- » **Changing Migration Patterns:**
 - Highly skilled Indian professionals are increasingly migrating to countries like Germany, the Netherlands, and Australia in search of better opportunities.
 - These workers typically remit more money home, boosting India's remittance inflows.
- » **Uncertainty in Immigration Policies:**
 - Right-wing politics in several AEs have led to restrictive immigration policies, making it harder for migrants to secure permanent residency.
 - This uncertainty has led many Indian migrants to remit larger sums home rather than investing in their host countries.

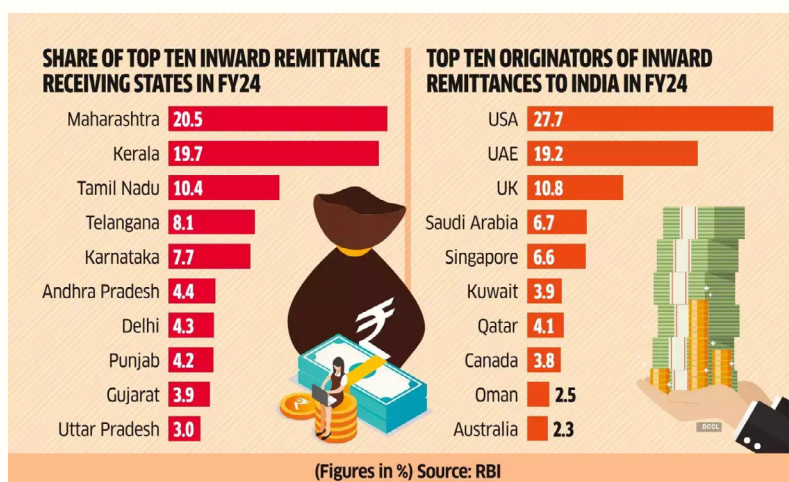
Role of Indian Students in Remittance Growth:

- ❖ **Growing Student Migration:**
 - » A significant portion of India's remittance inflows now comes from Indian students pursuing higher education abroad.
 - » Students contribute to remittance inflows through loan repayments and family financial transfers.
- ❖ **Challenge of Deskilling and Underemployment:**
 - » Many Indian students in Canada and the UK face "wilful deskilling", where highly educated graduates are forced to take low-skill jobs (retail, hospitality, delivery services) to qualify for permanent residency.
 - » This restricts their long-term earning potential, affecting future remittance inflows.
- ❖ **Impact of Changing Visa Policies:**
 - » Sudden visa rule changes in countries like Canada and Australia impact students' career prospects, affecting

their ability to send remittances home.

Future Trends in India's Remittance Economy:

- ❖ **Potential Increase in Remittances from AEs:** As skilled migration increases, remittances from AEs (especially the US, UK, and Canada) will continue to grow.
- ❖ **Possibility of Return Migration to India:** If immigration policies become more restrictive, some Indian professionals may return to India, bringing their financial assets and remittances with them.



- ❖ **Stabilization of Gulf Remittances:** Economic recovery in the GCC region could revive employment opportunities and stabilize remittance inflows from the Gulf.

Policy Recommendations for Maximizing Remittance Benefits:

- ❖ **Skill Harmonization and Migration Policies:** India should align its education and skill development programs with the global labor market, ensuring that Indian workers secure jobs that match their qualifications.
- ❖ **Preventing Deskilling of Indian Students Abroad:** The government should negotiate with host countries to ensure that skilled Indian graduates can access jobs relevant to their expertise.
- ❖ **Investment Incentives for Returning Migrants:** India should encourage returning

migrants to reinvest in the domestic economy, ensuring that remittances contribute to long-term economic growth.

Conclusion:

India's remittance landscape is undergoing a fundamental shift, moving away from Gulf-based, low-wage remittances to high-value inflows from skilled professionals in AEs. This transition presents both opportunities

and challenges. While it strengthens India's economy, it also demands strategic policy interventions to maximize remittance benefits and support migrant workers. By addressing skill gaps, immigration policies, and labor market integration, India can ensure that remittances continue to be a driving force for economic development.

India's Milestone in Coal Production

India's coal sector has achieved a historic milestone by surpassing one billion tonnes (BT) of coal production in the fiscal year 2024-25, reaching 1.04 BT on March 20, 2025—11 days ahead of the previous fiscal year's total of 997.83 million tonnes (MT). This achievement underscores the sector's pivotal role in the national energy framework, given that coal contributes 55% to India's energy mix and fuels over 74% of total power generation. With the fifth-largest coal reserves globally and as the second-largest consumer, India has strategically enhanced domestic coal production to reduce import dependence and ensure energy security.

Growth in Coal Production and Dispatch:

- ❖ India's coal production has witnessed a significant increase, reaching 1.04 billion tonnes in FY 2024-25, marking a 4.99% growth from the previous fiscal year. This rise is attributed to:
 - » **Public and Private Sector Contributions:** Coal production from commercial, captive, and other private entities grew by 28.11%, reaching 197.50 MT (Provisional) compared to 154.16 MT in the previous year.
 - » **Coal Dispatch:** The total coal dispatch crossed 1 BT, with 1,024.99 MT (Provisional) distributed in FY 2024-25, reflecting a 5.34% growth from 973.01 MT in FY 2023-24.
 - » **Private Sector Engagement:** Dispatch

from commercial and captive entities surged by 31.39%, reaching 196.83 MT compared to 149.81 MT in the prior fiscal year.

- ❖ Coal dispatch, the process of transporting and distributing coal to power plants and industrial units, plays a critical role in maintaining an uninterrupted energy supply.

Reduction in Coal Imports and Energy Security:

- ❖ India has made notable progress in reducing coal imports, enhancing self-reliance in energy production.
 - » Coal imports declined by 8.4% from 200.19 MT in April-December 2023 to 183.42 MT in the same period of 2024, resulting in foreign exchange savings of \$5.43 billion (Rs. 42,315.7 crore).
 - » The Non-Regulated Sector (NRS) recorded a 12.01% decline in coal imports, while imports for blending by thermal power plants fell by 29.8%, despite a 3.53% increase in coal-based power generation.
 - » Initiatives such as Commercial Coal Mining and Mission Coking Coal boosted domestic output by 6.11%, further reducing dependency on foreign coal.
- ❖ Although India continues to require imports of coking and high-grade thermal coal, government policies emphasize domestic

coal mining expansion to enhance energy security.

Economic Significance of the Coal Sector:

Coal remains a fundamental pillar of India's economy, with substantial contributions to revenue generation, employment, and industrial development.

❖ **Contribution to Railways and Freight Revenue:**

- » Coal is the largest contributor to railway freight, accounting for nearly 49% of total freight earnings.
- » In FY 2022-23, coal transport generated Rs.82,275 crore, making up 33% of total railway earnings.

❖ **Government Revenue Generation:**

- » The coal sector contributes over Rs.70,000 crore annually to the central and state governments through royalties, GST, and other levies.
- » Royalty collections from coal production alone amounted to Rs.23,184.86 crore in FY 2022-23, supporting infrastructure and socio-economic development in coal-producing regions.

❖ **Employment and Workforce Development:**

- » The coal industry directly employs over 239,000 workers in Coal India Limited (CIL), with thousands more engaged in contractual mining, transportation, and related industries.
- » Substantial capital expenditure investments, averaging Rs.18,255 crore annually over the past five years, have facilitated infrastructure expansion and employment generation.

❖ **Coal Gasification: A Path to Sustainable Coal Utilization**

- » To promote cleaner coal technologies, India has prioritized coal gasification, a process that converts coal into syngas, which can be used for producing methanol, Synthetic Natural Gas (SNG), fertilizers, and ammonium nitrate.

Key Government Initiatives:

- » **Financial Incentives:** The government approved Rs.8,500 crore on January

24, 2024, to promote coal/lignite gasification projects.

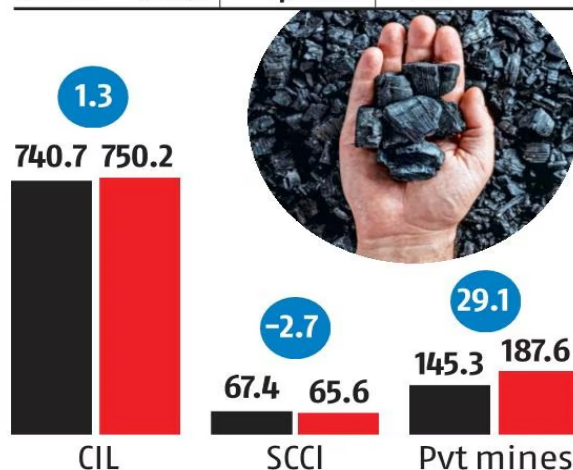
- » **Investment by Coal India Ltd (CIL):** CIL has partnered with BHEL and GAIL for coal gasification ventures.
- » **New Policy for Gasification-Based Auctions:** The "Production of Syngas" category was introduced in 2022 under the NRS linkage auctions policy.
- » **Revenue Share Rebates:** A 50% rebate in revenue share has been offered for coal used in gasification projects, provided at least 10% of total production is utilized for gasification.

- ❖ By 2047, coal gasification is expected to reduce environmental impact and align with India's long-term vision for sustainable energy development.

THE COAL BASKET

Coal production (in million tonnes)

	FY24	FY25*	% chg Y-o-Y
TOTAL ▶	953.3	1,003.3	5.2



Pvt mines include captive and commercial mines

*until March 20

Coal Mine Safety and Technological Advancements:

The Ministry of Coal has implemented several measures to enhance mine safety, workforce protection, and operational efficiency.

- ❖ **Safety Audits and Regulatory Framework:**

- » **Annual Safety Audits:** Conducted under the "Safety Health Management System Audit" guidelines (December 2023).
- » **National Coal Mine Safety Report Portal:** Launched on December 17, 2024, incorporating safety audit modules for online reporting.

❖ **Advanced Mining Technologies:**

- » **Blast-Free Mining Technologies:** Adoption of Continuous Miner, Powered Support Longwall (PSLW), and Hybrid High Wall Mining to improve efficiency and reduce environmental hazards.
- » **Real-Time Monitoring:** Use of Environmental Telemonitoring Systems (ETMS) and Gas Chromatographs for underground mine air sampling.
- » **Strata Control Technologies:** Implementation of mechanized roof bolting systems for structural stability.

❖ **Environmental and Worker Welfare Measures:**

- » **Health and Safety Provisions:** Mines Rules, 1955, ensures health checks, first aid, canteens, and welfare facilities for workers.
- » **Environmental Monitoring:** Environmental Impact Assessments

(EIA) are conducted before project approvals.

- » **Skill Development:** Introduction of simulator-based training programs for Heavy Earth Moving Machinery (HEMM) operators and virtual reality (VR) training modules.

Conclusion:

India's coal sector continues to be a cornerstone of the nation's energy security, economic growth, and industrial development. The recent milestone of one billion tonnes in production and dispatch, coupled with a notable reduction in imports, underscores India's commitment to energy self-reliance. With ongoing investments in coal gasification, mine safety, and technological advancements, the coal industry is transitioning towards a more sustainable and efficient framework. Despite the expansion of renewable energy sources, coal will remain a critical energy resource, projected to constitute 55% of India's power generation in 2030 and 27% by 2047. Through strategic policy initiatives and a dedicated workforce, India is well-positioned to ensure a sustainable coal sector that aligns with the national vision of Viksit Bharat (Developed India) by 2047.

Short Issues

RBI Reduces Repo Rate

Context:

On April 9, 2025, the Reserve Bank of India's (RBI) six-member Monetary Policy Committee (MPC) announced a reduction in the repo rate by 25 basis points, bringing it down to 6%. Along with this, the RBI changed its monetary policy stance from "neutral" to "accommodative", indicating the possibility of further rate cuts in the future. This decision comes at a time of global economic uncertainty and domestic growth concerns.

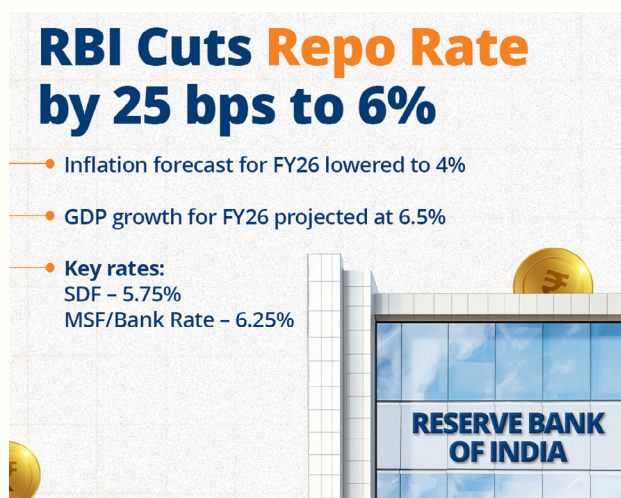
About the Repo Rate:

- The repo rate is the interest rate at which commercial banks take loans from the RBI. It helps decide the overall interest rates in the economy. The reverse repo rate is the interest rate the RBI pays to banks when they deposit extra money with it.
- Currently, the repo rate is 6%, and the reverse repo rate is 3.35%.
- When the RBI lowers the repo rate, banks can borrow money at a lower cost. This allows them to reduce loan interest rates, making borrowing cheaper for businesses and individuals.
- On the other hand, when the RBI increases the repo rate, loans become more expensive.

This reduces borrowing and helps control inflation.

Reason behind reducing the Repo Rate:

- The RBI's decision to cut the repo rate is influenced by both global and domestic economic factors.
 - » **Global Uncertainty:** The trade tensions created by the reciprocal tariffs imposed by the United States under the Trump administration have led to instability in global markets. RBI Governor Sanjay Malhotra noted that reviving economic growth is a bigger concern than inflation at this point.
 - » **Controlled Inflation:** The average inflation rate in January-February 2025 was 3.9%, which is lower than the RBI's projection of 4.8% for the fourth quarter of FY 2025. Since inflation remains within manageable levels, the RBI has more flexibility to support economic growth by reducing interest rates.



Impact of the Rate Cut:

- **Boosting Economic Growth:** Lower borrowing costs make loans cheaper for businesses and individuals, encouraging investment, spending, and job creation.
- **Potential Inflationary Pressure:** While lower interest rates help growth, they can also increase money supply, which might

lead to higher inflation in the future.

- **Changes in Banking Sector Rates:** Commercial banks may reduce their lending rates, making home, vehicle, and business loans more affordable, but also lowering interest rates on deposits.
- **Future Monetary Policy:** The RBI's accommodative stance suggests that if economic conditions do not improve, further repo rate reductions may follow to stimulate growth.

Conclusion:

The RBI's repo rate cut reflects its strategy to support economic growth amid global challenges. By making borrowing cheaper, the central bank aims to encourage investment and spending. However, closely monitoring inflation and external economic conditions will be essential to maintain a balanced monetary policy.

Amalgamation of Regional Rural Banks

Context:

The Ministry of Finance, through the Department of Financial Services (DFS), has announced the amalgamation of 26 Regional Rural Banks (RRBs) based on the principle of "One State, One RRB".

About Regional Rural Banks (RRBs):

- Regional Rural Banks (RRBs) were established under the provisions of an Ordinance in 1975 based on the recommendations of the Narasimham Committee on Rural Credit. This led to the passing of the Regional Rural Banks Act, 1976, which formalized their operations.
- These are Indian Scheduled Commercial Banks that operate at the regional level across different states. They play a vital role in ensuring financial inclusion, with around 92% of their branches located in rural and semi-urban areas.
- Their primary objective is to facilitate rural economic development by providing

financial assistance to:

- » Small and marginal farmers
- » Agricultural laborers
- » Artisans and small entrepreneurs

Ownership Structure of RRBs:

- The equity of RRBs is divided among three key stakeholders in the following ratio:
 - » 50% - Central Government
 - » 35% - Sponsor or Scheduled Banks
 - » 15% - State Governments

Consolidation Efforts and Phases of Amalgamation:

- The consolidation of RRBs began in 2004-05, following the Dr. Vyas Committee (2001) recommendations. It has been carried out in multiple phases:
 - » **Phase-I (FY 2006 – FY 2010):** The number of RRBs was reduced from 196 to 82.
 - » **Phase-II (FY 2013 – FY 2015):** Further reduced from 82 to 56.
 - » **Phase-III (FY 2019 – FY 2021):** The number of RRBs was consolidated from 56 to 43.
 - » **Phase-IV (2024):** The latest phase has merged 26 RRBs across 12 states, reducing the total number from 43 to 28.
- **Current Consolidation Phase (2024):**
 - » The Ministry of Finance, in consultation with the National Bank for Agriculture and Rural Development (NABARD), has implemented the “One State, One RRB” model. This aims to:
 - Reduce operational costs
 - Enhance capital adequacy
 - Improve banking efficiency
 - » Several states, including Andhra Pradesh, Uttar Pradesh, and West Bengal, are witnessing the consolidation of multiple RRBs into a single institution for better governance and service delivery.

Impact of Amalgamation:

- Post-amalgamation, the number of RRBs has been reduced to 28, operating across 26 states and 2 Union Territories. These banks

will serve more than 700 districts through a network of over 22,000 branches, ensuring broader financial reach in rural areas.

- » **Improved Scale Efficiency:** Larger RRBs can better manage resources and increase their financial stability.
- » **Cost Rationalization:** Reduced administrative expenses will enhance profitability.
- » **Technological Advancements:** Strengthened banks will have more resources to invest in digital banking and modern financial services.
- » **Stronger Financial Inclusion:** Consolidated RRBs will be able to offer better credit and financial services to rural populations.

