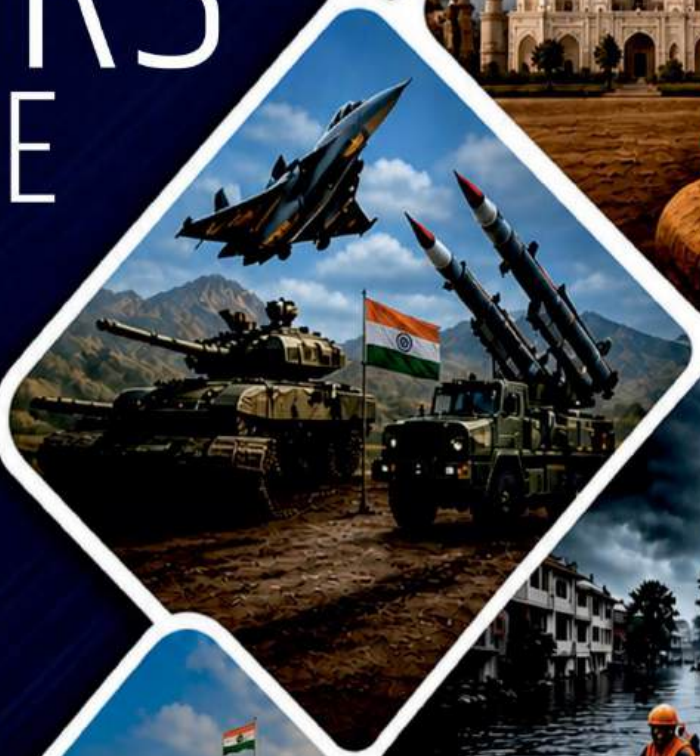
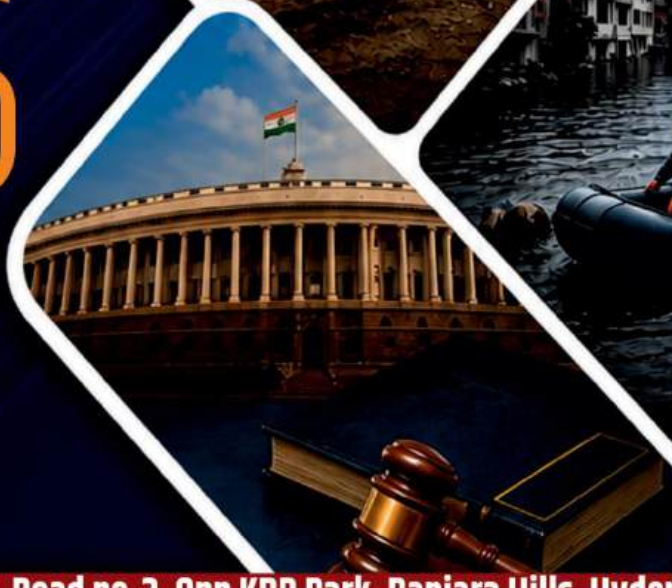
EXCEL
CIVILS ACADEMY
EMPOWERING FUTURE LEADERS

CURRENT AFFAIRS MAGAZINE

May 2026





Excel Civils Academy, Road no-2, Opp KBR Park, Banjara Hills, Hyderabad
Contact :- +91 9100433442/445

DIRECTOR'S MESSAGE

Dear Aspirants,

The population census is not merely an exercise in counting heads; it is the foundational pillar upon which a modern democratic nation maps its growth, drafts its welfare strategies, and structures its political representation. As the largest administrative undertaking in the democratic world, a decennial census provides a comprehensive snapshot of a country's demographic, economic, and social realities. It captures vital data regarding literacy, housing conditions, urbanization, asset ownership, and occupational shifts. For a diverse and expanding nation like India, this data transforms from a simple mathematical collection into an indispensable instrument of governance. It ensures that state policies are guided by empirical evidence rather than administrative guesswork.

In terms of governance, the significance of census data can be observed across legislative, fiscal, and welfare dimensions. First, it forms the core of data-driven welfare distribution. Major national programs, including the targeted public distribution system for food grains, rural housing networks, and health insurance initiatives, rely explicitly on localized demographic statistics to identify and reach true beneficiaries. Without updated figures, state governments risk using obsolete projections that systematically exclude millions of eligible citizens from baseline welfare access. Second, the census carries profound constitutional weight regarding fiscal federalism. The Finance Commission utilizes population data as a key metric to determine the vertical and horizontal distribution of tax revenues between the Central government and the States. An accurate headcount ensures that financial allocations match the actual public service burdens borne by individual provinces. Furthermore, the census provides the empirical framework required for legislative equity. It determines the proportional reservation of seats for Scheduled Castes and Scheduled Tribes in the Parliament and state assemblies, directly upholding the constitutional promise of fair political representation.