Conclusion:

The structured amalgamation of RRBs is a strategic move toward strengthening rural banking in India. By consolidating smaller banks into larger, more efficient entities, the government aims to enhance financial inclusion, improve banking services, and support rural economic development.

Kerala Declares Dharmadam Constituency ‘Extreme Poverty-Free’

Context:

Recently, Kerala has declared his Dharmadam Assembly constituency in Kannur as the first in the state to be completely free of extreme poverty. The announcement was made during a public function held at Pinarayi village, located within the constituency. The Chief Minister of Kerala also stated that Kerala will be officially declared an ‘extreme poverty-free’ state by November 1, 2025, aligning the target with the state’s formation day.

About Extreme Poverty:

- Extreme poverty is defined by the World Bank as living on less than \$2.15 per person per day (adjusted for 2017 purchasing power parity).
- This threshold represents the most severe

form of poverty, where individuals struggle to meet even the most basic human needs—including access to adequate food, clean drinking water, sanitation, shelter, basic healthcare, education, and information.

- People living in extreme poverty often face chronic hunger, high infant mortality rates, and lack of access to schooling and healthcare, and insecure housing.

Extreme poverty in Kerala:

- Three years ago, the government embarked on a mission to eradicate extreme poverty from the state. It identified 64,002 families living under conditions of extreme deprivation. Micro-level action plans were then rolled out to uplift them with the help of various departments.
- In Kerala, identification of extreme poverty was based on four core indicators: food availability, healthcare access, income, and housing. Families lacking in any of these essential areas were included in the category.
- In Dharmadam, a total of 196 families were initially found to be living in extreme poverty:
- All families were also assisted in acquiring mandatory identification documents and were linked to relevant welfare schemes.

Statewide Progress:

- Out of the 64,002 families identified statewide, 44,000 families have already been lifted out of extreme poverty, with the remaining set to be covered in the coming months.
- The effort was driven by a grassroots survey conducted across all local self-government bodies, with the Kerala Institute of Local Administration setting the framework for evaluation and identification.
- Kerala, often lauded for its human development indicators, had already recorded the lowest poverty rate in India at 0.71%, according to the NITI Aayog's 2021 Multidimensional Poverty Index (MPI).

Conclusion:

Despite Kerala's high ranking in national poverty and development indices, the state acknowledged the presence of isolated pockets of extreme poverty—a challenge the current administration has worked to address through this focused, family-level intervention. This achievement demonstrates Kerala's commitment to inclusive development and poverty alleviation, solidifying its position as a leader in human development indices.

Chronic Fund Underutilization by Tourism Ministry

Context:

A recent report by the Department-Related Parliamentary Standing Committee on Transport, Tourism, and Culture raised concerns over the Union Tourism Ministry's chronic underutilization of allocated funds. The findings suggest systemic inefficiencies hindering India's tourism sector's growth.

Key Findings:

- **Underutilization Trend:**
 - » In 2024-25, the Ministry used only Rs.396.82 crore out of Rs. 2,479.62 crore allocated. In 2023-24, only 33.4% of the Rs.2,400 crore allocations was utilized. This ongoing underperformance signals deep-rooted inefficiencies needing urgent reforms.
- **Administrative Bottlenecks:**
 - » The Ministry attributed underperformance to delays, administrative bottlenecks, and coordination issues. However, the committee found these explanations insufficient, pointing to deeper operational weaknesses.

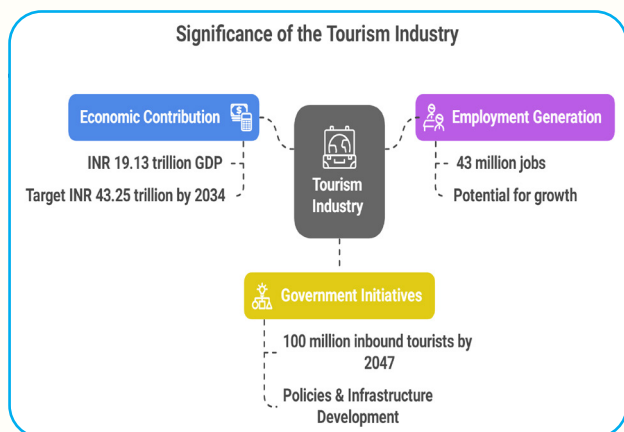
Recommendations:

- **Integrated Digital Project Management System (IDPMS):**
 - » To improve fund management and transparency, the committee recommended implementing a

centralized platform for tracking project lifecycles, from proposal submission to fund disbursal. The system would feature real-time status updates and automatic alerts for pending actions.

▪ **Tourism Implementation Rating System (TIRS):**

- » A performance-based framework was suggested to evaluate states on their tourism project execution. States would be ranked based on efficiency, fund utilization, and documentation, fostering competition and rewarding high-performing regions with incentives like priority funding and relaxed procedural requirements.



Implications:

- **Growth of India's Tourism Potential:**
 - » Chronic underutilization is a barrier to unlocking India's tourism potential. Efficient use of funds is essential to developing infrastructure and positioning India as a global tourist destination.
- **Incentives for States:**
 - » States with strong implementation records will be incentivized with priority funding for new projects, procedural relaxations, and annual tourism excellence awards.

Significance of Tourism Industry:

- Tourism is a major economic driver. In 2023, it contributed INR 19.13 trillion to India's GDP, surpassing pre-pandemic

levels. The sector also created 43 million jobs. The government aims to attract 100 million inbound tourists by 2047, increasing tourism's GDP contribution to INR 43.25 trillion by 2034.

Government Initiatives:

- **The government has taken steps to boost tourism:**
 - » **Niche Tourism:** Promoting adventure, wellness, and eco-tourism.
 - » **E-visas and 24X7 Helplines:** Simplified visa processes and multilingual assistance.
 - » **Paryatan Didi and Mitra:** To enhance hospitality for foreign tourists.
- **Domestic Tourism:**
 - » Domestic tourism continues to thrive, with 2.51 billion visits recorded in 2023. Programs like Dekho Apna Desh and Udaan have helped increase awareness of India's lesser-known destinations.

Conclusion:

Addressing fund underutilization, improving administrative processes, and incentivizing states are essential for unlocking India's tourism potential, which will contribute significantly to economic growth and global recognition.

Cabinet Approves Rs.1,600 Crore Scheme to Modernize Irrigation and Water Management

Context:

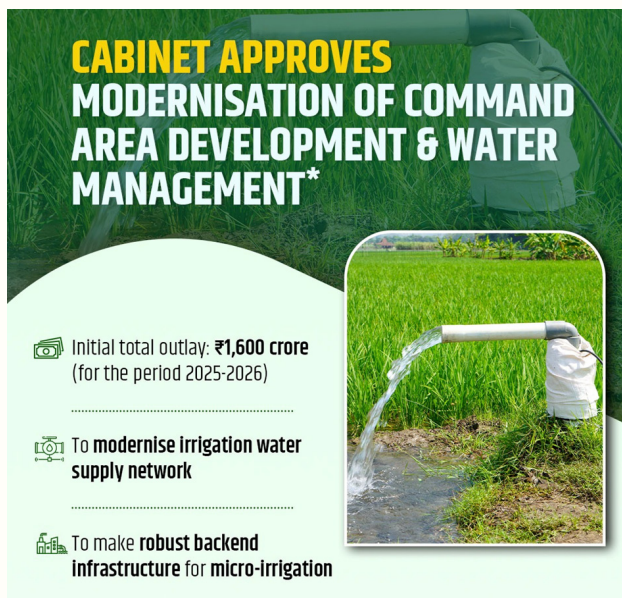
Recently, Union Cabinet, chaired by Prime Minister Narendra Modi, has approved the Modernization of Command Area Development and Water Management (M-CADWM) scheme as a sub-scheme under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). The scheme will be implemented during 2025–2026 with an initial financial outlay of Rs.1,600 crore.

Key Features of the Scheme

- **Modernization of Irrigation Infrastructure:** The M-CADWM scheme aims to modernize the irrigation water supply

network, delivering water from existing canals and other sources to designated farming clusters. The focus will be on building robust backend infrastructure to support micro-irrigation systems, improving last-mile connectivity to farms.

- **Smart Water Management with Technology:** To enhance Water Use Efficiency (WUE), the scheme will integrate advanced technologies such as:
 - » SCADA (Supervisory Control and Data Acquisition)
 - » Internet of Things (IoT)
- These systems will help with real-time monitoring, water accounting, and smart irrigation, empowering farmers to make data-driven decisions.



**CABINET APPROVES
MODERNISATION OF COMMAND
AREA DEVELOPMENT & WATER
MANAGEMENT***

-  Initial total outlay: ₹1,600 crore (for the period 2025-2026)
-  To modernise irrigation water supply network
-  To make robust backend infrastructure for micro-irrigation

- **Boost in Agricultural Productivity and Incomes:** By ensuring precise and timely irrigation, the scheme is expected to increase agricultural production and productivity, ultimately contributing to higher farm incomes and improved rural livelihoods.
- **Sustainable Project Management through Local Involvement:** The scheme introduces Irrigation Management Transfer (IMT), which hands over the management of irrigation assets to Water User Societies (WUS). These community groups will:
 - » Oversee operations and maintenance

- » Receive support for five years
 - » Be linked with Farmer Producer Organisations (FPOs) and Primary Agricultural Credit Societies (PACS) to ensure financial and operational sustainability
- **Youth Engagement and Innovation in Farming:** M-CADWM also seeks to attract youth to agriculture by promoting modern irrigation techniques and creating new opportunities in agri-tech and water management. The scheme envisions a next-generation farming model driven by innovation and efficiency.

Implementation and Future Outlook:

- **Pilot Phase (2025–26):** The scheme will initially be implemented across 78 pilot sites, covering nearly 80,000 farmers across various agro-climatic zones in India.
- **National Rollout (From April 2026):** Based on insights and learnings from the pilot phase, the government will launch a comprehensive National Plan for Command Area Development and Water Management in April 2026, aligned with the 16th Finance Commission period.

About the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):

- Launched in 2015, PMKSY is a Centrally Sponsored Scheme aimed at improving irrigation coverage and promoting efficient water usage across India's agricultural sector. It is part of the government's commitment to ensuring "Har Khet Ko Pani" — water for every farm.
- **Objectives:**
 - » Enhance access to irrigation for farmers
 - » Expand the cultivable area under assured irrigation
 - » Improve water-use efficiency through micro-irrigation techniques
 - » Promote sustainable water conservation and groundwater recharge practices

Conclusion:

The M-CADWM sub-scheme marks a forward-looking step in India's journey toward

sustainable agriculture, efficient irrigation, and empowered farming communities. By blending infrastructure, technology, and community engagement, the initiative aims to transform how water is used on Indian farms—ensuring that every drop counts.

New Pamban Bridge

Context:

Prime Minister Narendra Modi recently inaugurated the New Pamban Bridge in Tamil Nadu India marking a new landmark in infrastructure development in India. As the country's first vertical-lift sea bridge, this state-of-the-art structure showcases India's advancing engineering capabilities and commitment to modernizing transportation.

Structural and Engineering Features:

- Stretching 2.07 kilometers across the Palk Strait, the bridge links Rameswaram Island to mainland India.
- It replaces the original Pamban Bridge, constructed in 1914 by British engineers, which served as a crucial rail link but faced increasing challenges due to the harsh marine environment and growing transportation demands.
- The new bridge stands three meters taller than the original, ensuring better maritime clearance and smooth passage for ships.
- Built by Rail Vikas Nigam Limited (RVNL), a Navratna PSU under the Ministry of Railways, the bridge was sanctioned in 2019 with a focus on durability, speed, load-bearing capacity, and safety.
- A key highlight of the structure is its vertical-lift mechanism, which allows it to rise when required, enabling uninterrupted maritime traffic while ensuring railway connectivity.

Economic, Cultural, and Strategic Significance:

- Beyond its impressive engineering, the New Pamban Bridge is a lifeline for pilgrims, tourists, and trade, significantly improving connectivity and boosting the local economy.

- The vertical-lift design ensures efficient maritime operations, supporting commercial and defense movements in the strategically important Palk Strait region.

Salient features of
New Pamban Bridge



Objective
Construction of a new Pamban bridge with Navigational Lift Span

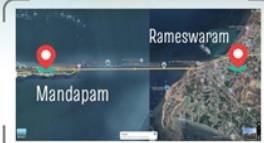
Location
Located in Ramanathapuram District of Tamil Nadu, the new Pamban Bridge will connect Rameswaram island with the Main land

Year of sanction
2019

Anticipated cost
Rs.550 cr

Span configuration
99 x 18.3 m + 1 x 72.5m

Length of the bridge
2.08 Km



Superstructure
72.5m Steel Through Girder for Navigational span & 18.3 m Steel Plate Girders for approach spans

Navigational span
One Vertical lift span of 72.5 m with provision for two tracks

Approach spans
99 Spans of 18.3m Steel Plate Girders fabricated for Single line

Global Comparisons:

- The New Pamban Bridge joins an elite list of iconic bridges known for their engineering excellence, including:
 - » **Golden Gate Bridge (USA):** A landmark suspension bridge.
 - » **Tower Bridge (London):** A bascule and suspension bridge.
 - » **resund Bridge (Denmark-Sweden):** A combined railway and motorway bridge.

Conclusion:

The New Pamban Bridge is more than just an infrastructural upgrade—it is a symbol of India's progress, innovation, and engineering

prowess. By blending modern technology with historical significance, this project reflects the nation's vision for efficient, future-ready transportation while reinforcing its global position in infrastructure development.

CROP assessment on Rabi Crop Progress in India

Context:

To strengthen agricultural monitoring in India, ISRO's National Remote Sensing Centre (NRSC) has developed a semi-automated, scalable framework called Comprehensive Remote Sensing Observation on Crop Progress (CROP). This framework provides near real-time assessment of crop sowing, growth, and harvesting. Implemented during the 2024–25 Rabi season, the framework focuses on wheat cultivation across India.

Key Findings:

- **Wheat Sown Area:** As of March 31, 2025, satellite analysis estimated wheat sowing at 330.8 lakh hectares, closely matching the Ministry of Agriculture & Farmers Welfare's figure of 324.4 lakh hectares (as of February 4, 2025), confirming the accuracy of the remote sensing approach.
- **Crop Health and Weather Impacts:**
 - » **January 2025:** Conditions were stable with timely sowing and healthy vegetative growth in Punjab, Haryana, and Uttar Pradesh.
 - » **February 2025:** Rising temperatures and rainfall deficits posed risks of heat stress during grain filling stages.
 - » **March 2025:** Favorable weather supported recovery, and crop maturity progressed well. By late March, Rabi crops exhibited resilience, leading to optimistic projections.
- **Harvest Progress:** Harvesting began in December 2024 and steadily progressed through January, February, March, and the first week of April 2025, marking a successful harvest timeline.

- **Estimated Wheat Production:** As of March 31, 2025, wheat production across the eight major states was estimated at 122.7 million tonnes, based on the integrated crop simulation model and satellite data.

About CROPS:

- CROP aims to systematically monitor wheat crop progress using advanced satellite data. It has been deployed across eight major wheat-growing states:
 - » Uttar Pradesh
 - » Madhya Pradesh
 - » Rajasthan
 - » Punjab
 - » Haryana
 - » Bihar
 - » Gujarat
 - » Maharashtra

Methodology:

- **Satellite-Based Monitoring:** CROP integrates multi-source data from both optical and Synthetic Aperture Radar (SAR) satellites, including:
 - » EOS-04 (RISAT-1A)
 - » EOS-06 (Oceansat-3)
 - » Resourcesat-2A
- This combination enables continuous tracking of sowing progress, vegetation health, and drought stress.
- **Vegetation Health Index (VHI):** The Vegetation Health Index (VHI) is used to monitor vegetation stress and overall crop condition. Monthly evaluations highlight changes in environmental factors affecting wheat growth.
- **Crop Growth Simulation:** An experimental crop growth simulation model at 5 km × 5 km spatial resolution assimilates satellite-derived inputs (sown area, sowing dates, and crop condition) to estimate wheat yield, allowing precise national-scale forecasting.

Significance and Future Prospects:

- The CROP framework serves as a proof-of-concept for operational scalability in agricultural monitoring. It demonstrates potential in:

- » Real-time tracking of sowing and harvesting
- » Monitoring drought and crop health
- » Enhancing yield estimation accuracy
- With further refinement and automation, the framework can support data-driven agricultural planning and food security strategies at national and regional levels.

Conclusion:

ISRO's CROP framework exemplifies innovation in agricultural surveillance through satellite technology. Its successful implementation for the 2024–25 Rabi season highlights its potential as a strategic tool for improving agricultural resilience and policy planning in India.

RBI Eases Liquidity Coverage Ratio Norms

Context:

In a move aimed at refining liquidity risk management without unduly burdening banks, the Reserve Bank of India (RBI) has eased its proposed norms under the Liquidity Coverage Ratio (LCR) framework. The central bank has now finalized guidelines that require banks to assign an additional 2.5% run-off factor to digital retail deposits—a significant revision from the earlier draft proposal of 5%.

- The new norms will come into effect from April 1, 2026, and will apply to all commercial banks, excluding payments banks, regional rural banks, and local area banks.

Understanding the Run-Off Factor:

- A run-off factor indicates the percentage of deposits expected to be withdrawn in a financial stress scenario. The new provision acknowledges the heightened liquidity risk associated with internet banking, mobile banking, and UPI, all of which allow customers to rapidly move funds.

About Liquidity Coverage Ratio (LCR):

- The Liquidity Coverage Ratio (LCR) is a global regulatory standard that ensures financial institutions hold a sufficient buffer

of High-Quality Liquid Assets (HQLA) to survive a 30-day period of financial stress.

- The measure was introduced by the Basel Committee on Banking Supervision (BCBS) in the aftermath of the 2008 global financial crisis. In India, the LCR became fully operational in 2019 with a 100% minimum requirement, applying primarily to large banks.

Relief for Banks:

- The RBI's softened stance has come as a relief for banks, which had raised concerns about liquidity strain under the initially proposed 5% additional run-off factor. Now, under the revised guidelines:
 - » Stable IMB-enabled deposits will carry a 7.5% run-off factor, up from the current 5%.
 - » Less stable IMB-enabled deposits will be subject to a 12.5% run-off factor, up from 10%.
 - » These adjustments reflect a calibrated approach that balances financial stability with operational feasibility.

Other Key Highlights from the RBI Guidelines:

- Funding from non-financial entities such as trusts, AoPs, partnerships, LLPs, and proprietorships will now attract a 40% run-off rate, reduced from the earlier 100%, recognizing their moderate withdrawal risk.
- Unsecured wholesale funding from non-financial small business customers (SBCs) will now be treated like retail deposits and attract the same 2.5% additional run-off factor.
- Level 1 High-Quality Liquid Assets (HQLA), primarily government securities, will be valued at their market price minus applicable haircuts, aligning with the Liquidity Adjustment Facility (LAF) and Marginal Standing Facility (MSF).

Implication:

- With estimated High-Quality Liquid Assets (HQLA) of Rs.45–50 lakh crore, the changes could release Rs.2.7–3 lakh crore in lendable

resources. This could support an additional 1.4–1.5% in credit growth, boosting lending and economic activity.

Conclusion:

The RBI's calibrated revision of the LCR norms signals a forward-looking approach to balancing liquidity management with the realities of a rapidly digitizing banking sector. By integrating digital deposit risks into its framework, while also responding to industry concerns, the central bank aims to maintain a resilient yet growth-friendly financial ecosystem.

IMF's World Economic Outlook

Context:

India is poised to lead the global economy once again, with the International Monetary Fund (IMF) projecting it to remain the fastest growing major economy over the next two years. According to the April 2025 edition of the IMF's World Economic Outlook, India's economy is expected to grow by 6.2 per cent in 2025 and 6.3 per cent in 2026, maintaining a solid lead over global and regional peers.

World Economic Outlook Report:

- The World Economic Outlook (WEO) is the International Monetary Fund's key report on global economic trends and policy challenges. Published twice a year with interim updates, it provides projections for the near and medium term, covering advanced, emerging, and developing economies.
- According to the April 2025 edition after several years of overlapping shocks, the global economy has entered a phase of cautious stabilisation.
- Growth remains modest and projections for global output have been revised downward from the January 2025 update. This reflects a steep rise in tariff rates, policy uncertainty, and slowing progress in international cooperation.
- Global inflation is expected to decline,

although at a slower pace than previously anticipated, and downside risks such as trade tensions and volatile financial markets continue to weigh on the outlook.

Report for India:

- For India, the growth outlook is relatively more stable. The IMF projects steady expansion of the Indian economy, supported by firm private consumption, particularly in rural areas.
- In a global environment marked by uncertainty and subdued growth, India's resilience stands out, reinforcing its role as a key driver of global economic activity. India is projected to remain the fastest-growing large economy for 2025 and 2026, reaffirming its dominance in the global economic landscape.
- The country's economy is expected to expand by 6.2 per cent in 2025 and 6.3 per cent in 2026, outpacing many of its global counterparts. The IMF projects global economic growth to be much lower, at 2.8 per cent in 2025 and 3.0 per cent in 2026, highlighting India's exceptional outperformance.

Report for Major Economies:

- China's GDP growth forecast for 2025 has been downgraded to 4.0 per cent, down from 4.6 per cent in the January 2025 edition of the World Economic Outlook. Similarly, the United States is expected to see a slowdown, with its growth revised downward by 90 basis points to 1.8 per cent.

Conclusion:

India's economic outlook for 2025 and 2026 remains one of the brightest among major global economies, as highlighted by the IMF. Despite global uncertainties and downward revisions in growth forecasts for other large economies, India is set to maintain its leadership in global economic growth. Supported by strong fundamentals and strategic government initiatives, the country is well-positioned to navigate the challenges ahead.



Internal Security

GPS Spoofing: A Rising Threat to India's Airspace and Security

India is facing a serious new threat in its skies. Between 2023 and 2025, more than 465 cases of GPS interference and spoofing were reported in the Amritsar and Jammu air corridors. This was officially confirmed in March 2025 by the Ministry of State for Civil Aviation in the Lok Sabha. These incidents are not only affecting commercial flights but also surveillance aircraft, raising major concerns about aviation safety and national security. This form of attack, seen earlier in regions like West Asia and Eastern Europe, has now started affecting India's western and northeastern borders. Experts believe that countries like Pakistan and China are using GPS spoofing as part of grey-zone warfare—tactics that create confusion and disruption without open conflict.

What is GPS Spoofing and Why it Matters?

- ❖ GPS spoofing is when fake satellite signals are sent out to trick navigation systems into showing the wrong location, speed, or time. It's different from jamming, which blocks signals. Spoofing quietly misleads the systems and is harder to detect right away.
- ❖ This is dangerous for aircraft, which depend on satellite signals to guide them. These signals are already weak because they come from satellites over 20,000 kilometres away. Stronger fake signals can easily mislead an aircraft's systems like:
 - » Flight Management System (FMS)
 - » Automatic Dependent Surveillance (ADS-B/ADS-C)
 - » Ground Proximity Warning Systems

- ❖ If tricked, aircraft might go off course, miss terrain warnings, or send the wrong location to air traffic control.

Global Use of GPS Spoofing:

- ❖ Spoofing is no longer just a theory. It is now being used in real warfare. For example:
 - » Russia used spoofing tools like



Krasukha-4 and Tirada-2 during its war with Ukraine.

- » Iran reportedly spoofed a U.S. drone in 2011.
- » Azerbaijan used spoofing in its conflict with Armenia to disable air defense and allow drones to dominate.
- ❖ These examples show how spoofing is now a key part of electronic and asymmetric warfare.

Spoofing in India: Alarming Trends:

- ❖ From November 2023 to February 2025, the number of GPS spoofing incidents in India rose sharply, especially along its sensitive borders.

Some important figures

Metric	Details
GPS Spoofing Cases (Nov 2023 – Feb 2025)	Over 465
Main Regions Affected	Amritsar, Jammu, North-East (Manipur, Nagaland)
Air Corridors	Amritsar FIR, Jammu FIR, Delhi FIR
Delhi FIR	9th globally for GPS interference
Drones Intercepted by BSF (2023–2025)	Nearly 300 (mostly from Pakistan)
Drone Payloads	Narcotics, fake currency, small arms
Low GNSS Accuracy Zones (GPSjam data)	India-Pakistan and India-Myanmar borders
Spoofing Rate in Delhi FIR (per OPSGROUP)	Daily reports since 2024

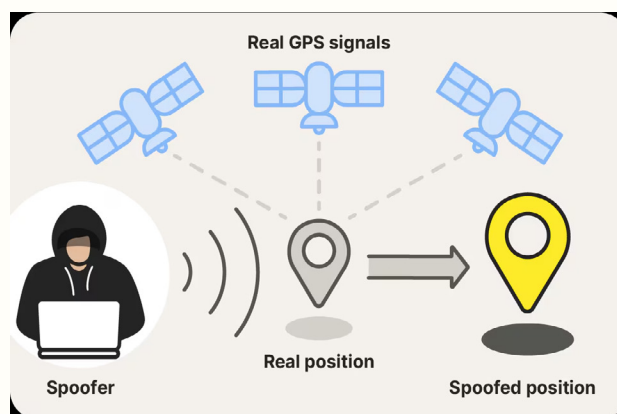
- ❖ The fact that many drones were caught in the same regions at the same time suggests a planned strategy. These drones, carrying drugs and weapons, could be using spoofing to hide their paths and confuse radar systems.
- ❖ The GPSjam portal and OPSGROUP aviation alerts confirm that spoofing in the Delhi Flight Information Region has become a daily issue since 2024, affecting around 10% of flights.

Role of Non-State Actors:

- ❖ It's not just states like Pakistan and China. Violent non-state groups may also be using spoofing. These include:
 - » Drug traffickers
 - » Arms smugglers
 - » Insurgents
- ❖ With cheap, easy-to-build spoofing tools using software-defined radios (SDRs) and GPS simulators, even small groups can

launch attacks. These spoofers can be:

- » Small
- » Battery-operated
- » Mounted on drones
- ❖ Such tools can help criminals cross borders undetected or even attack sensitive areas. In cases where terrorist groups get support from countries like Pakistan, spoofing becomes even harder to stop. It creates a hybrid threat—a mix of terrorism, smuggling, and electronic warfare.



Global Recognition of the Threat:

- ❖ At the 14th ICAO Air Navigation Conference in 2024, global aviation experts officially called GNSS interference a “significant cyber risk”. This shows how serious spoofing has become, especially for countries facing border threats or grey-zone tactics.
- ❖ **What India Should Do:** To deal with this growing threat, India needs a strong, multi-layered plan. Some key actions include:
 - » **Promote Use of NavIC:** India's own navigation system, NavIC, offers regional coverage. It should be promoted for use in commercial airlines and military systems. Though not a full GPS replacement, it can be a strong support system.
 - » **Deploy Detection Systems:** Install ground and airborne sensors to detect spoofing in real time. These use triangulation methods to trace fake signals. India can

also use optical gyroscopes and satellite-free systems for safer navigation.

- » **Support Indigenous Technologies:** India should invest in affordable NavIC receivers and anti-spoofing tools made in India. This will reduce reliance on foreign hardware—especially from hostile countries like China.
- » **Upgrade Aircraft Safety Systems:** Planes should be fitted with Receiver Autonomous Integrity Monitoring (RAIM) and multi-sensor GNSS systems that compare different satellite data for accuracy.
- » **Speed Up GAGAN Adoption:** The DGCA already directed aircraft to adopt GAGAN, an Indian Satellite-Based Augmentation System. However, delays remain. These should be addressed quickly by ISRO and the Airports Authority of India.
- » **Use Military Tools Like SAMBHAV:** Though SAMBHAV (Secure Army Mobile Bharat Vision) is for military communication, its encrypted tech could help in blocking

spoofing. India can expand its role in aviation security.

- » **Crowdsourced Detection Network:** Smartphones and civilian devices can be used as part of a crowdsourced GNSS interference alert system. This will improve real-time tracking of spoofing attempts.
- » **Collaborate with Global Partners:** India should work with ICAO and nearby countries to share spoofing data and adopt global best practices.

Conclusion

GPS spoofing is a silent but dangerous threat to India's air safety and national defence. As cases rise near borders, this low-cost but high-impact tactic demands urgent action. With a mix of advanced technology, strict policy, military innovation, and international cooperation, India can protect its skies and set an example in global airspace security. What started as a technical challenge could now push India to modernise its defences and take the lead in making navigation systems more secure.

Left-Wing Extremism and the Red Corridor: India's Prolonged Internal Security

Left-Wing Extremism (LWE), often known as Naxalism, has remained one of India's most pressing internal security concerns for over five decades. While the movement initially emerged from ideological motivations such as class struggle and agrarian issues, its present form is influenced by a mix of socio-economic underdevelopment, weak governance, and ongoing violence. A significant portion of this activity is concentrated in the "Red Corridor"—a stretch of districts affected by Naxal violence across central and eastern India. This region, marked by underdevelopment and tribal alienation, has been both a stronghold and a battleground in India's prolonged struggle

against left-wing insurgency. Although the intensity of LWE has significantly declined in recent years, the Red Corridor continues to demand targeted policy attention and sustained engagement. In this context, Chhattisgarh CM Vishnu Deo Sai visited Bastar to discuss development plans post-Naxalism eradication, targeted by 2026. The government continues urging Naxalites to surrender, aiming for peace and integration into mainstream society alongside rapid regional development.

Understanding the Origins and Ideology:

- ❖ The Naxalite movement originated in 1967 in the village of Naxalbari in West Bengal, when a section of the Communist Party of

India (Marxist) launched an armed uprising demanding land redistribution and justice for marginalized peasants. The movement drew ideological inspiration from Mao Zedong's principles of protracted people's war, advocating the overthrow of the state through armed struggle.

- ❖ Over the decades, LWE splintered into multiple factions. However, in 2004, the Communist Party of India (Marxist-Leninist) People's War Group and the Maoist Communist Centre of India merged to form the CPI (Maoist), which today leads the insurgency. The group's stated objective is to wage a "people's war" against the "bourgeois Indian state" and establish a Maoist regime.

About the Red Corridor:

- ❖ The term Red Corridor refers to the region in India significantly affected by LWE. At its peak, this corridor is stretched across more than 200 districts in 20 states. Over time, through coordinated state and central interventions, the spread has narrowed. As of 2023, the Ministry of Home Affairs (MHA) has identified 70 districts in 10 states as LWE-affected, with 25 districts listed as "most affected".

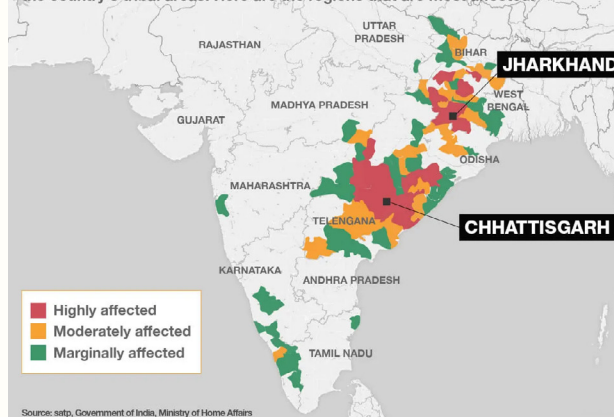
Key States in the Red Corridor Include:

- ❖ **Chhattisgarh:** Especially the Bastar region, which has witnessed some of the most intense Maoist violence. Dense forests and difficult terrain make it a stronghold.
- ❖ **Jharkhand:** A mineral-rich state with significant tribal populations facing displacement and land alienation.
- ❖ **Odisha:** Southern districts such as Malkangiri and Koraput have seen periodic violent activities and recruitment.
- ❖ **Bihar and Maharashtra:** Areas along inter-state borders are especially vulnerable.
- ❖ **Andhra Pradesh and Telangana:** Earlier hotbeds of Maoist activity, now largely under control due to sustained counter-

insurgency efforts.

A map of India's Maoist conflict

A crackdown on Maoist rebels has led to a rise in the number of casualties in the country's tribal areas. Here are the regions that are most affected.



Socio-Economic Characteristics of the Red Corridor:

- » **High Tribal Population:** Many districts in the Red Corridor have a significant Scheduled Tribe (ST) population, whose traditional land rights have been historically ignored or overridden.
- » **Underdevelopment:** These areas lag behind national averages in health, education, road connectivity, digital access, and basic infrastructure.
- » **Alienation and Exploitation:** Displacement due to mining, industrial projects, and lack of forest rights have led to a sense of disenfranchisement.
- » **Weak Governance:** Inaccessibility, administrative apathy, and poor delivery of welfare services have eroded the credibility of state institutions.
- ❖ These conditions have created a vacuum where Maoists have, at times, projected themselves as an alternative authority by resolving disputes, running informal courts (jan adalats), and collecting taxes (levy).

Government Response:

- ❖ **Security Interventions**
 - » **Deployment of Central Armed Police Forces (CAPFs):** Specialized forces such

as CRPF's CoBRA units have been deployed in core affected areas.

- » **Establishment of fortified police stations:** Focus on strengthening security infrastructure in remote areas.
- » **Unified Command Structure:** Joint coordination among centre, state police, and intelligence agencies has improved operational efficiency.

❖ **Developmental Approach**

- » **Road Connectivity Projects:** Under schemes like the Road Requirement Plan-I and II, roads are being constructed in forested and remote tribal regions.
- » **Skill Development and Livelihood Support:** Programs such as ROSHNI, DDU-GKY, and National Rural Livelihood Mission (NRLM) aim to provide income opportunities for tribal youth.
- » **Mobile and Digital Connectivity:** Expansion of telecom infrastructure in dense forests is helping bridge the information gap.
- » **Education and Health Infrastructure:** Construction of residential schools (Eklavya Model Residential Schools) and mobile medical units.

❖ **Surrender and Rehabilitation Policies:**

- » The MHA supports state governments in implementing attractive surrender and rehabilitation policies offering financial assistance, vocational training, housing support, and education for children.
- » These schemes aim to encourage cadre-level Maoists to return to the mainstream.