Despite its critical importance, India's decennial census experienced an unprecedented delay. Originally scheduled to commence its field operations in April 2020 and conclude the final population count by early 2021, the comprehensive exercise was delayed for several years. The primary, immediate cause for this disruption was the sudden onset of the COVID-19 pandemic in early 2020. A traditional census requires nearly three million public workers, predominantly primary school teachers and local administrative staff, to visit every household across the nation. Amidst lockdowns, strict physical distancing protocols, and an overextended healthcare apparatus, deploying a massive human network for door-to-door surveys was a public health impossibility.

However, as the pandemic risks declined, subsequent delays were driven by complex administrative modifications and shifting political factors. Structurally, the government decided to transform the census from a traditional paper-and-pen format into the world's first fully digital population count. Building this secure digital infrastructure required extensive preparation, including developing dedicated, multilingual smartphone applications for field enumerators, establishing the House-listing Block Creator application integrated with satellite mapping, and launching a secure online portal for citizen-led self-enumeration. Training millions of local workers to navigate these new digital tools and ensuring strict data privacy protocols added considerable time to the preparatory phase.

Beyond technological changes, the delay was heavily extended by deep political debates surrounding two highly sensitive topics: caste enumeration and electoral delimitation. The demand for a comprehensive socio-economic caste census, which had not been attempted on a national scale since 1931, emerged as a central issue in national politics. Navigating the logistical challenges of accurately classifying thousands of sub-castes while managing the political anxieties associated with updating reservation quotas required careful, prolonged policy deliberations.

Simultaneously, the upcoming census is legally tied to the next interstate delimitation exercise—the process of redrawing parliamentary and state assembly constituencies based on the latest population figures. Because the current distribution of parliamentary seats remains frozen based on the 1971 population spread, southern states that successfully implemented family planning programs expressed deep structural anxieties that a new census would diminish their political representation relative to faster-growing northern regions. Balancing these regional concerns and building an administrative consensus around the post-2026 delimitation map required extensive institutional dialogue, which pushed the official launch of the first phase to April 2026.

To effectively execute this massive digital transformation, the Central Government launched a series of dedicated administrative and technological initiatives under the umbrella of the Digital India campaign. Central to this effort was the rollout of the National Census Portal and the companion Census India Mobile Application, which served as the twin delivery mechanisms for the exercise. Through these platforms, the government introduced the Self-Enumeration Scheme, allowing citizens to log in using their Aadhaar-linked mobile numbers to independently fill out their household profiles. To support the millions of field data collectors who still needed to visit non-digitized households, the Ministry of Home Affairs introduced the Enumerator Incentive and Training Scheme, a well-funded capacity-building initiative that provided direct financial assistance to local workers for mobile data usage, alongside structured training modules to ensure data security at the grass-roots level. Furthermore, the data generated from this digital framework was structurally linked to the government's ongoing National

Spatial Data Infrastructure project. This integration allowed the census apparatus to pair demographic responses with geographic information system mapping, ensuring that rural and urban boundaries were perfectly aligned and eliminating the errors that plagued previous manual surveys.

The long-awaited commencement of this digital census marks a crucial step forward for Indian governance. While the extended delay created a temporary statistical gap that forced policymakers to rely on old projections, the shift toward a digital platform ensures that the finalized data will be processed rapidly and remain dynamic. By systematically recording demographic growth, urban shifts, and socioeconomic conditions through secure digital applications, the census re-establishes an accurate, reliable foundation for public policy. Ultimately, navigating the logistical, technological, and political challenges that delayed this exercise demonstrates that a census is far more than a statistical requirement; it is a vital national process that shapes the long-term democratic fabric, fiscal balance, and social equity of the nation.

Best wishes

Yours sincerely,

K Rajendra Kumar IPS (Retd)

EXCEL

CIVILS ACADEMY

EMPOWERING FUTURE LEADERS

May-2026

Current Affairs

Contents

Chapter-
1

HISTORY & CULTURE

50th Statehood Celebrations of Sikkim

Context:

Prime Minister of India visited Gangtok, to participate in the closing ceremony of Sikkim's year-long 50th Statehood celebrations.