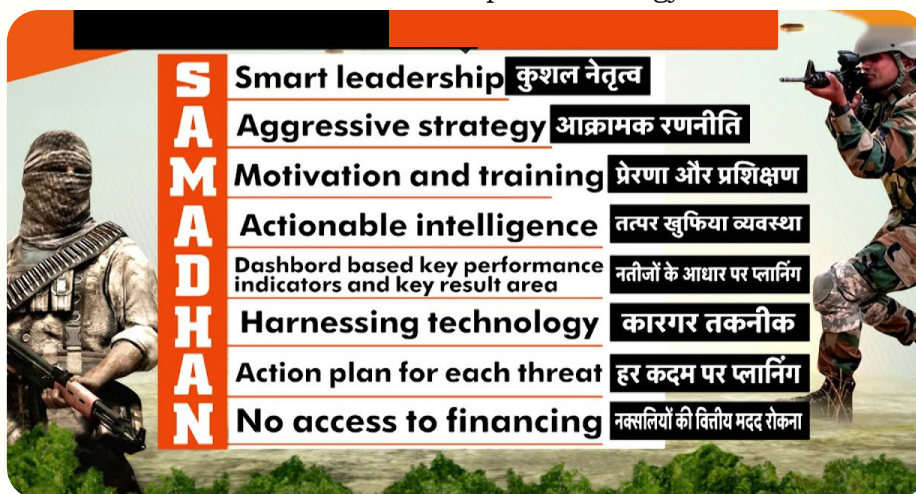
- ❖ **SAMADHAN Strategy:** Launched by the Ministry of Home Affairs, SAMADHAN is an

umbrella policy that includes:

- » Smart leadership
- » Aggressive strategy
- » Motivation and training
- » Actionable intelligence
- » Dashboard-based Key Performance Indicators (KPIs)
- » Harnessing technology
- » Action plan for each theatre
- » No access to financing or arms for Maoists

Trends and Progress:

- ❖ India has witnessed a steady decline in LWE-related violence:
 - » According to MHA data, incidents of violence have reduced by over 77%, and deaths by more than 90% between 2010 and 2023.
 - » States like Andhra Pradesh and Telangana have seen a near elimination of Maoist presence.
 - » The number of LWE-affected districts has also declined substantially due to effective implementation of the security-development strategy.



Remaining Challenges in the Red Corridor

- ❖ **Geographic Cover and Terrain:** The dense forests of Bastar, Abujhmad, and parts of Odisha offer tactical advantages to Maoists and hinder security operations.

- ❖ **Local Grievances and State Absence:** In many areas, people still perceive state institutions as corrupt or unresponsive, while Maoist networks are seen as more approachable.
- ❖ **Recruitment and Radicalization:** Disillusioned tribal youth with limited education and opportunities remain vulnerable to Maoist recruitment drives.
- ❖ **Inter-State Coordination Gaps:** Naxal groups often exploit administrative boundaries and jurisdictional limitations.
- ❖ **Build trust through civil society:** NGOs, local leaders, and social workers can help build bridges between the state and citizens.
- ❖ **Invest in education and opportunity:** Schools, digital learning, and skill centres should be accessible to every tribal hamlet.
- ❖ **Continue the dual strategy:** Maintain pressure on armed cadres while expanding the state's developmental footprint.

Way Forward:

- ❖ **Strengthen grassroots governance:** Implementation of the Panchayats (Extension to Scheduled Areas) Act (PESA) and Forest Rights Act (FRA) must be prioritized to empower tribal communities.
- ❖ **Improve last-mile delivery:** Welfare schemes should reach the most remote villages without leakages or delays.

Conclusion

The Red Corridor, once synonymous with insurgency and violence, is now undergoing a transformation. However, the deep structural issues—land alienation, tribal marginalization, and developmental exclusion—require sustained attention. The decline in Left-Wing Extremism should not lead to complacency. Only by combining robust security with genuine socio-economic empowerment can India ensure peace and progress in the Red Corridor.

Short Issues

Long-Range Glide Bomb 'Gaurav'

Context:

Defence Research and Development Organisation (DRDO) successfully conducted the release trials of Long-Range Glide Bomb (LRGB) 'Gaurav' from the Su-30 MKI aircraft. The trials successfully demonstrated range close to 100 kms with pin-point accuracy.

What are Long-Range Glide Bombs?

- A glide bomb is a precision-guided munition that, once released from an aircraft, glides toward its target using lift-generating surfaces (like wings) and internal guidance systems such as GPS or inertial navigation. When designed with extended range, these bombs allow aircraft to strike targets from distances of 60–150 km or more, minimizing

exposure to enemy air defense systems.

Key Features

- **Standoff Range:** Allows strikes from safe distances.
- **Precision Guidance:** GPS, INS, electro-optical or laser guidance ensures high accuracy.
- **Cost-Effective:** Cheaper than cruise missiles, enabling broader deployment.
- **Stealth and Survivability:** Small radar cross-section and high-speed delivery make interception difficult.
- **Modular Warheads:** Configurable for high-explosive, penetration, or cluster roles.

Glide Bombs of India:

- DRDO has developed two glide bombs - Gaurav and Gautham. While the winged version of LRGB Gaurav weighs around 1,000 kg, the non-winged Gautham weighs

550 kg.

- The LRGB has been developed indigenously by the DRDO's Research Centre Imarat and Armament Research and Development Establishment. The development-cum-production partners are Adani Defence Systems and Technologies, Bharat Forge and various MSMEs.

Long-Range Glide Bomb 'Gaurav'

Why in News- India's DRDO successfully tested the Long-Range Glide Bomb (LRGB) 'Gaurav' from Sukhoi-30MKI aircraft between April 8-10, 2025, boosting the nation's aerial defence capabilities.

About 'Gaurav'

- The Gaurav is a precision-guided glide bomb with a range of 30 km to 150 km.
- It is designed to target areas beyond the reach of conventional anti-aircraft defences.
- The bomb weighs around 1,000 kg and has a wingspan of 3.4 metres and a length of 4 metres.
- Engineered for high accuracy, it demonstrated a range of nearly 100 km in successful trials.



Strategic Importance:

- **Suppression of Enemy Air Defenses (SEAD):** Glide bombs can neutralize radars or missile batteries before manned aircraft move in.
- **Low-Collateral Urban Warfare:** Their precision makes them ideal for operations in dense civilian areas.
- **Drone & Multi-Platform Compatibility:** Increasingly, these weapons are being adapted for Unmanned Aerial Vehicles (UAVs), enhancing strike capability without risking pilots.
- **Force Multiplication:** One aircraft can strike multiple distant targets in a single sortie, improving efficiency.

Strategic Advantages

- **Standoff Strikes:** Glide bombs allow an aircraft to hit targets without crossing into hostile airspace, reducing risk from surface-to-air missile (SAM) systems like the S-400 or Patriot.
- **High Precision:** Using satellite and inertial

guidance, some systems have a circular error probable (CEP) of just 1-3 meters, enabling them to strike small or fortified targets with minimal damage nearby.

- **Cost-Effectiveness:** Compared to cruise missiles (which can cost over \$1 million), glide bombs are relatively cheap, making them suitable for mass deployment.
- **Platform Versatility:** They can be launched from fighter jets, bombers, or UAVs, and are increasingly modular, with countries developing "smart bomb kits" to convert old munitions.

Conclusion:

Long-range glide bombs are redefining modern warfare by offering a unique combination of range, precision, affordability, and safety. As India expands its capabilities through indigenous R&D and strategic collaboration, mastering this technology is critical for its defense preparedness and regional strategic balance.

India to Build Underground Nuclear Submarine Fortress to Counter China

Context:

India is set to commission a new naval base near Rambilli in Andhra Pradesh by 2026, enhancing its strategic edge in the Indian Ocean. This high-security facility, part of Project Varsha, will house nuclear submarines with stealth access to the Bay of Bengal.

About Rambilli naval base:

- The Rambilli naval base is a strategically important facility located in Andhra Pradesh, India. It is part of Project Varsha and is designed to house nuclear-powered ballistic missile submarines (SSBNs) in underground pens and tunnels.
- This facility aims to provide stealth and security for India's growing fleet of nuclear submarines, allowing them to slip into the Bay of Bengal undetected and maintain a second-strike capability for nuclear

deterrence.

About Project Varsha:

- Project Varsha is a classified and high-priority naval infrastructure initiative launched by the Indian Navy, aimed at establishing a state-of-the-art nuclear submarine base known as INS Varsha. The project is designed to significantly enhance India's maritime capabilities and bolster its strategic defense posture in the Bay of Bengal and the broader Indian Ocean Region (IOR).

Key Features:

- Underground Submarine Pens and Tunnels:** These provide stealth deployment capabilities, preventing detection by aerial surveillance or satellite imagery. This ensures that India's nuclear submarines can operate covertly and safely, preserving their second-strike capability.
- Capacity to Dock 12 Nuclear Submarines:** The base is designed to accommodate up to 12 nuclear-powered submarines, enabling India to house a substantial portion of its submarine fleet, ensuring operational flexibility and rapid response in times of crisis.
- Protection from Aerial Surveillance and Satellite Detection:** The underground infrastructure ensures that submarines are shielded from surveillance by both aerial and space-based assets, a critical factor in maintaining operational secrecy and security.

Implications:

- The Rambilli base enhances India's military capabilities by allowing its nuclear-powered ballistic missile submarines (SSBNs) to operate undetected. This base will enable submarines to patrol key strategic areas, including the Malacca Strait, without being detected by enemy satellites, especially those operated by China.
- It strengthens India's nuclear triad, ensuring the country can deliver a retaliatory nuclear strike even if its land and air-based nuclear weapons are destroyed.

Naval Expansion of India:

- The expected commissioning of the INS Aridhaman in this year, India's third nuclear-powered submarine, is an important step in the development of its nuclear deterrence capabilities. With the capacity to carry K-4 missiles, the INS Aridhaman will significantly enhance India's ability to conduct long-range deterrent patrols.
- The expansion of the Karwar Naval Base, under Project Seabird, increases India's naval operational flexibility. It will allow the Indian Navy to house a larger fleet, facilitating quick responses and better operational coordination across the region.

Conclusion:

Projects Varsha and Seabird mark a significant scaling up of India's naval infrastructure. While progress has taken over a decade, the developments are viewed as crucial for enabling dispersed basing, sustained undersea operations, and long-term force modernisation.

Vibrant Villages Programme-II

Context:

The Union Cabinet has approved the second phase of the Vibrant Villages Programme (VVP-II) as a central sector scheme with 100% central funding, aimed at the comprehensive development of strategically located villages along India's international borders. This initiative aligns with the government's vision of Viksit Bharat@2047, ensuring safe, secure, and vibrant land borders.

What is VVP-II?

- The Vibrant Villages Programme-II (VVP-II) is a 100% centrally funded scheme focused on the development of strategic villages along international land borders (ILBs). Unlike VVP-I, which was dedicated to northern border regions, VVP-II extends its scope to other border areas across 17 states and union territories.

Objectives of VVP-II:

- **Develop Infrastructure:** Improve roads, communication networks, and essential services in strategic border villages.
- **Enhance Livelihoods:** Create better living conditions and economic opportunities for border populations.
- **Strengthen Border Security:** Integrate border communities into national security frameworks.
- **Prevent Crime:** Curb trans-border crimes through community participation and improved policing.
- **Promote National Integration:** Encourage border populations to serve as "eyes and ears" of border guarding forces, fostering national unity.

Financial Allocation and Implementation:

- With a total budget of Rs. 6,839 crore, VVP-II will be implemented until 2028-29 and will cover strategic villages in 17 Indian states and union territories that were not included in VVP-I.

States and Union Territories Covered

- **Northeastern states:** Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
- **Northern and Himalayan states:** Jammu and Kashmir, Ladakh, Uttarakhand
- **Western and border states:** Gujarat, Punjab, Rajasthan
- **Eastern and central states:** Bihar, Uttar Pradesh, West Bengal

Background: Vibrant Villages Programme (VVP-I & II)

- **VVP-I (First Phase)**
 - » **Launched:** February 2023
 - » **Ministry in Charge:** Ministry of Home Affairs (MHA)
 - » **Focus:** Development of villages along northern borders (China-facing states like Arunachal Pradesh, Ladakh, and Himachal Pradesh).
- **VVP-II (Second Phase)**
 - » **Approved:** April 2025
 - » **Focus:** Comprehensive development of strategic villages along ILBs, excluding

those covered in VVP-I.

- » **Vision Aligned with:** Viksit Bharat@2047 and the goal of 'Safe, Secure & Vibrant Borders'.

Government's Vision and Strategic Importance:

- Union Home Minister Amit Shah described VVP-II as a transformative initiative that will turn border villages into hubs of growth and development. The programme is expected to fortify India's border security while ensuring inclusive economic growth for communities in remote areas.
- Investments in modern infrastructure, economic upliftment, and security under VVP-II aim to prevent migration from border areas, ensuring that border villages remain populated and active, which is crucial for territorial integrity and national security.

Conclusion

The Vibrant Villages Programme-II is a strategic initiative that seeks to develop India's border regions while integrating them into the national economic framework. By enhancing infrastructure, creating livelihood opportunities, and strengthening security, VVP-II aligns with India's broader vision of socio-economic transformation and national security enhancement by 2047.

Directed Energy Weapon

Context:

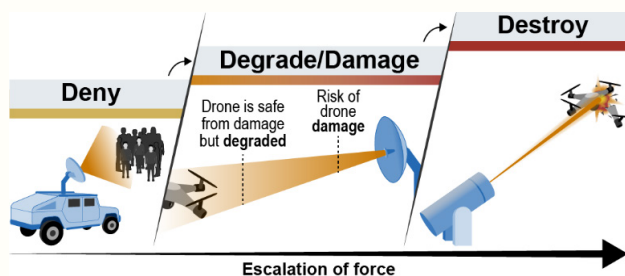
Recently, India has successfully tested a cutting-edge Directed Energy Weapon (DEW), marking a major stride in the country's defense technology capabilities. The Defence Research and Development Organisation (DRDO) recently conducted a live trial of its Mk-II(A) Laser-DEW system at the National Open Air Range (NOAR) in Kurnool district, Andhra Pradesh.

- This successful test places India among a selected group of nations—including the United States, China, and Russia—that possess operational laser-based weaponry, signalling a transformative shift in the

nature of future warfare.

Key Features of the Laser-DEW System:

- **High-Energy Laser Beam:** At the heart of the system is a powerful 30-kilowatt laser, capable of disabling and destroying fixed-wing drones, swarm drones, and smaller airborne projectiles.
- **Speed-of-Light Engagement:** The laser weapon delivers destructive force instantaneously, ensuring rapid target neutralization.
- **Pinpoint Precision:** The system can accurately track and destroy small, fast-moving targets with minimal margin for error.
- **Economical Operation:** Firing the laser for a few seconds costs about the same as a couple of litres of petrol—a fraction of the cost compared to traditional interceptors or missiles.



Source: GAO. | GAO-23-106717

How the Laser-DEW System Works?

- The DEW system is designed to detect, track, and neutralize aerial threats with minimal human intervention:
 - » **Detection:** Targets are detected using advanced radar systems or the inbuilt Electro Optic (EO) sensors.
 - » **Engagement:** Once locked on, the laser emits a concentrated beam of energy that burns through the target's structure, leading to its disintegration or critical failure.
 - » **Impact:** The weapon offers a clean, precise, and silent method of engagement, dramatically reducing the risk of collateral damage.

Advantages of using laser weapons

- Instantaneous targeting
- No ammunition required
- Low cost
- Minimal collateral damage
- High precision

Potential Applications:

- The Mk-II(A) Laser-DEW system holds vast potential:
 - » **Counter-Drone Defense:** Especially effective against hostile UAVs used for surveillance, smuggling, or attacks.
 - » **Border and Base Protection:** It can guard sensitive military installations with minimal manpower.
 - » **Missile Defense Integration:** In future iterations, it may supplement or even replace traditional kinetic interceptors.

Conclusion:

India must focus on scaling up and deploying DEW systems across strategic locations, invest in advanced R&D for higher-power variants, and develop counter-DEW capabilities. Strengthening public-private partnerships and training defense personnel will be crucial to fully integrate these technologies into national security frameworks and enhance future warfare preparedness.

Active Cooled Scramjet Combustor Test

Context:

India has achieved a major milestone in hypersonic weapon development. The Defence Research and Development Organisation (DRDO), through its Defence Research and Development Laboratory (DRDL) in Hyderabad, successfully conducted a long-duration test of an Active Cooled Scramjet Subscale Combustor, marking significant progress in this critical domain.

Understanding Hypersonic Missiles:

- Hypersonic missiles are advanced systems capable of flying at speeds greater than Mach 5 (over 5,400 kmph). Highly maneuverable,

they can evade traditional air defenses and deliver rapid, precise strikes. Nations like the United States, Russia, China, and India are actively investing in hypersonic technologies to redefine strategic military capabilities.

The Scramjet Engine: A Technological Leap

- The scramjet (Supersonic Combusting Ramjet) engine signifies a major advancement over traditional ramjets by enabling combustion at supersonic speeds.
- Unlike conventional jet engines that rely on rotating compressors, both ramjets and scramjets compress incoming air through the vehicle's forward motion. An evolved variant, known as the Dual Mode Ramjet (DMRJ), further enhances flexibility by operating in both subsonic and supersonic combustion modes.

Another crucial aspect of Scramjet engine:

- Scramjet engine (Supersonic Combustion Ramjet) is an air-breathing propulsion system that allows combustion to occur at supersonic speeds. Unlike traditional jet engines, scramjets have no moving parts, relying instead on the vehicle's high speed to compress incoming air before combustion.
- Operating a scramjet engine is an engineering challenge comparable to keeping a candle lit in a hurricane. To maintain combustion under such extreme conditions, a special flame stabilization mechanism is used, ensuring that the engine can function efficiently even when airflows exceed 1.5 kilometers per second.