50th Statehood Celebrations of Sikkim

About50th Statehood Celebrations of Sikkim:

What it is?

- The 50th Statehood celebrations, which began in May 2025, commemorate five decades since Sikkim officially integrated with the Union of India in 1975. The event highlights Sikkim's transition from a Himalayan kingdom to a leader in sustainable development.

Background of Sikkim:

- Establishment of the Kingdom: The Kingdom of Sikkim was established in 1642 with Phuntsong Namgyal as the first Chogyal (ruler).
- British Protectorate: In 1861, the Treaty of Tumlong established Sikkim as a British protectorate, serving as a buffer state against China and Nepal.
- Post-Independence Status: After 1947, Sikkim did not immediately accede to India. Instead, the 1950 Indo-Sikkim Treaty made it an Indian protectorate, granting India control over its defense, external affairs, and strategic communications while allowing internal autonomy.

Events Leading to Statehood

- Pro-Democracy Movements: The 1960s and 70s saw rising demand for political reforms and closer ties with India, led by parties like the Sikkim National Congress (SNC).
- Tripartite Agreement (1973): Following massive anti-monarchy protests that surrounded the royal palace, a tripartite agreement was signed between the Chogyal, the Indian government, and major political parties to introduce reforms.
- Referendum (1975): In a historic referendum held in April 1975, 59,637 voters (roughly 97.5% of those who voted) chose to abolish the monarchy and join India.

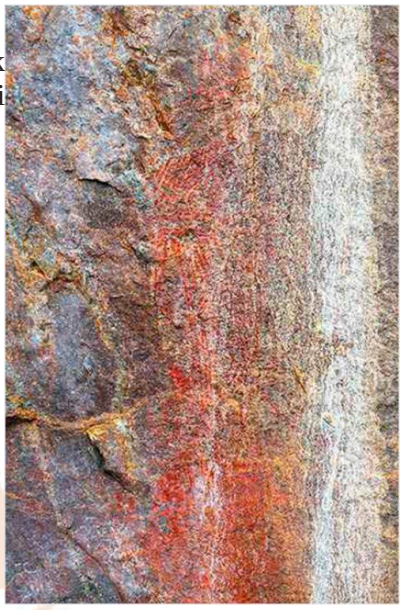
- Constitutional Amendment: Following the referendum, the Indian Parliament passed the 36th Amendment Act, officially recognizing Sikkim as the 22nd state of the Union on May 16, 1975.

Significance:

- Democratic Triumph: The statehood celebrations mark the successful transition from an absolute monarchy to a thriving participatory democracy.
- National Contribution: The Prime Minister noted that Sikkim's cultural heritage and sustainable practices contribute significantly to national development.

Prehistoric Rock Painting Site in Nilgiris

Context:



The Yaakai Heritage Trust has reported the re-discovery of a prehistoric rock painting site in the Nilgiris district of Tamil Nadu, located near the Vellarikombai village.

Prehistoric Rock Painting Site in Nilgiris

AboutPrehistoric Rock Painting Site in Nilgiris:

What It Is?

- A prehistoric rock art shelter located approximately 1,100 metres above sea level near Kotagiri.
- The newly identified site adds to the rich archaeological landscape of the Nilgiris, which includes other famous rock art locations like Eluthuparai and Tholikkiparai.
- Location and Access: Situated northwest of Vellarikombai, the site is reached by climbing 450 metres up a steep rocky slope. It is accessible only in summer; during monsoons, water flows over the rock like a waterfall.
- Dimensions: The paintings are spread across a rock surface measuring roughly 638 cm in length and 540 cm in height.
- Artistic Style: All figures are executed using red ochre.
- Identifiable Figures: The site contains 30 clear figures, including human forms, anthropomorphic figures with conical headdresses, and elongated-limbed figures.
- Symbolism: Ritual symbols such as dot-filled rectangular patterns and ladder-like body structures suggest strong ties to prehistoric supernatural beliefs.

About Oor Pare:

- Oor Pare is the local name given to this specific rock painting site by the indigenous tribal communities of the region. It is traditionally used as a resting place by these tribes during honey-gathering expeditions.

AboutIrula and Kurumba Tribes:

The rock art site is considered sacred to the Irula and Kurumba communities, who have inhabited the Nilgiri biospehere for centuries.