How the Scramjet Engine Operates?

- The engine requires the vehicle to already be traveling at supersonic speeds (above Mach 3).
- Incoming air is compressed naturally due to the high velocity of the vehicle, eliminating the need for mechanical compressors.
- Hydrogen or similar fuels are injected into the compressed air and ignited, maintaining a supersonic airflow throughout the combustor.

- The combustion of fuel produces hot gases that expand and exit through the nozzle, generating thrust according to Newton's Third Law—every action has an equal and opposite reaction.



SCRAMJET ENGINE

Why in News?
India successfully tested its scramjet engine for over 1,000 seconds — a major leap in hypersonic technology!

What is a Scramjet?

- A Supersonic Combustion Ramjet
- Air-breathing engine using supersonic airflow for combustion
- No moving parts — just inlet, combustor, and nozzle

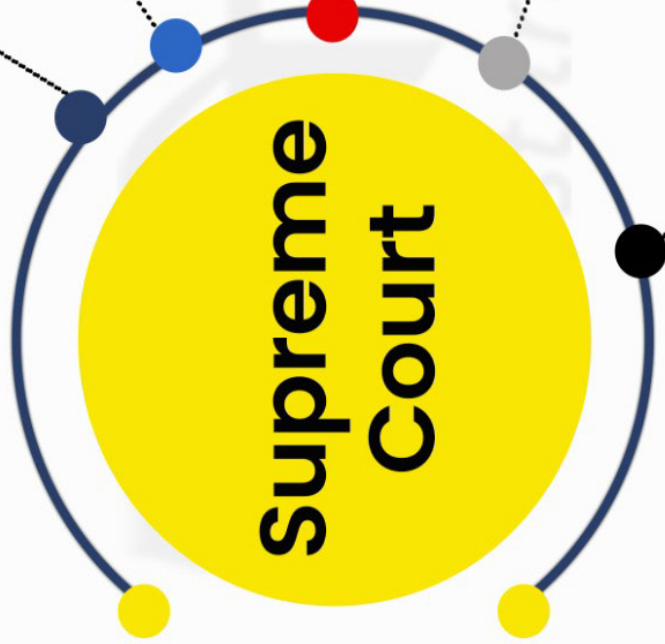
Advantages of Scramjet Technology:

- Uses atmospheric oxygen, reducing vehicle weight compared to traditional rockets that carry oxidizers.
- Facilitates reusable and more cost-effective space missions with heavier payloads.
- Enables vehicles to reach speeds beyond Mach 6.
- Strengthens hypersonic missile and reconnaissance capabilities, enhancing national defense.

Conclusion:

India's success in hypersonic technology, amid growing regional tensions and strategic rivalries, is a critical boost to its defense capabilities. As global powers race to develop faster, more precise, and survivable weapon systems, hypersonic missiles are set to reshape the future of military strategy. DRDO's achievement represents a vital step in securing India's place among the leading nations mastering this transformative technology.

BRAIN BOOSTER



01

Constitutional Provision

- Established under Article 124 of the Constitution.
- Highest judicial authority in India.

02

Composition and Appointment

- CJI + 34 Judges.
- Appointed by the President, based on Collegium recommendation.
- Qualifications: High Court judge for 5 years or advocate for 10 years.

03

Acting, Ad Hoc, & Retired Judges

- Acting CJI in absence of CJI.
- Ad Hoc Judges appointed by the President in case of shortage.
- Retired Judges may be reappointed for specific cases.

04

Independence of Supreme Court

- Security of tenure for judges.
- Judges removed only by impeachment.
- Salaries and allowances cannot be reduced during tenure.

05

Jurisdiction & Powers of Supreme Court

- Original Jurisdiction:** Disputes between states or state vs Centre.
- Appellate Jurisdiction:** Appeals from lower courts.
- Advisory Jurisdiction:** President can seek advice.
- Judicial Review:** Can declare laws unconstitutional.
- PIL:** Court can hear matters of public importance.

BRAIN BOOSTER

01

Constitutional Provisions

- Articles 214 to 231 in Part VI of the Indian Constitution deal with the organization, independence, jurisdiction, powers, and procedures of the High Courts.

02

Composition of Judges of High Court

- HC consists of a **Chief Justice** and such other **Judges** as determined by President

03

Appointment of Judges of High Court

- The Chief Justice is appointed by the President after consultation with the **Governor** of the concerned State and the **Chief Justice of India**.
- Judges of the HC are appointed by the President after consultation with the **Governor of the State**, the **CJI**, and the **Chief Justice of the concerned High Court**.
- A person to be appointed as a judge of a High Court should have Indian **Citizenship**, should have held a judicial office in the territory of India for **10 years** or Been an advocate of a High Court (or High Courts in succession) for ten years.

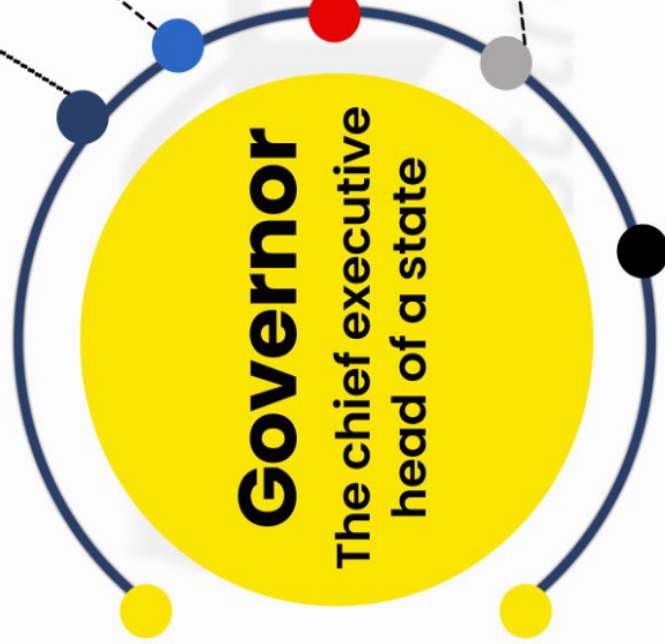
04

Tenure of Judges of High Court

- They hold office until he attains the age of **62 years**.
- They can **resign** from his/her office by **writing to the President**.
- They can be **removed** from his/her office by the President on the **recommendation of the Parliament**.

The High Court
Apex Judicial Body
within the State

BRAIN BOOSTER



Governor
The chief executive
head of a state

01

Constitutional Provisions

- **Article 153:** Every state must have a Governor, & one person may be appointed as the Governor of two or more states.
- **Article 157:** The person must be an Indian citizen and at least 35 years old to be appointed as a Governor.

02

Governor's Appointment

- The President of India appoints the Governor, who is considered a nominee of the central government. The process is similar to the Canadian system.
- Sarkaria Commission Recommended that the Governor should be from outside the state, politically neutral, & distinguished in some field.

03

Conditions of the Governor's Office

- **Article 158:** Governors must not be members of any state legislature or Parliament and must not hold other offices of profit.
- Governors enjoy immunity from legal proceedings & their emoluments cannot be reduced during their term.

04

Powers and Functions

- **Executive Powers:** Appointing the Chief Minister, ministers, and key officials, and ensuring the rule of law.
- **Legislative Powers:** Summoning or proroguing the legislature, exercising veto power over bills, and addressing legislative sessions.
- **Financial Powers:** Overseeing the state budget & approving money bills.
- **Judicial Powers:** Granting pardons and reprieves, and consulting the President for judicial appointments.
- The Governor may act in discretion in matters like recommending President's Rule, reserving bills for the President, or dissolving the state legislature when necessary.

05

Governor's Term and Removal

- Governors serve for a term of five years but can be removed or transferred at the President's pleasure.
- They can resign at any time by submitting a letter to the President.

BRAIN BOOSTER

Chief Minister Real Executive Head

01

Constitutional Framework

- Part VI of the Constitution deals with State Executive: Governor, CM, Council of Ministers, Advocate General.
- Article 163: CM + Council to aid & advise the Governor (except discretionary powers).
- Article 164: CM appointed by Governor; other ministers on CM's advice.
- Article 167: CM must inform the Governor of decisions; provide info if asked.

02

Appointment of Chief Minister

- Governor appoints CM under Article 164. Usually the leader of the majority party in the assembly.
- If No majority? Governor uses discretion → largest party/coalition leader → must prove majority.
- Not a legislator? Can still become CM, but must get elected within 6 months.

03

Appointment of Council of Ministers

- Appointed by Governor on CM's advice.
- Must become a member of legislature within 6 months.
- Serve at the pleasure of the Governor (functionally, CM controls this).

04

Oath & Term

- Oath of office + secrecy → Administered by Governor.
- No fixed term – hold office as long as majority support in Assembly.

Salary & Allowances – Decided by the State Legislature,
• Paid from the Consolidated Fund of the State.

05

Powers & Functions of CM

- Recommends appointments: Advocate General, PSC members, etc.
- Advises summoning, proroguing, and dissolution of Assembly.
- Announces government policies in the House.

BRAIN BOOSTER

PRESIDING OFFICERS OF PARLIAMENT

Meaning

The Constitution provides for the presiding officer for each house. There is a **Speaker** and a **Deputy Speaker** for Lok Sabha and a **Chairman** and a **Deputy Chairman** for Rajyasbha.

Presiding Officers of Lok Sabha

Speaker of Lok Sabha

- Elected by the members of Lok Sabha from amongst its members.
- Derives his duties from **Constitution of India, Rules of Procedure and Conduct of Business of Lok Sabha and Parliamentary conventions.**
- Provided with the **Security of Tenure** i.e. he can be removed by a resolution passed by Lok Sabha with **Effective Majority** after giving **notice of 14 days.**
- **Special powers of Speaker** – He decides whether the bill is a **money bill** or not and he **Presides over Joint Sitting of Both the Houses of Parliament.**

Deputy Speaker of Lok Sabha

- Elected by the members of Lok Sabha after the election of Speaker.
- Deputy speaker performs his duties only when the speaker is absent.

Deputy Chairperson of Rajya Sabha

- The Deputy Chairman of Rajya Sabha is elected from amongst its members.
- He performed the duties of Chairman when its vacant or when Vice President act as a President
- He can be removed by a **resolution** passed by a **majority of all the then members of Rajya Sabha** with prior notice of **14 days.**

Chairman of Rajya Sabha

- **Vice President of India** is **Ex Officio Chairman** of the **Rajya Sabha.**
- The Chairman of Rajya Sabha can be removed from his office only if he is **removed** from the **office of Vice President.**

BRAIN BOOSTER

PARLIAMENTARY COMMITTEE

Meaning

A Parliamentary committee consists of Members of Parliament (MPs) appointed by the Speaker of the Lok Sabha or the Chairman of the Rajya Sabha. These committees, inspired by the British Parliament, work **under the guidance of the Speaker or Chairman** & submit reports to the respective houses.

Constitutional Provisions

- **Article 105** outlines the **powers and privileges** granted to the Houses of Parliament, as well as to their members and committees.
- **Article 118** states that each **House of Parliament** has the authority to **establish rules governing its procedures and the way it conducts its business**, in accordance with the provisions of the Constitution.

Classification of Parliamentary committee

- **Standing Committee** - permanent committees that are constituted by the Parliament at the beginning of each session to deal with specific areas of public policy or administration.
- **Ad Hoc Committee** - short-term bodies established with a **specific objective** and for a defined duration. They are generally formed to examine and provide reports on particular bills or to investigate issues of significant public concern.

Standing Committee

1. Estimates Committee

- Total Members: **30**
- Duration: **One year**
- Selection Process: **Members are elected by both Houses of Parliament**

2. Public Accounts Committee

- Total Members: **22 (comprising 15 from the Lok Sabha and 7 from the Rajya Sabha)**
- Duration: **One year**
- Selection Process: **Members are elected exclusively by the Lok Sabha**

3. Committee on Public Undertakings

- Total Members: **22 (including 15 from the Lok Sabha and 7 from the Rajya Sabha)**
- Duration: **One year**
- Selection Process: **Members are chosen through elections by both the Lok Sabha and the Rajya Sabha**

Power Packed News

Justice Bhushan Gavai will be the 52nd Chief Justice of India

- India's senior-most judge Bhushan Ramakrishna Gavai will take over as the 52nd Chief Justice of India (CJI) from May 14, 2025. He has been appointed to this post by President Draupadi Murmu. He will replace the current Chief Justice Sanjiv Khanna, whose term ends on May 13, 2025.
- Justice Gavai is from Maharashtra and will be one of the first Dalit Chief Justices of the Supreme Court. According to tradition, the most senior judge of the Supreme Court is appointed as the Chief Justice.
- Article 124 (2) of the Indian Constitution gives the President the right to appoint judges of the Supreme Court, but this appointment is made after consultation with other judges.
- The first Chief Justice of India was H.J. Kania. The role of the Chief Justice is considered very important for the independence of the judiciary, protection of the Constitution and monitoring the judicial process. Justice Gavai's tenure will be short-lived but his experience and impartial approach are expected to strengthen the judiciary.

Kamala Prasad-Bissessar

- The United National Congress Party has won the recent parliamentary elections in Trinidad and Tobago, after which Kamala Prasad-Bissessar is going to become the next Prime Minister of the country.
- Bissessar has previously held this post from 2010 to 2015 and is the first and so far the only woman to lead the Caribbean country. Her political comeback symbolizes the return of female leadership in Caribbean politics.
- Bissessar's leadership is recognized for social inclusion, improvement in education and health sector. His return is expected to give a new direction to political stability and economic development in the country. This victory further empowers women's participation in the democratic system of Trinidad.
- Trinidad and Tobago is the southernmost island nation of the Caribbean region, whose capital is Port of Spain and the official currency is the Trinidad and Tobago dollar. This country is rich in resources and oil and natural gas are its major industries.

"Gyan Post": New educational initiative of the Department of Posts

- The Department of Posts has launched a new service called "Gyan Post" from May 1, 2025 to promote education. The aim of this initiative is to provide affordable and reliable book delivery service to students, competitive examinees, educational institutions and socio-cultural organizations.
- According to the Chief Postmaster General, Haryana Circle, under this service, legally published textbooks and study material can be sent for a fee ranging from ₹ 20 to ₹ 100. This fee will depend on the weight of the packet (from 300 grams to 5 kg).
- Further, only educational and cultural material is allowed in it this service, while professional or commercial material will be prohibited.
- The "Gyan Post" initiative will be especially beneficial for students living in rural areas and youth with limited resources, making physical books accessible even in the digital age. This initiative is considered an important step towards promoting inclusiveness of knowledge and access to education in India.

Padma Awards 2025

- The Government of India distributed the Padma Awards for 2025 at a ceremony held at the Darbar Hall of Rashtrapati Bhavan on 28 April 2025. President Draupadi Murmu presented 4 Padma Vibhushan, 10 Padma Bhushan and 57 Padma Shri awards on the occasion.
- These awards are given to citizens who have made outstanding contributions in various fields of the country, including art, social service, science, medicine, education, sports, civil service, business, etc. This time the names of 139 people were announced on the eve of the 76th Republic Day, out of which 71 were honored at the investiture ceremony in April.
- The Padma Awards are among the highest civilian honors of India and recognize those who have made exemplary contributions in their field. This honor is not only a matter of pride for the awardees but also a source of inspiration for the society.
- The Padma Awards are announced every year by the Government of India and are considered a celebration of the diversity and talent of Indian democracy.

IISc tops India in Asia University Rankings 2025

- Times Higher Education (THE) has released the Asia University Rankings 2025, in which the Indian Institute of Science (IISc) has topped India. IISc has secured 38th position with a score of 65.2.
- A total of 7 Indian universities have found a place in this list. Anna University ranked second at 111th position. IIT Indore is ranked 131st, Mahatma Gandhi University is ranked 140th, Shoolini University and Savita Institute are ranked 146th and 149th respectively. Jamia Millia Islamia secured 161st rank.
- China continues to dominate the rankings, with Tsinghua and Peking Universities coming in first and second. The National University of Singapore is ranked third, while institutions from Japan and Hong Kong also made it to the top 10.
- This achievement of India reflects its growing global recognition in higher education. It is a testimony to the continuous improvement in research, innovation and academic quality of Indian universities, which is strengthening the country's education system on the global stage.

16 new sites added to UNESCO Global Geopark Network

- On 7 April 2024, UNESCO added 16 new sites to its Global Geopark Network, spread across 11 countries.
- These new sites are located in China, North Korea, Ecuador, Indonesia, Italy, Norway, South Korea, Saudi Arabia, Spain, UK and Vietnam. The special thing was that North Korea was included in this network for the first time, while Saudi Arabia also made its debut with two new geoparks.
- The Global Geopark Network has now expanded to 229 sites in 50 countries, covering an area of about 855,000 square kilometers. As of 26 July 2024, India does not have any sites in this list.
- The Global Geopark Network celebrates its 10th anniversary in 2025. UNESCO established this network in 2015 with the aim of protecting geologically important sites and recognizing them at the global level. This network is playing an important role in promoting education, conservation and sustainable development.

Dr. Krishnaswamy Kasturirangan passed away

- Former ISRO Chairman Dr. Krishnaswamy Kasturirangan passed away in Bengaluru recently.
- He was one of the key architects of India's National Education Policy (NEP) and also served as Chancellor of Jawaharlal Nehru University.
- Kasturirangan also served as the chairman of the Karnataka Knowledge Commission. He took over as ISRO chief in 1992 after Dr. UR Rao and led ISRO till 2003.
- During his tenure, ASLV and PSLV launch vehicles were developed, strengthening India's space program. He also mentored many scientists, such as current ISRO Chairman S Somnath.
- During his tenure, the foundation stone of the Chandrayaan-1 project was laid and it received government approval in 2004. Dr. Kasturirangan has made invaluable contributions in making India's space programme prestigious at the global level.

National Zero Measles-Rubella Elimination Campaign

- On the occasion of World Immunization Week (24-30 April), Union Minister for Health and Family Welfare Jagat Prakash Nadda on 24 April virtually launched the National Zero Measles-Rubella Elimination Campaign 2025-26. The campaign aims to eliminate measles and rubella from the country by 2026.
- The campaign aims to achieve 100% vaccination coverage by giving two doses of measles-rubella vaccine to children. During January-March 2025, no cases of measles were reported in 332 districts and no cases of rubella in 487 districts.
- Measles and rubella are highly infectious diseases that can cause serious complications and death. India has recorded a decline of 73% in measles cases and 17% in rubella cases.
- The Universal Immunization Programme (UIP) has significantly reduced mortality rates in children under 5 years of age. Recently India has also been awarded the Measles and Rubella Champion Award.

Reservation in police recruitment for Agniveer jawans

- During an event held in Gangtok on April 24, Sikkim Chief Minister Prem Singh Tamang announced 20% reservation for Agniveer jawans in the state police force. Along with this, ex-servicemen will also be given age relaxation of 10 years while applying for police recruitment.
- The government also announced that retired soldiers will be allotted shops to start a business. This initiative is an important step towards providing employment opportunities to Agniveers recruited under the Agneepath scheme.
- The Agneepath scheme aims to recruit youth in the armed forces for posts 'below officer rank' for a period of four years and reduce the pension expenditure of the army. The scheme was launched on June 15, 2022 and both male and female candidates are recruited under it.
- This decision of the Sikkim government is being considered a positive initiative towards securing the future of Agniveers and strengthening the security system of the state.

China's aggression increased in disputed PMZ waters

- China built a huge steel rig in the provisional maritime zone (PMZ) near Socotra Rock, southwest of Jeju Island, raising tensions in the Yellow Sea. China described the structure as an 'aquafarm', while South Korea cited the right to inspection under the 2001 Korea-China

Fisheries Agreement. The structure is a 71.5-meter-long underwater cage called Shen Lan 2 Hao, used for salmon farming.

- Satellite images have shown that several steel platforms have been installed by China in the PMZ. South Korea summoned a representative of the Chinese Embassy in Seoul and lodged a formal protest. This incident has increased the possibility of maritime conflict in the region.
- The PMZ is the area where the exclusive economic zones (EEZ) of China and South Korea overlap. The dispute escalated when the South Korean research ship Onnuri attempted to inspect the structure but was stopped by the Chinese coast guard and civilian ships. There was a two-hour standoff between the coast guards of the two countries.

Koneru Humpy wins Pune FIDE Women's Grand Prix

- On 23 April, Indian Grandmaster Koneru Humpy won the FIDE Women's Grand Prix held in Pune. She scored 7 out of 9 points and won with white pieces against Bulgarian International Master Nurgul Salimova in the final round.
- Chinese Grandmaster Zhu Jiner also finished the tournament with 7/9 points, but Humpy emerged victorious on the basis of tiebreak and Zhu got second place. The Grand Prix points and prize money will be shared between the two players. This win has strengthened Humpy's chances of qualifying for the next Women's Candidates Tournament.
- India's Divya Deshmukh also performed well and finished third with 5.5/9 points. She drew against Polish player Alina Kashlinskaya.
- Humpy's performance is a testimony to the growing dominance of Indian chess and reflects her consistency and experience. Top women chess players participated in this tournament held in Pune and India once again made its presence felt on the global stage.

Operations from India's largest cruise terminal begin

- Union Minister Sarbananda Sonowal recently inaugurated cruise operations from the Mumbai International Cruise Terminal (MICT). Developed as per the latest global standards, this new terminal is expected to significantly boost cruise tourism in India. It has the capacity to handle up to 1 million passengers every year.
- With this launch, Mumbai International Cruise Terminal joins the league of other major international terminals in Visakhapatnam and Chennai. Alongside the terminal inauguration, the Union Minister also opened the renovated Agni Smarak at Victoria Docks, as well as the restored Fort House Ballard Estate and Evelyn House heritage buildings.
- In addition, shore-to-ship electric supply and the Sagar Upvan garden were launched under the Green Port initiative, further strengthening India's commitment to sustainable and eco-friendly port development.
- The 'Cruise India Mission', which was launched on 30 September 2024, aims to make India a top cruise destination. It includes promoting ocean, river and island cruises and development of 10 international marine terminals and 100 river terminals.

Indian Army launches 'Voice of Kinnaur' radio station

- On 20 April 2025, the Indian Army inaugurated the 'Voice of Kinnaur' community radio station in Kinnaur district of Himachal Pradesh.
- This initiative has been taken to strengthen the relationship with the local community under

the Army's 'Operation Sadbhavana'. The aim of the radio station is to broadcast local news, educational and health content and promote regional culture.

- 'Voice of Kinnaur' will become a platform for broadcasting important information related to public interest and will provide an opportunity to youth, women and apple farmers to share their concerns and achievements.
- This initiative will not only enhance the exchange of information but will also strengthen trust and cooperation between the Army and the local community. Important information will reach easily even in remote areas through this community radio, which will help in the overall development of the region.

Indian Navy completes refit of Maldives Coast Guard Ship Huravi

- The Indian Navy successfully completed the refit of Maldives Coast Guard Ship MNDF Huravi. The exercise is part of India's efforts to strengthen regional maritime security under 'Security and Growth for All in the Region' (SAGAR) vision and 'Neighbourhood First' policy.
- Huravi, a "Make in India" ship, was handed over to Maldives in May 2023 and is playing a key role in humanitarian assistance, disaster relief and medical evacuation operations. The refit has further strengthened defence cooperation and diplomatic ties between India and Maldives.
- Maldives is an important island nation located in the Indian Ocean with Male as its capital and Maldivian Rufiyaa as its currency.
- Prime Minister Modi announced the SAGAR policy during his visit to Mauritius in 2015. The 'Neighbourhood First' policy, launched in 2008, prioritises India's relations based on respect, dialogue and prosperity with its neighbours like Afghanistan, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka.

Pope Francis dies, Novendals mourning begins

- Pope Francis died at the age of 88. He took over as Pope after Benedict XVI resigned in 2013 and served as the religious head of 1.4 billion Catholic followers for 12 years. His death triggered a nine-day mourning and prayer period called 'Novendals'.
- Pope Francis was buried beneath Rome's Santa Maria Maggiore Basilica, making him the first pope in a century to be buried outside the Vatican. Traditionally, popes have been buried beneath St Peter's Basilica.
- After the funeral, the College of Cardinals gathers in the Sistine Chapel to elect a new pope. After the election, the newly elected pope is asked to accept his role. After consent, they choose a new name. "Habemus Papam" (we have a pope) is then announced and the new pope gives his first blessing to his followers.

New rules for radar speed measurement devices

- The central government has notified new rules for "radar devices for measuring speed of vehicles" to enhance road safety and ensure fairness in traffic enforcement.
- These rules have been issued under the Legal Metrology (General) Rules, 2011 and will come into effect from July 1, 2025. Under this, it will be mandatory for all radar-based speed measurement devices to be verified and sealed by legal metrology authorities.
- It aims to ensure accuracy, calibration and legal compliance of the devices, thereby increasing transparency, public trust and integrity of enforcement.

- The new rules present a clear technical and regulatory framework for the industry in line with international standards such as OIML R 91.
- Radar devices measure the speed of vehicles with high accuracy using technologies such as Doppler radar. This initiative is part of the Centre's efforts to strengthen road safety and promote effective enforcement of traffic rules.

India's Participation at Gitex Africa 2025

- India played an active role in Gitex Africa 2025, Africa's largest tech and startup event. The event took place in Marrakech, Morocco, where global policy makers, innovators and leaders gathered to drive inclusive economic growth.
- Shri Jayant Chaudhary, Minister of State (Independent Charge) for Skill Development and Entrepreneurship and Minister of State for Education represented the Republic of India at the summit.
- Shri Jayant Chaudhary highlighted the global recognition of India's digital public infrastructure, Aadhaar, UPI, ONDC and digital health tools. The remarkable success of Skill India Digital Hub (SIDH) was also showcased, which registered 10 million users in 18 months.
- He also discussed the 33.39% growth in AI talent in India, citing the AI Stanford Index 2025. India's presence at Gitex reinforces its global leadership role in digital innovation and skill development. Initiatives like Skill India, Digital India and DigiLocker are now seen as global standards.

Indian Air Force Participation in Desert Flag-10

- The Indian Air Force (IAF) participated in the multinational exercise "Desert Flag-10" held at Al Dhafra Air Base in the United Arab Emirates (UAE). The exercise is being held from 21 April to 8 May 2025. The contingent of the Indian Air Force consists of MiG-29 and Jaguar fighter aircraft. The exercise is organized by the UAE Air Force and is also participating in it.
- The aim of the exercise is to share operational knowledge, exchange best practices and conduct complex combat missions with the air forces of various countries.
- The participation of the Indian Air Force reflects India's commitment to strengthen defense cooperation and interoperability. Such exercises strengthen strategic partnerships and defence relations with friendly countries, thereby promoting regional and global security cooperation.

RBI and FIU-IND sign MoU against money laundering

- The Reserve Bank of India (RBI) and Financial Intelligence Unit-India (FIU-IND) have signed a Memorandum of Understanding (MoU) to strengthen efforts against money laundering and terrorist financing. The MoU aims to promote effective implementation of the Prevention of Money Laundering Act (PMLA) and the rules thereunder.
- The MoU was signed by RBI Executive Director R.L.K. Rao and FIU-IND Director Vivek Aggarwal. The two entities will share relevant intelligence and information with each other. Additionally, they will conduct training and awareness programmes on prevention of money laundering and terrorist financing for employees of regulated entities.
- The MoU will also prioritise assessment of risks and vulnerabilities existing in various financial sectors. This collaboration will enhance transparency in the financial system and help curb illegal financial activities.

- This initiative will strengthen the capacity of financial institutions as well as establish a robust compliance mechanism in line with international standards.

DPS Wetland becomes Flamingo Conservation Reserve

- Navi Mumbai's DPS Wetland has been declared as "Flamingo Conservation Reserve" by the Maharashtra State Wildlife Board.
- This decision was taken in the board meeting chaired by Chief Minister Devendra Fadnavis, in which Forest Minister Ganesh Naik and other senior officials were also present. Bombay Natural History Society (BNHS) Director Kishore Rethe said that the institution and local organizations had demanded to preserve this wetland.
- DPS lake is located near Navi Mumbai International Airport and its conservation can help in reducing incidents of bird collisions there. Apart from this, the board has also approved the expansion of Bor Wildlife Sanctuary located in Wardha district. Under the expansion, Garamsur, Yenidodka, Methiraji, Umarvihori and Markasoor villages will be added.
- Also, it has been decided to declare the sacred grove named Devrai located in the Western Ghats as a conservation area. For this, a committee will be constituted under the chairmanship of APCCF (West). This step is an important initiative towards maintaining the biodiversity and ecological balance of the state.

Heatwave declared "state-specific disaster" in Telangana

- The Telangana government has classified heatwaves, sunstroke and sunburn as "state-specific disasters". With this decision, affected families will now be able to get compensation of up to Rs. 4 lakh from the State Disaster Response Fund (SDRF). Earlier this amount was just Rs. 50,000.
- The government has described heatwaves as a "hidden danger" that is often not taken seriously. According to data from the Indian Meteorological Department (IMD), 28 out of 33 districts in Telangana faced heatwaves for more than 15 days in 2024. This new policy will allow the state to use up to 10% of the annual budget of SDRF for heatwave relief.
- The move comes at a time when climate change and abnormal weather events are on the rise. Heatwave conditions are considered when the temperature in the plains reaches 40°C or more. This situation can be extremely fatal for the human body.
- This new announcement will not only provide economic relief, but better preparations can be made at the administrative level to deal with heatwaves. This decision is an example of sensitivity and preparedness towards climate disasters.

MoU between Ministry of Labour and Employment and Swiggy

- On April 15, an important Memorandum of Understanding (MoU) was signed between the Ministry of Labour and Employment and Swiggy, India's leading online food delivery platform. It aims to promote employment opportunities in the gig and logistics sector through the National Career Service (NCS) portal.
- The NCS portal is an active platform that connects job seekers and employers across the country. As of January 31, 2025, it has connected 1.25 crore job seekers and 40 lakh employers. Now, Swiggy will connect its delivery, logistics and support roles jobs to this portal. This collaboration will ease access to employment in urban and semi-urban areas.

- Through real-time integration, NCS users will be able to get information about available jobs. This will benefit the youth with location-based and timely work.
- Founded in 2014, Swiggy is headquartered in Bangalore and also provides services like Swiggy Instamart and Swiggy Genie. This partnership is considered a major initiative in the development of gig economy and organized employment.

Bhubharati revenue portal launched in Telangana

- Telangana Chief Minister Revanth Reddy officially launched the revenue portal Bhubharati in Hyderabad. This portal is a big step towards strengthening land security, bringing transparency in records and resolving disputes. Under this system, land owners will be given 'Bhudhar Card', which will contain complete information related to their land. At present, this portal is being tested in four mandals - Khammam, Mulugu, Kodangal and Kamareddy.
- Revenue officers will visit each village to check and correct land records. The government aims to resolve all pending land cases in these mandals by May 1. After this, one Mandal will be selected from every district from May and this process will be gradually expanded across the state.
- This new system will be implemented across the state of Telangana from June 2. This digital initiative will not only reduce the number of land disputes, but the general public will get easy and transparent access to their property records. This will also promote better revenue management and good governance in the state.

Khelo India Youth Games 2025: Bihar to host

- The seventh edition of the Khelo India Youth Games will be held in Bihar from May 4 to 15, 2025. This is the first time Bihar is hosting this major sporting event. The event will be held in cities like Patna, Gaya, Rajgir, Begusarai and Bhagalpur.
- Chief Minister Nitish Kumar and Union Sports Minister Dr. Mansukh Mandaviya unveiled the mascot "Gajsingh" and logo of the event in Patna. Gajsingh symbolizes the strength of the elephant and the courage of the lion, the design of which is inspired by the Pala dynasty heritage of Nalanda and Bodhi Gaya.
- More than 8,500 players will participate in the event and the total number of delegates will exceed 10,000. It will include 18 events of traditional sports like volleyball, football, basketball, boxing and kabaddi as well as modern sports like athletics and sepak takraw.
- Around 27 sports competitions will be held, including the indigenous sport of Mallakhamb. The event will be an opportunity to showcase Bihar's cultural heritage on the national stage, as well as strengthen the interest and infrastructure for sports in the state.

Progress in FDI and PLI in India's Pharmaceutical Sector

- India's pharmaceutical and medical device sector attracted significant FDI in FY 2024-25. A total of Rs 11,888 crore of foreign direct investment (FDI) came into the sector from April to December 2024.
- 13 FDI proposals worth Rs 7,246.40 crore for brownfield projects were approved by the Central Government. The total FDI in the sector reached Rs 19,134.4 crore by the end of FY 2024-25 (March 31, 2025), which is a positive sign. These figures have been compiled by the Department of Pharmaceuticals.

- The Production Linked Incentive (PLI) scheme has been extremely effective in boosting domestic production. The scheme played a key role in attracting investments, reducing dependence on imports and boosting exports.
- As of December 2024, investments worth Rs 4,253.92 crore have been received under the PLI scheme, which is more than the original target of Rs 3,938.57 crore.
- 48 projects were selected under the special PLI scheme for bulk drugs, out of which 34 projects have been commissioned as of December 2024. Of these, 25 projects are for bulk drugs. This progress is taking India on the path of self-reliant pharma manufacturing.

Chief Justice of Jammu and Kashmir and Ladakh High Court

- Justice Arun Palli has been appointed as the Chief Justice of Jammu and Kashmir and Ladakh High Court. The President of India has made this appointment under the powers conferred by the Constitution and in consultation with the Chief Justice of India.
- His appointment has been notified by the Central Government and will be effective from the date on which he assumes charge.
- Justice Palli is currently serving as a judge in the Punjab and Haryana High Court. He was enrolled as a senior advocate on 26 April 2007 and was elevated to the High Court on 28 December 2013.
- Additionally, he is serving as the Executive Chairman of the Haryana State Legal Services Authority from 31 May 2023. On 31 October 2023, he was also nominated to the Governing Body of the National Legal Services Authority (NALSA) for two years.
- Justice Palli's judicial experience, administrative skills and contribution to the legal services sector make him suitable for this post. His appointment will further strengthen the judicial system in Jammu and Kashmir and Ladakh.

India successfully tests drone shooting technology using laser weapon

- India has successfully tested a state-of-the-art laser directed energy weapon (DEW) demonstrating its ability to destroy fixed-wing drones. This success has put India in the league of limited countries like the US, Russia and China, which have previously developed such capabilities.
- The test used a 30-kilowatt laser DEW system developed by DRDO. The test was conducted in Kurnool, Andhra Pradesh, while the weapon system was designed by a special laboratory based in Hyderabad. The vehicle-mounted version of this system, DEW Mk-II (A), was used.
- The laser weapon not only successfully shot down an unmanned fixed-wing drone, but also disabled swarm drones during the test. It caused heavy damage to the structure of the drones and also disabled their surveillance sensors.
- DRDO is also working on other high-energy technologies such as high-energy microwave weapons and electromagnetic pulse (EMP) systems. These advanced projects are aimed at developing future "Star Wars"-level defence capabilities that will take India's strategic security to a new height.