Irula Tribe

Who They Are?

- One of the oldest indigenous communities in South India, recognized as a Scheduled Tribe.
- Habitat: They primarily reside in the Nilgiri Mountains across Tamil Nadu and Kerala.
- Key Characteristics: Historically known for their expertise in snake and rat catching, as well as their deep knowledge of herbal medicine and forest produce collection.

Kurumba Tribe

Who They Are?

- An ethnic group traditionally linked to the ancient Pallava empire, now living as a forest-dwelling tribe.
- Habitat: They live in the mid-to-lower elevations of the Nilgiri hills, often in proximity to steep cliffs.

- Key Characteristics: They are renowned for their traditional honey-gathering skills, often scaling dangerous heights using handmade vine ladders. They are also known for their unique traditions in art and sorcery within the local tribal hierarchy.

St. Francis Xavier

Context:

YouTuber Gautam Khattar was recently arrested and brought to Goa on a transit remand for allegedly making derogatory remarks about St. Francis Xavier at a public event.

St. Francis Xavier

AboutSt. Francis Xavier:

What it is?

- Francis Xavier (1506–1552) is revered as the patron saint of Goa, often affectionately called Goencho Saib (Lord of Goa) by the local population. He was a pioneering Roman Catholic missionary and a co-founder of the Society of Jesus (Jesuits).

Early Life:

- Birth and Nobility: Born Francisco de Jasso y Azpilicueta on April 7, 1506, in the Castle of Xavier, Kingdom of Navarre (modern-day Spain).
- Education: In 1525, he went to the University of Paris, where he spent eleven years studying and eventually teaching philosophy.
- SpiritualTurning Point: While in Paris, he met Ignatius of Loyola, who eventually broke down Francis's initial resistance to a religious life with the question: What will it profit a man to gain the whole world, and lose his own soul?
- Founding the Jesuits: In 1534, he was one of the seven students who took vows of poverty and chastity at Montmartre, leading to the formal approval of the Society of Jesus in 1540.

Major Contributions:

- Missionary Journeys: Appointed as the first Jesuit missionary, he traveled extensively across Asia, including Mozambique, India, Malacca, the Maluku Islands, and Japan.
- Arrival in Goa: He arrived in Goa in May 1542. His primary mission was to restore Christian values among Portuguese settlers and evangelize the local population.
- Educational Work: He ministered to the sick, taught children catechism, and headed St. Paul's College in Old Goa, a pioneer seminary for educating priests in Asia.
- Apostle of the East: He led the first Christian mission to Japan and was the first major Christian missionary to venture into Borneo and the Maluku Islands.

Significant Events and Legacy

- Death and Incorruptible Remains: He died in 1552 on Shangchuan Island while attempting to enter China. His body was found to be exceptionally well-preserved after multiple exhumations and transfers between Malacca and Goa.
- Basilica of Bom Jesus: Since 1624, his mortal remains have been housed in a silver casket at the Basilica of Bom Jesus in Old Goa.
- Canonization: He was beatified in 1619 and canonized by Pope Gregory XV in 1622.

Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs)

Context:

The Union Social Justice Ministry report for 2025-26 highlights a significant lack of state support in issuing community certificates and identifying beneficiaries for denotified, nomadic, and semi-nomadic tribes (DNTs).

Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs)

About Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs):

Who They Are?

- Communities that were officially labeled as criminal by the colonial British administration under the Criminal Tribes Act (CTA) of 1871. Groups that maintain a mobile or semi-mobile lifestyle, traditionally moving for livelihoods such as trade, pastoralism, or entertainment.
- Current Status: These groups were denotified in 1952 when the CTA was repealed, though many were subsequently monitored under various Habitual Offenders Acts.

Origin and History:

- Colonial Stigma: The British codified the criminal label based on the belief that certain castes were addicted to crime by heredity and usage.
- Repeal and Transition: Following independence, the CTA was repealed in 1952, transforming Criminal Tribes into Denotified Tribes.
- Enumeration History: These communities were specifically discussed in Census reports from 1911 to 1931, but specific accounting was halted after 1931.

Regional Spread:

- National Presence: There are nearly 1,200 such communities spread across various parts of India.
- State Issues: Currently, only seven states are actively issuing the DNT community certificates required to access central benefits.
- Unclassified Groups: While many have been assimilated into SC, ST, or OBC lists, approximately 268 communities remain unclassified in any category.