Kumudini Lakhia

- On 12 April 2025, eminent Kathak dancer Kumudini Lakhia passed away in Ahmedabad at the age of 95. She was a pioneer of Indian classical dance and was known as the "Martha

Graham" of India.

- She was born on 17 May 1930 in Ahmedabad. She gave a new direction to Kathak dance, challenging traditional boundaries and enriching it with contemporary expressions.
- In 1967, she founded the Kadamba School of Dance and Music. She was also the choreographer of the film Umrao Jaan (1981). For her contribution, she was awarded the Padma Shri (1987), Sangeet Natak Akademi Award (1982), Kalidas Samman (2002-03), Padma Bhushan (2010), Tagore Ratna (2011) and recently Padma Vibhushan (2025).

Africa-India-Key Maritime Cooperation (AIKEYME) 2025

- Africa-India-Key Maritime Cooperation (AIKEYME) 2025 was inaugurated in Dar-es-Salaam, Tanzania. It was the first multilateral maritime exercise between India and African countries, co-hosted by India and Tanzania.
- The exercise was conducted from 13 to 18 April 2025, in which 11 countries including India—Tanzania, Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Seychelles and South Africa—participated.
- It aimed to find collaborative solutions to maritime security challenges and enhance coordination among navies. It was in line with India's "SAGAR" and "Ocean" initiatives.
- INS Chennai, Kesari and Sunayna from the Indian Navy participated. INS Sunayna was deployed under "IOS Sagar Mission", which included goodwill visits and joint surveillance. The exercise was divided into two phases—harbour and sea.

Mauritius signs Country Partnership Framework with ISA

- Mauritius has become the first African country to sign the Country Partnership Framework (CPF) of the International Solar Alliance (ISA). Earlier only Bangladesh, Bhutan and Cuba had adopted this framework.
- The partnership aims to create an organized framework of cooperation with ISA for solar energy projects in line with Mauritius' national priorities.
- The CPF is a strategic initiative developed to promote long-term and medium-term cooperation with member countries. Under this, a detailed Country Partnership Strategy (CPS) will be prepared according to the needs and opportunities of Mauritius.
- ISA was established in 2015 by India and France, and aims to mobilize US\$1 trillion in solar investment by 2030. This partnership is an important step towards accelerating the global transition towards clean energy.

President Murmu conferred with honorary doctorate in Slovakia

- President Draupadi Murmu was conferred with an honorary doctorate (Honoris Causa – Dr. H.C.) by Constantine the Philosopher University in Nitra, Slovakia.
- The award was given to her for her contribution to public service, social justice, education, women empowerment and cultural and linguistic diversity.
- In her address, the President highlighted the transformative power of education and shared her inspirational journey from being a teacher to becoming the President of India.
- The university is one of the premier academic institutions in Slovakia, named after the historical scholar St. Constantine-Cyril.
- The honorary degree is conferred by the Scientific Council of the University to individuals who

have made notable contributions in the fields of education, culture, science, humanity and international cooperation.

- The award also symbolises the deepening academic and cultural ties between India and Slovakia.

'Heart Lamp' shortlisted for International Booker Prize 2025

- Karnataka writer, activist and lawyer Banu Mushtaq's short story collection 'Heart Lamp' has been shortlisted for the International Booker Prize 2025, making it the first book in the Kannada language to reach this prestigious literary platform. The collection has been translated from Kannada to English by Deepa Bhashthi.
- The 12 stories, originally published between 1990 and 2023, present familial and social tensions in a satirical, sensitive and conversational style. The jury was impressed by the liveliness and depth of the collection.
- 'Heart Lamp' is now in competition with five other masterpieces from around the world. The achievement is being considered historic for Kannada literature and the translation world.
- The International Booker Prize, formerly known as the Man Booker International Prize, honours books translated into English.

Bangladesh signs NASA's Artemis Accords

- Bangladesh has taken a new initiative in the field of space exploration by signing the Artemis Accords with the US space agency NASA. It has become the 54th country to do so.
- This agreement will provide Bangladesh with opportunities for technology transfer, scientific research and economic cooperation. Under this, Bangladesh Space Agency SPARRSO will get an opportunity to work closely with NASA, which will increase its capabilities.
- The Artemis Agreement was launched by NASA in October 2020, which aims to promote peaceful, transparent and civilian exploration of outer space. It is a non-binding agreement, which presents a framework of common principles for the use of outer space.
- Earlier, India signed this agreement in 2023. The Artemis program began in 2022 with the launch of the "Orion" spacecraft from the Space Launch System.

India's first Himalayan Climate Centre launched in Udhampur

- On 8 April 2025, Union Minister Dr. Jitendra Singh inaugurated India's first 'Himalayan High Altitude Atmospheric and Climate Research Centre' at Nathatop, Chenani in Udhampur district of Jammu and Kashmir.
- This centre is a joint initiative of the Ministry of Earth Sciences, Jammu and Kashmir Forest Department and Central University of Jammu.
- The centre is located at an altitude of 2,250 metres above sea level and aims to collect accurate data for climate change and weather forecasting in the region.
- The Himalayan High Altitude Atmospheric and Climate Research Centre has been established at a clean and minimally polluted location to analyse atmospheric processes in free tropospheric conditions.
- On this occasion, the Minister also flagged off the Indo-Swiss joint research project "Ice-Crunch", which will study the properties of ice particles and cloud condensation nuclei in the

North-Western Himalaya by Indian scientists and researchers from ETH Zurich, Switzerland.

President Murmu conferred with 'City Key of Honour' in Lisbon

- On 7 April 2025, President Draupadi Murmu was conferred with the 'City Key of Honour' in Lisbon, Portugal. The honour was presented by the Mayor of Lisbon during a special ceremony at the historic City Hall of Lisbon. It is the highest civilian honour conferred by Portugal on a foreign dignitary.
- President Murmu's visit is the first state visit by an Indian President in the last 27 years; the last visit was by President K.R. Narayanan in 1998. President Murmu's visit coincides with the 50th anniversary of India-Portugal diplomatic relations. On the occasion, the President also released a special postage stamp dedicated to the cultural heritage of the two countries.

India's stellar performance at World Boxing Cup 2025 (Brazil)

- Indian boxer Hitesh Gulia won the gold medal in the men's 70kg category at the World Boxing Cup 2025 held in Foz do Iguaçu, Brazil. His opponent Odell Kamara of England got injured in the final bout, giving Gulia a walkover and India won the gold medal.
- Another Indian boxer Abhinash Jamwal won the silver medal in the men's 65kg category. He lost 0-5 to Brazil's Yuri Reis in the final. India's Jadumani Singh Mandengbam (50kg), Manish Rathore (55kg), Sachin (60kg) and Vishal (90kg) won bronze medals.
- The Indian contingent won a total of six medals—one gold, one silver and four bronze—in the tournament, which is a commendable achievement for the country.
- A total of three World Boxing Cups will be held in 2025. The first of these has already taken place in Brazil, the next two tournaments will be held in Kazakhstan (June-July) and India (November).

Poonam Gupta becomes RBI Deputy Governor

- Poonam Gupta has been appointed as the new Deputy Governor of the Reserve Bank of India (RBI). She took charge on 1 April 2025 for a term of three years. She is the first woman in 14 years to be appointed to this post.
- The post was vacant after Michael Patra left the post in January 2025. Currently, Gupta is the Director General of the National Council of Applied Economic Research (NCAER) and is also a member of the Prime Minister's Economic Advisory Council. Additionally, she is the convener of the Advisory Council of the 16th Finance Commission.
- In the 90-year history of the RBI, only three women – KJ Udeshi, Shyamala Gopinath and Usha Thorat – have held this post so far. Gupta has become the fourth woman deputy governor.
- She will be the first woman to hold responsibility for both the monetary policy and economic and policy research departments of the RBI. This appointment is being considered an important step towards women participation and leadership in the Indian central banking system.

Famous actor Manoj Kumar dies

- On 4 April 2025, eminent actor, writer and director Manoj Kumar died in Mumbai at the age of 87. He was known as 'Bharat Kumar' due to his patriotic acting and direction in films.
- He gave a new identity to patriotic cinema through classic films like 'Upkaar' (1967), 'Purab

Aur Paschim' (1970), and 'Kranti' (1981). His other famous films include 'Pathar Ke Sanam', 'Shor', 'Sanyasi' and 'Roti Kapda Aur Makaan'.

- In view of his invaluable contribution to Indian cinema, he was awarded the Padma Shri in 1992 and the Dadasaheb Phalke Award in 2015. Apart from this, he also received the National Film Award and seven Filmfare Awards.
- Manoj Kumar's films not only entertained but also brought social and patriotic values to the masses. With his demise, Indian cinema has lost a great artist, thinker and true patriot.

PM-AJAY – 2024-25

- Union Minister of State for Social Justice and Empowerment Shri Ramdas Athawale recently gave detailed information about PM AJAY in a written reply to a question in the Lok Sabha.
- Pradhan Mantri Scheduled Caste Abhyudaya Yojana (PM-AJAY) is a centrally sponsored scheme launched in 2021-22 for socio-economic empowerment of Scheduled Caste communities. It has three major components "Adarsh Gram, Grant-in-Aid and Hostel".
- In the year 2021-22, it subsumed the old Pradhan Mantri Adarsh Gram Yojana (2009-10).
- From the year 2018-19 till date, 29,847 villages have been selected, out of which 11,076 have been declared as Adarsh Gram. In 2024-25 alone, 4,991 villages have been given the status of Adarsh Gram.
- The scheme covers villages where the Scheduled Caste population is more than 40% and the total population is 500 or more. Skill development is also an important component of the scheme. A total of Rs 457.82 crore was released for 8,146 projects including 987 skill development projects during 2023-24 and 2024-25.
- Under the hostel component, 891 hostels have been sanctioned so far, of which 27 have been sanctioned in 2024-25. The scheme encourages residential education and higher education for SC students.

NITI Aayog's Fiscal Health Index

- NITI Aayog has developed the Fiscal Health Index (FHI) to measure the fiscal performance of states in India. This index reflects the strengths and weaknesses of the fiscal management of the states and assists policymakers in taking financial decisions.
- The index covers 18 major states, which contribute significantly to the country's GDP, public expenditure and revenue. It is based on five broad categories – revenue generation, expenditure management, debt control, deficit management and overall financial stability.
- The index analysis for the year 2022-23 is based on the data of the Comptroller and Auditor General of India (CAG). As per the index, the expenditure and revenue collection by the states have a direct impact on the economic stability of the country.
- Odisha ranked first in this index, followed by Chhattisgarh, Goa, Jharkhand and Gujarat respectively. It aims to promote transparency, accountability and prudent fiscal administration, thereby helping states adopt more sustainable and resilient fiscal policies.

Exercise Tiger Triumph

- The fourth edition of Exercise Tiger Triumph was conducted from 1 to 13 April 2025 on the Indo-US Eastern Seaboard. It was a bilateral tri-military Humanitarian Assistance and Disaster Relief (HADR) exercise aimed at building standard operating procedures and developing

interoperability for the establishment of a Combined Coordination Centre (CCC).

- The harbour phase of the exercise took place at Visakhapatnam from 1 to 7 April, while the field activities were carried out at Kakinada. From the Indian side, naval ships Jalashwa, Ghariyal, Mumbai, Shakti, P8I aircraft, Army's 91 Infantry Brigade, 12 Mech Infantry Battalion, Air Force's C-130 and MI-17 helicopters and RAMT participated.
- From the US side, naval ships Comstock and Ralph Johnson and troops of Marine Division participated.
- This exercise started in 2019 and has been an important step towards strengthening coordination of India-US joint forces during times of crisis.

Chilean President Gabriel Boric Font's visit to India

- Chilean President Gabriel Boric Font was on an official visit to India from 1 to 5 April 2025. This was the first visit of a Chilean President to India in 16 years. He visited New Delhi, Agra, Mumbai and Bengaluru. He was accompanied by a high-level delegation of ministers, parliamentarians and business representatives.
- The visit was aimed at strengthening the 76-year-old India-Chile diplomatic relations. The two countries discussed increasing cooperation in trade, lithium supply, renewable energy and defense sector. The two leaders agreed to start negotiations on a Free Trade Agreement (FTA).
- This visit can give a new dimension to India's relations with South America.
- Chile is India's 5th largest trading partner in the Latin America and Caribbean (LAC) region. Santiago is its capital and the Chilean peso is its currency.

INIOCHOS-25 Exercise

- The Indian Air Force participated in the 12-day INIOCHOS-25 exercise held in Greece from 31 March to 11 April 2025.
- It was a biennial multinational air exercise organised by the Hellenic Air Force, in which 15 countries, such as Greece, India, Israel, Italy, France, Poland, Qatar, UAE, USA, Spain and Montenegro took part.
- The Indian Air Force contingent comprised Su-30 MKI fighter aircraft, IL-78 tankers and C-17 transport aircraft. The exercise promoted international cooperation and interoperability among the participating air forces. The participation of the Indian Air Force strengthened India's strategic partnerships, especially with Greece and other allied countries.

Operation Brahma

- India launched 'Operation Brahma' after the 7.7 magnitude earthquake struck Myanmar and Thailand on March 28. Under the 'Operation Brahma' campaign, a special rescue unit of the 50 (I) Para Brigade of the Indian Army and a 118-member field hospital were sent to Myanmar. Two C-17 aircraft arrived there with 60 tonnes of relief material.
- The NDRF evacuated 170 monks from the 'U Hla Thein' monastery. Relief material was distributed to 2000 monks in the Sky Villa area.
- Indian Naval ships Satpura, Savitri, INS Karmukh and LCU 52 were also involved in the relief in Yangon. India and Myanmar have a 1643 km border and strong historical and strategic relations, due to which India has provided quick humanitarian assistance.

MCQs Based on Current Affairs

1. With reference to the Railways (Amendment) Bill, 2024, consider the following statements:

1. The Bill empowers the central government to determine the number of Railway Board members, their qualifications, and appointment process.
2. The Bill completely eliminates the Railway Board and replaces it with a new regulatory authority.

Which of the statements given above is/are correct?

A: Only 1

B: Only 2

C: Both 1 and 2

D: Neither 1 nor 2

2. Consider the following statements regarding the Project to Monitor Tigers outside Reserves:

1. The project is being implemented under the supervision of the National Tiger Conservation Authority (NTCA).
2. The project is exclusively funded by the Union Budget's Wildlife Conservation Fund.
3. Around 30% of India's total tiger population lives outside designated reserves.

How many of the above statements are correct?

A: Only one

B: Only two

C: All three

D: None

3. Assertion (A): The Siliguri Corridor is geopolitically sensitive due to its proximity to Chumbi Valley.

Reason (R): Control over the Chumbi Valley can impact India's access to the Northeast.

- A: Both A and R are true, and R is the correct explanation of A.
- B: Both A and R are true, but R is NOT the correct explanation of A.
- C: A is true, but R is false.
- D: A is false, but R is true.

4. Consider the following statements regarding the Fram2 mission:

1. The Fram2 mission is the first private human spaceflight to use a polar orbit.
2. The mission was launched by NASA as part of its Artemis program.
3. The mission aims to conduct biological and medical research in space, including the first human X-ray in space.

Which of the statements given above is/are correct?

A: 1 and 3 only

B: 2 and 3 only

C: 1 and 2 only

D: All of the above

5. What is Stable Isotope Analysis used in tracking the migration of the Painted Lady Butterfly?

- A: A method that uses isotopic markers to distinguish genetically different populations
- B: A process that studies isotopic compositions in wings to determine the region where the butterfly developed as a larva
- C: A technique that uses radio signals to track real-time movement patterns
- D: A process that involves tagging butterflies with chemical markers to trace migration routes

6. Consider the following statements regarding aerosols and greenhouse gases (GHGs):

1. Aerosols have a longer atmospheric lifespan than greenhouse gases.
2. Aerosols create a temporary cooling effect by scattering sunlight.
3. Greenhouse gases cause long-term warming by trapping heat in the atmosphere.
4. A rapid reduction in aerosols without cutting GHG emissions could lead to an increase in global temperatures.

How many of the above statements are correct?

- A: Only 1
- B: Only 2
- C: Only 3
- D: All four

7. Which of the following best describes Odonata?

- A: A group of birds found in tropical regions.
- B: A class of amphibians with aquatic larvae.
- C: An order of insects that includes dragonflies and damselflies.
- D: A family of butterflies that inhabit dense forests.

8. What is the primary objective of the “4S Approach” that India follows in BIMSTEC?

- A: Strengthening economic integration among member nations.
- B: Promoting space and technology cooperation.
- C: Enhancing dialogue, peace, prosperity, and respect among member nations.
- D: Facilitating disaster resilience and climate adaptation.

9. Consider the following statements regarding the 2025 Technology and Innovation Report:

1. The report is published by the United Nations Development Programme (UNDP).
2. The report highlights global technological trends, including AI, digital infrastructure, and automation.
3. According to the 2025 report, India ranked 10th globally in AI private sector investment in 2023.

Which of the above statements is/are correct?