Key Features:

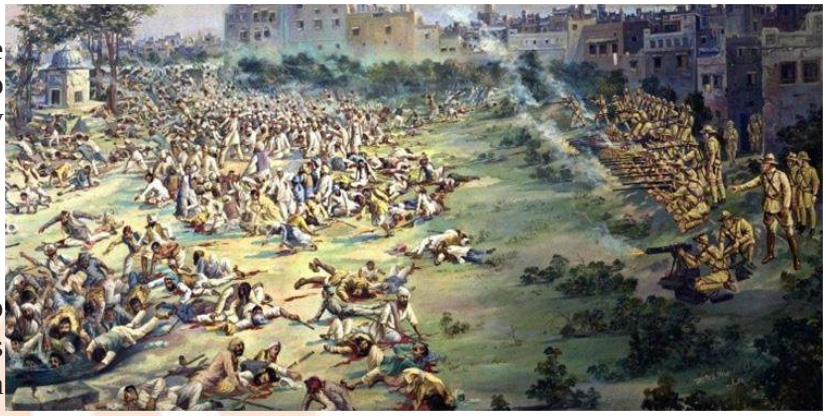
- Social Marginalization: Despite denotification, they face persistent social stigma and are often treated as habitual offenders by local authorities.
- Economic Backwardness: Most remain socially and educationally backward; the SEED scheme, intended for their upliftment, has seen minimal spending due to identification hurdles.
- Identity Issues: Many DNTs are misclassified into existing SC/ST/OBC lists, which community leaders argue dilutes their specific needs and leads to further marginalization within those groups.
- Certification Barriers: A primary obstacle is the lack of DNT community certificates, which prevents eligible individuals from claiming housing under PMAY-G or benefits under the SEED scheme.

Significance:

- Scholars estimate that failing to accurately count and support DNTs in the upcoming Census could alienate over 10 crore people.
- Community leaders frame their history as one of resistance against foreign aggressors and colonial rule, rather than inherent criminality.

The Jallianwala Bagh Massacre

Context:



India marks the 107th anniversary of the Jallianwala Bagh massacre, paying homage to the hundreds of unarmed civilians killed by British forces in 1919.

About The Jallianwala Bagh Massacre:

What it is?

- The Jallianwala Bagh massacre, also known as the Amritsar Massacre, was a brutal slaughter of unarmed Indian civilians by British troops under the command of Brigadier-General Reginald Dyer.
- It remains one of the darkest chapters of British colonial rule in India and served as a turning point that shifted the national sentiment from seeking reform to demanding complete independence (Swaraj).

Background of the Massacre:

- The Rowlatt Act (1919): The British passed the Black Act, which allowed the government to imprison any person suspected of sedition without a trial for up to two years. This sparked widespread Rowlatt Satyagraha led by Mahatma Gandhi.
- Arrest of Leaders: Two popular pro-independence leaders, Dr. Saifuddin Kitchlew and Dr. Satyapal, were arrested in Amritsar, leading to violent protests and a critical security situation in Punjab.
- Martial Law: General Dyer was called in to restore order. He issued a proclamation banning all public meetings and gatherings, but it was not widely disseminated and was issued only in English.

The Day of the Massacre:

- Baisakhi Gathering: April 13 was the festival of Baisakhi. Thousands of people—including men, women, and children—gathered at Jallianwala Bagh. Some were there to peacefully protest the arrests, while many rural visitors were simply there to celebrate the festival.
- No Warning: General Dyer entered the garden with 50 soldiers and two armored cars. Without issuing any warning for the crowd to disperse, he blocked the only narrow exit.
- The Firing: He ordered his troops to fire until their ammunition was exhausted. Over 1,600 rounds were fired into the trapped crowd for about 10 minutes.
- Casualties: While official British figures stated 379 were killed, Indian estimates suggested over 1,000 deaths. Many jumped into the Martyr's Well inside the park to escape the bullets and drowned.

Post-Massacre Events:

- Reign of Terror: Following the massacre, Dyer imposed humiliating crawling orders, public floggings, and the cutting of water and electricity to Indian families in Punjab.
- Hunter Commission: The British government appointed the Hunter Commission to investigate. While it censured Dyer, he was not prosecuted and was even hailed as a Saviour of the Punjab by some imperial loyalists in Britain.
- Renunciation of Honors: In protest, Rabindranath Tagore renounced his Knighthood, and Mahatma Gandhi returned his Kaiser-i-Hind gold medal.

Implications and Legacy:

- The brutality of the event convinced Gandhi that the British government was satanic. It led directly to the launch of the Non-Cooperation Movement.

- The massacre bridged the gap between different social classes and religions, uniting Indians against a common oppressor.
- Figures like Udham Singh (who later assassinated Michael O'Dwyer) and Bhagat Singh were deeply influenced by the tragedy, leading to an upsurge in revolutionary activities.

The Lanjia Saora Community

Context:

The Lanjia Saora community is in the news for its resilient efforts to preserve its unique visual heritage, such as traditional metal earrings and tattoos, while adapting these customs to modern lifestyles.

About The Lanjia Saora Community:

Who They Are?

- The Lanjia Saoras are one of the oldest and most distinct tribes in India, belonging to the Sauras ethnic group. They are recognized by the Government of India as a Particularly Vulnerable Tribal Group (PVTG) due to their stagnant population, low literacy levels, and traditional agricultural practices.

Habitat:

- Region: They primarily inhabit the densely forested and hilly terrains of the Rayagada and Gajapati districts in southern Odisha.
- Living Conditions: They live in mud-and-thatch homes scattered across undulating, undulating landscapes, often isolated from mainstream urban centers.

History and Belief System:

- Ancient Origins: The Saoras find mention in Hindu epics like the Ramayana (associated with Shabari) and the Mahabharata, marking them as an ancient indigenous lineage.
- Nature Intertwined: Their history is rooted in a belief system deeply intertwined with nature. Rituals are performed to appease forest deities and ancestral spirits, which they believe govern their harvest and health.

Key Characteristics:

Visual Traditions:

- Earrings: Known for large, thick circular metal earrings fixed into stretched earlobes. While the older generation wears them permanently as markers of identity, the youth are transitioning to hooked versions for comfort.
- Tattoos: Intricate geometric patterns or nature-inspired motifs were traditionally etched permanently for spiritual protection.
- Livelihood: They sustain themselves through shifting cultivation (Podu Chasa), foraging for forest produce, and small-scale farming.
- Artistic Heritage (Idital): They are famous for their Saora paintings (Idital), which are wall murals made using red ochre and rice paste. These paintings serve as a visual language to communicate with the spirit world.
- Music and Dance: Music is intrinsic to their daily life, used during every significant life event, from birth to the Guar (funeral) ritual.
- Social Structure: They maintain a highly egalitarian society with a strong sense of communal resource sharing and collective decision-making.

Significance:

- The Lanjia Saoras represent a vital link to India's pre-Vedic indigenous history and ancient visual languages.
- Their survival is proof of sustainable co-existence with the Eastern Ghats' ecosystem.

- Saora art has gained international recognition, influencing modern Indian textile design and contemporary tribal art.

Purvanchal Mahotsav 'Maati-9' Festival

Context:

Speaker of Lok Sabha addressed the Purvanchal Mahotsav 'Maati-9' Festival highlighting the region's cultural and spiritual heritage.

About Purvanchal Mahotsav 'Maati-9' Festival:

What it is?

- MAATI-9 is a premier cultural festival of the Purvanchal region, centred on the theme Maati (soil).
- It celebrates the deep bond between people and their ancestral roots through heritage, food, tourism, and arts.
- Host: Organised as part of the Purvanchal Mahotsav with participation from cultural groups, artisans, and community representatives.

Aim:

- To preserve and promote the cultural heritage of Purvanchal.
- To strengthen the connection of youth with their regional identity and traditions.

Key Features:

- Cultural Showcase: Folk arts, music, local dialects, and traditional performances of the Purvanchal region.
- Cuisine & Heritage Promotion: Highlights traditional food, crafts, and tourism potential of the region.
- Diaspora Engagement: Recognises contributions of the Purvanchali diaspora in preserving cultural values globally.

Significance:

- Cultural Preservation: Protects local traditions, language, and community identity in a globalised world.
- Economic Opportunity: Promotes cultural tourism, local entrepreneurship, and sustainable regional development.

Panchayat Advancement Index (PAI) 2.0 Report

Context:

The Ministry of Panchayati Raj released the Panchayat Advancement Index (PAI) 2.0 Report for 2023–24 on National Panchayati Raj Day.