- A: Only one
- B: Only two
- C: All three
- D: None

10. Consider the following statements regarding the Vibrant Villages Programme-II (VVP-II):

1. VVP-II is a 100% centrally funded scheme aimed

at developing strategic villages along India's international borders.

2. Unlike VVP-I, which focused on northern border regions, VVP-II includes border villages from 17 states and union territories.
3. The programme is implemented under the Ministry of Defence (MoD).

Which of the statements given above is/are correct?

- A: Only one
- B: Only two
- C: All three
- D: None

11. Consider the following statements regarding India's support for Sri Lanka's economic and energy sectors:

1. India has pledged grant assistance to develop Trincomalee as an energy hub in partnership with Sri Lanka and Japan.
2. The Sampur Solar Power Plant was inaugurated as part of India's commitment to renewable energy in Sri Lanka.
3. A 5000 MT temperature-controlled warehouse in Dambulla was developed to enhance agricultural supply chain management.

How many of the above statements are correct?

- A: Only one
- B: Only two
- C: All three
- D: None

12. Consider the following statements regarding the New Pamban Bridge:

1. It is India's first vertical-lift sea bridge.
2. The bridge connects Rameswaram Island to the Sri Lankan mainland.
3. The bridge is built by the Border Roads Organisation (BRO) under the Ministry of Defence.

Which of the statements given above is/are correct?

- A: 1 only
- B: 1 and 2 only

C: 1 and 3 only

D: 1, 2, and 3

13. Consider the following statements regarding India's coal sector:

1. India has the second-largest coal reserves in the world.
2. Coal contributes to over 74% of India's power generation.
3. The reduction in coal imports has led to foreign exchange savings of over \$5 billion in the fiscal year 2024-25.
4. India has completely eliminated its reliance on imported coking coal.

How many of the above statements are correct?

A: Only one

B: Only two

C: Only three

D: All four

14. Consider the following statements regarding the Digital Threat Report 2024:

1. It has been launched by the Ministry of Electronics and Information Technology (MeitY) in collaboration with CERT-In and SISA.
2. The report primarily focuses on cybersecurity threats in India's Banking, Financial Services, and Insurance (BFSI) sector.
3. The report emphasizes AI-driven cyber threats as a key concern for financial institutions.

How many of the above statements are correct?

A: Only 1

B: Only 2

C: All three

D: None

15. What is Magnetic Hyperthermia in cancer treatment?

- A: A method of cooling cancer cells to slow their growth
- B: A technique that uses magnetic nanoparticles to

generate localized heat and destroy cancer cells

C: A type of radiation therapy that emits electromagnetic waves

D: A surgical method to remove tumors using magnetically guided lasers

16. Consider the following statements regarding judicial reforms in India:

1. The Restatement of Values of Judicial Life (1997) sets ethical standards for judges and prohibits speculative investments to prevent conflicts of interest.
2. The Fast Track Special Courts (FTSCs) are exclusively set up to handle financial fraud and corporate litigation cases.
3. The Mediation Act, 2023, aims to institutionalize Alternative Dispute Resolution (ADR) and encourage out-of-court settlements.

Which of the above statements is/are correct?

A: Only 1

B: Only 2

C: All three

D: None

17. Consider the following statements regarding India-UAE relations:

1. The Comprehensive Economic Partnership Agreement (CEPA) has significantly increased bilateral trade between India and the UAE.
2. The India-Middle East-Europe Economic Corridor (IMEEC) is a joint initiative between India, UAE, and Saudi Arabia to enhance energy cooperation.
3. India and UAE have established a Defence Partnership Forum to deepen strategic collaboration.

Which of the above statements is/are incorrect?

A: Only 1

B: Only 2

C: All three

D: None

18. Consider the following statements about

Regional Rural Banks (RRBs):

1. RRBs were established based on recommendations of the Narasimham Committee.
2. The equity of RRBs is shared equally between the Central Government and NABARD.
3. The majority of RRB branches are located in urban areas.

How many of the above statements are correct?

- A: Only one
 B: Only two
 C: All three
 D: None

19. Consider the following statements regarding M-CADWM:

Statement-I: The scheme focuses on delivering irrigation water from new canal systems being constructed under PMKSY.

Statement-II: The scheme emphasizes modernization of existing irrigation networks to improve last-mile water delivery.

Which of the following is correct?

- A: Both Statement-I and Statement-II are correct, and Statement-II is the correct explanation for Statement-I
 B: Both Statement-I and Statement-II are correct, but Statement-II is not the correct explanation for Statement-I
 C: Statement-I is correct, but Statement-II is incorrect
 D: Statement-I is incorrect, but Statement-II is correct

20. Consider the following statements about government initiatives supporting women entrepreneurs in India:

1. The Women Entrepreneurship Platform (WEP) is an initiative of the Ministry of MSME.
2. Mahila Udyami Yojana offers collateral-free loans to women up to ₹10 lakh.
3. The Startup India Seed Fund Scheme provides funding only to startups owned by women.

How many of the above statements are correct?

- A: Only one
 B: Only two
 C: All three
 D: None

21. Which of the following statements about the M-CADWM scheme is incorrect?

- A: It promotes micro-irrigation infrastructure through backend modernization.
 B: The scheme is part of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).
 C: It excludes integration with digital technologies for water-use efficiency.
 D: It includes community-based water management through Water User Societies.

22. Consider the following advantages of long-range glide bombs:

1. They enable aircraft to strike targets without entering enemy airspace.
2. They are more expensive than cruise missiles but offer better accuracy.
3. They can be launched from fighter jets, bombers, or drones.

How many of the above statements are correct?

- A: Only one
 B: Only two
 C: All three
 D: None

23. With reference to India's 'Panchamrit' commitments, consider the following statements:

1. India has committed to achieving net-zero carbon emissions by 2050.
2. One of the targets is to reduce the carbon intensity of the economy by 45% from 2005 levels by 2030.
3. India aims to meet 50% of its total energy needs from renewable sources by 2030.

Which of the above statements is/are correct?

- A: 2 and 3 only

B: 1 and 2 only

C: 3 only

D: All three

24. Which of the following best explains the constitutional significance of the Supreme Court's ruling on Article 201?

A: It allows the President to reject state bills without providing any reason.

B: It sets a constitutional time limit for the Governor to assent to bills.

C: It introduces a time-bound mechanism for the President to decide on reserved state bills.

D: It removes the Governor's power to reserve bills for the President.

25. With reference to India's position in global automotive production, which of the following statements is correct?

A: India is the largest automobile producer in the world.

B: India is the fourth-largest automobile producer in the world.

C: India's production exceeds 10 million vehicles annually.

D: India ranks 5th in the global automobile production.

26. Consider the following statements regarding India-Italy relations:

1. Italy is one of the top 10 foreign investors in India since 2000.

2. India and Italy collaborate under the India-Middle East-Europe Economic Corridor (IMEEC).

3. The India-Italy Strategic Partnership was formalized before 2020.

Which of the statements given above is/are correct?

A: 1 and 2 only

B: 2 only

C: 1 and 3 only

D: 1, 2 and 3

27. Which of the following best describes the significance of the Genome India Project (GIP)?

A: It will focus exclusively on mapping genetic data from South Indian populations for future medical applications.

B: It will create a biobank with genetic data that can be used to develop treatments tailored to India's genetic diversity.

C: The project aims to sequence genomes of individuals from non-Indian ethnic groups to compare global genetic traits.

D: The project seeks to only document common genetic traits of individuals within the Indian population.

28. Consider the following statements about extreme poverty in Kerala:

1. Kerala has the lowest poverty rate in India, as per the NITI Aayog's Multidimensional Poverty Index (MPI) for 2021.

2. The Kerala government aims to completely eradicate extreme poverty from the state by 2025.

3. Extreme poverty in Kerala is defined as a daily income of less than \$1.50 per person, adjusted for 2017 purchasing power parity.

4. Kerala's efforts to eradicate extreme poverty are limited to urban areas, excluding rural populations.

Which of the above statements are correct?

A: 1 and 2 only

B: 1, 2, and 3 only

C: 1 and 4 only

D: 2 and 3 only

29. With reference to India's pharmaceutical sector, consider the following statements:

1. The Department of Pharmaceuticals operates under the Ministry of Health and Family Welfare.

2. India is the largest global supplier of vaccines to UNICEF.

3. The Pradhan Mantri Bhartiya Janaushadhi Pariyojana encourages doctors to prescribe branded drugs in

public health facilities.

Which of the above statements is/are correct?

- A: 2 only
- B: 1 and 3 only
- C: 1 and 2 only
- D: 2 and 3 only

30. Why is the Directed Energy Weapon (DEW) system considered a transformative technology in defense?

- A: It replaces tanks and artillery in ground combat operations
- B: It allows silent, precise, and low-cost neutralization of airborne threats
- C: It enables satellite-based control over missile launchers
- D: It eliminates the need for any conventional air defense systems

31. With reference to the Cheetah Project Steering Committee, consider the following:

1. It functions under the National Tiger Conservation Authority (NTCA).
2. It is responsible for implementing wildlife tourism plans in national parks.
3. It monitors progress and advises on policy decisions for Project Cheetah.

Which of the statements given above is/are correct?

- A: 1 and 2 only
- B: 1 and 3 only
- C: 2 and 3 only
- D: 1, 2 and 3

32. Which of the following advantages does silicon photonics offer over traditional electronic data transfer?

1. Lower energy consumption
2. Faster data transmission
3. Resistance to heat beyond 120°C
4. Enhanced compatibility with quantum computing

Select the correct answer using the code given below:

- A: 1 and 2 only
- B: 2 and 3 only
- C: 1, 2 and 4 only
- D: 1, 2, 3 and 4

33. Consider the following statements regarding Left-Wing Extremism (LWE) in India:

1. The Naxalite movement originated in 1967 in Naxalbari, West Bengal, and was inspired by Mao Zedong's principles of protracted people's war.
2. The Red Corridor covers more than 200 districts across 20 states and is primarily influenced by socio-economic underdevelopment, tribal alienation, and weak governance.
3. Andhra Pradesh and Telangana remain the most affected states due to Maoist activities, despite the decline in LWE-related violence.

Which of the above statements are correct?

- A: 1 and 2 only
- B: 2 and 3 only
- C: 1 and 3 only
- D: 1, 2, and 3

34. Consider the following statements regarding the International Big Cat Alliance (IBCA):

1. IBCA is a legally recognized intergovernmental organization with its headquarters in India.
2. India has committed ₹150 crore towards IBCA's operations till 2028–29.
3. IBCA focuses exclusively on conservation of Old World big cats such as tiger, lion, and snow leopard.
4. The Alliance aims to promote transboundary conservation and international collaboration.

How many of the above statements are correct?

- A: Only two
- B: Only three
- C: All four
- D: Only one

35. Consider the following statements:

Statement I: India recorded a record-high total

export value in FY 2024–25, driven largely by a surge in goods exports.

Statement II: Electronics and coffee exports were among the fastest-growing segments, contributing to this export performance.

Which of the following is correct?

- A: Both Statement-I and Statement-II are correct, and Statement-II explains Statement-I
- B: Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- C: Statement-I is incorrect, but Statement-II is correct
- D: Statement-I is correct, but Statement-II is incorrect

36. According to the India Justice Report 2025, which state has successfully met caste-based reservations in both the police and district judiciary?

- A: Kerala
- B: Karnataka
- C: Andhra Pradesh
- D: Tamil Nadu

37. Consider the following statements regarding the NISAR mission:

1. It uses both L-band and S-band synthetic aperture radars to detect Earth surface changes.
2. The satellite is being launched on a GSLV rocket by ISRO.
3. It is capable of detecting ground movements as small as one metre.
4. It is a joint Earth observation initiative between ISRO and NASA.

How many of the above statements are correct?

- A: Only two
- B: Only three
- C: All four
- D: Only one

38. The manuscripts of which of the following texts were recently added to UNESCO's Memory of the World Register in 2024–25?

- A: Arthashastra and Ramayana
- B: Bhagavad Gita and Natyashastra
- C: Yoga Sutras and Manusmriti
- D: Tolkappiyam and Jataka Tales

39. Consider the following statements:

Statement I: Paste fill technology contributes to sustainable coal mining practices.

Statement II: It utilizes industrial by-products like fly ash and overburden to fill underground voids.

Which of the following is correct?

- A: Both statements are correct, and Statement II explains Statement I.
- B: Both statements are correct, but Statement II does not explain Statement I.
- C: Statement I is correct, but Statement II is incorrect.
- D: Statement I is incorrect, and Statement II is correct.

40. Why is rice more prone to arsenic accumulation than most other crops?

- A: It is genetically more susceptible to heavy metals.
- B: It is cultivated in oxygen-rich dry fields.
- C: It is often grown in water-saturated soil, which increases arsenic solubility.
- D: It has higher natural arsenic content than other crops.

41. According to the ICIMOD report, which of the following are direct consequences of reduced snow persistence in the Hindu Kush Himalayan (HKH) region?

1. Reduced summer river flow in the Indo-Gangetic plains
2. Decrease in hydropower potential
3. Disruption in wetland ecosystems
4. Increase in monsoon rainfall

How many of the above are correct?

- A: Only two
- B: Only three
- C: All four
- D: Only one

42. What is the primary purpose of the Liquidity Coverage Ratio (LCR)?

- A: Ensure banks maintain solvency under long-term stress
- B: Regulate interest rates across commercial banks
- C: Ensure availability of high-quality liquid assets to survive a short-term crisis
- D: Prevent digital fraud in internet banking transactions

43. With reference to GPS spoofing, consider the following statements:

1. It involves sending fake signals to deceive navigation systems.
2. It is the same as GPS jamming.
3. It can affect the Flight Management System and Ground Proximity Warning System of aircraft.
4. It was used during the Russia-Ukraine conflict.

How many of the above statements are correct?

- A: Only one
- B: Only two
- C: Only three
- D: All four

44. The “Soft Release Protocol” in wildlife conservation is primarily associated with which of the following objectives?

- A: Increasing genetic diversity in zoo-bred species
- B: Acclimatizing captive-bred animals before reintroducing them into the wild
- C: Preventing the spread of zoonotic diseases in animal populations
- D: Monitoring predator-prey dynamics in protected reserves

45. Consider the following statements regarding the India-Saudi Arabia strategic partnership:

1. Saudi Arabia is India's second-largest trade partner, while India is Saudi Arabia's third-largest trade partner.
2. Saudi Arabia has committed USD 100 billion

in investments across sectors like energy, infrastructure, health, and technology.

3. India has contributed USD 10 billion in investments to Saudi Arabia.

Which of the statements above is/are correct?

- A: 1 and 2 only
- B: 2 and 3 only
- C: 1, 2, and 3
- D: 2 only

46. Consider the following developments regarding India's Fintech ecosystem:

1. The Unified Payments Interface (UPI) has expanded to international markets and integrated with credit cards.
2. The Digital Lending Market in India is expected to reach over USD 500 billion by 2030.
3. Embedded Finance has no significant role in India's Fintech growth.
4. Blockchain is primarily used only for cryptocurrency in India.

How many of the above statements are correct?

- A: Only one
- B: Only two
- C: Only three
- D: All four

47. Consider the following factors contributing to the degradation of coral reef ecosystems globally:

1. Ocean acidification due to increased CO₂ absorption
2. Prolonged marine heatwaves exacerbated by El Niño
3. Sedimentation caused by coastal trawling and land runoff
4. Proliferation of invasive species like Kappaphycus alvarezii and crown-of-thorns starfish
5. Bioaccumulation of xenobiotic pollutants such as copper and oil

How many of the above directly impact coral health and contribute to coral bleaching or mortality?

- A: Only three
 B: Only four
 C: All five
 D: Only two

48. Which of the following best explains the strategic impact of India's suspension of the Indus Waters Treaty in April 2025?

- A: It allows Pakistan to claim water rights under the International Court of Justice
 B: It completely revokes the Treaty's legal validity
 C: It enables India to reconfigure its river usage without legal exit
 D: It initiates a UN-mandated water-sharing framework in South Asia

49. Consider the following statements regarding the impact of rising gold prices on the Indian economy:

1. A rise in gold prices leads to a wider Current Account Deficit (CAD) due to an increase in the import bill.
2. Higher gold prices provide greater financial security to households that own gold.

3. A surge in gold prices is likely to reduce inflation in the economy.

How many of the above statements are correct?

- A: 1 and 2 only
 B: 2 and 3 only
 C: 1 and 3 only
 D: 1, 2, and 3

50. Which of the following are true regarding Haemophilia A?

1. It is a genetic disorder inherited in an autosomal recessive pattern.
2. It primarily results from a deficiency of clotting Factor VIII.
3. It is more common in males than in females.
4. Regular infusion of clotting factors was the conventional treatment prior to gene therapy.

How many of the above statements are correct?

- A: Only two
 B: Only three
 C: All four
 D: Only one

ANSWER

1	A
2	B
3	A
4	A
5	B
6	C
7	C
8	C
9	B
10	B

11	B
12	A
13	B
14	C
15	B
16	B
17	A
18	A
19	D
20	A

21	C
22	B
23	A
24	C
25	B
26	B
27	B
28	A
29	A
30	B

31	B
32	C
33	A
34	B
35	C
36	B
37	B
38	B
39	A
40	C

41	B
42	C
43	C
44	B
45	D
46	B
47	C
48	C
49	A
50	B

UPSC (IAS) Foundation Batch

9th June 2025

Timing: 08:30 AM

UP - PCS Foundation Batch

11th June 2025

Timing: 09:00 AM | 06:00 PM



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