PAI assesses Gram Panchayat/Equivalent to GP performance across the following nine LSDG themes:

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7	Theme 8	Theme 9
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

National Panchayati Raj Day.

AboutThe Panchayat Advancement Index (PAI) 2.0:

What it is?

- The PAI 2.0 is India's first comprehensive, data-driven framework designed to monitor, assess, and incentivize the performance of over 2.5 lakh Gram Panchayats (GPs) and Traditional Local Bodies (TLBs).
- It serves as a localized report card that evaluates each Panchayat against 150 indicators and 230 data points across nine thematic areas to achieve the Localization of Sustainable Development Goals (LSDGs).

RANKING IN PANCHAYAT ADVANCEMENT INDEX (PAI) 2.0 REPORT

RANK	STATE/UT	FRONT RUNNER (GRADE A) COUNT
1	TRIPURA	943
2	TELANGANA	624
3	ANDRA PRADESH	591
4	ODISHA	555
5	MAHARASHTRA	315

The Panchayat Advancement Index (PAI) 2.0

Key Summary and Findings:

- National Participation: The index achieved 97.30% participation from 2,59,867 Panchayats across 33 States and UTs, a significant rise from 80.79% in version 1.0.
- Performance Categories: Panchayats are classified into five grades based on scores: Achiever (A+), Front Runner (A), Performer (B), Aspirant (C), and Beginner (D).

- Front Runner Status: Based on composite scores, 3,635 Gram Panchayats emerged in the Front Runner category (Grade A).
- Largest Segment: The Performer category (Grade B) houses the largest group, with 1,18,824 GPs (approximately 45.72% of participating bodies).
- Livelihood Gains: Under Theme 1 (Poverty Free & Enhanced Livelihoods), 3,313 GPs achieved the A+ grade, reflecting major successes in poverty reduction.
- Health Outcomes: Under Theme 2 (Healthy Panchayat), 1,015 GPs reached the A+ grade for excellence in preventive healthcare, nutrition, and sanitation.
- Framework Refinement: PAI 2.0 rationalized the indicator set from 516 indicators in version 1.0 to 150 indicators for sharper focus.
- State Inclusion: While 33 States/UTs took part, West Bengal did not on-board, and Delhi and Chandigarh were excluded as they lack Gram Panchayats.

Key Ranking Highlights from the Report

- Highest Performing State: Tripura is the top performer, with nearly 80% of its onboarded Panchayats (943 out of 1,176) reaching the Front Runner grade.
- Zero Achievers (A+): Nationally, zero Gram Panchayats achieved the Achiever (Grade A+) status, which requires a composite score of 90 and above.
- Maximum Participation: Uttar Pradesh had the highest volume of data submissions, with all 57,678 of its Gram Panchayats participating in the index.

Thematic Leaders:

- Poverty Free Theme: 3,313 GPs achieved an A+ grade individually in the Poverty Free and Enhanced Livelihoods category.
- Healthy Panchayat Theme: 1,015 GPs achieved an A+ grade individually in the Healthy Panchayat category.
- Non-Participants: West Bengal is the only major state that did not on-board for the PAI 2.0 exercise.

The Success Story: Leading Panchayats

- Evidence-Based Planning: High-performing Panchayats are utilizing PAI scores to identify local priorities and design targeted interventions in their Gram Panchayat Development Plans (GPDP).
- Learning Hubs: Top-performing GPs are being developed as Panchayat Learning Centers to facilitate exposure visits and peer-to-peer learning for other local bodies.
- AdministrativeTransparency: Mandatory Gram Sabha validation for PAI data has significantly boosted accountability and citizen engagement at the village level.
- Technological Adoption: The use of real-time dashboards and auto-porting of data from Union Ministries has reduced reporting friction and improved data accuracy.

Challenges Plaguing Panchayats:

- Regional Imbalance: Significant performance gaps exist between states; for example, Bihar has 6,862 Panchayats in the Aspirant (Grade C) category compared to very few Front Runners.
- E.g.: States like Manipur and Meghalaya show a high concentration of Beginner (Grade D) panchayats, indicating a severe lack of baseline infrastructure.
- Technological Barriers: Transitioning to a data-heavy framework is difficult for remote bodies that lack the digital literacy required for the single integrated data entry form.
- E.g.: GPs in Arunachal Pradesh and Nagaland have a majority of their bodies in the C and D grades, often due to technical reporting hurdles.
- Infrastructure Deficits: Maintaining Self-Sufficient Infrastructure remains the weakest theme for many performers, as local bodies struggle with funding for high-cost projects.
- E.g.: In Uttar Pradesh, despite some gains, over 6,100 Panchayats remain in the Beginner category, highlighting persistent gaps in basic infrastructure.
- Social Justice Hurdles: Scores in Socially Just and Socially Secured themes are often lower than livelihood scores, suggesting a lag in protecting vulnerable groups.
- E.g.: Only a small fraction of GPs in several North Indian states reached the A+ grade for social justice, despite high composite scores in other areas.

- Resource Dependency: Many Panchayats rely solely on state allocations, leading to financial strain when performance targets are not met.
- E.g.: Beginner-grade Panchayats in Jharkhand and Chhattisgarh often lack the own source revenue needed to move into higher performance tiers.

Way Ahead:

- Targeted Resourcing: States must use PAI scores to allocate additional financial resources specifically to the 1,23,719 Panchayats currently in the Aspirant category.
- Capacity Building: Implement dedicated training sessions for elected representatives in Beginner category GPs to help them better understand and use data for governance.
- Institutionalizing Awards: Link the National Panchayat Awards and other incentive mechanisms strictly to PAI performance to encourage healthy, data-backed competition.
- Vernacular Outreach: Expand the portal's vernacular language support to ensure that local traditional bodies can navigate the framework without linguistic barriers.
- Scheme Alignment: Use PAI 2.0 as a primary tool for Union Ministries to assess the outcomes of central schemes and formulate future rural policies.

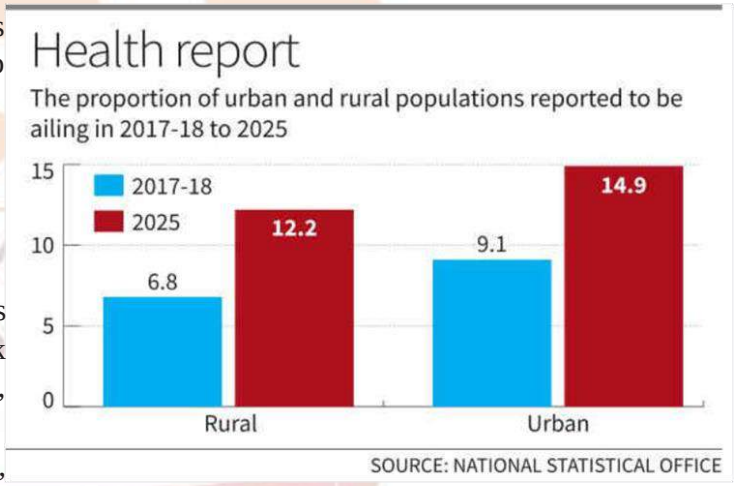
Conclusion:

The PAI 2.0 Report serves as a vital tool for achieving Viksit Gram Panchayats by replacing subjective claims with verifiable, data-driven outcomes. With 97.3% participation, it has established a transparent culture of accountability that empowers rural citizens to monitor their own development. Ultimately, this index provides the roadmap necessary for Panchayati Raj Institutions to meet the 2030 Sustainable Development Goals.

Improving Health-Seeking Behaviour

Context:

The National Statistical Office (NSO) released findings from its 80th round health survey highlighting a sharp rise in health-seeking behaviour across India.



Improving Health-Seeking Behaviour

AboutImproving Health-Seeking Behaviour:

What it is?

- Health-seeking behaviour refers to the actions individuals take to maintain health and seek medical care, including timely diagnosis, treatment, and preventive services.
- It reflects awareness, accessibility, affordability, and trust in the healthcare system.

Indicator	Data / Trend	Inference / Meaning
Ailment Reporting (PPRA)	Rural: 6.8% ⊠ 12.2%	
Urban: 9.1% ⊠ 14.9%	Improved awareness and greater willingness to seek treatment	
Health Insurance Coverage	Rural: 12.9% ⊠ 45.5%	
Urban: 8.9% ⊠ 31.8%	Expansion driven by schemes like Ayushman Bharat Pradhan Mantri Jan Arogya Yojana	
Institutional Deliveries	Rural: 95.6%	
Urban: 97.8%	Strong improvement in maternal healthcare access	
OOPE (Median Expenditure)	⊠11,285 per hospitalization Public facilities: ~⊠1,100 OPD: Often zero	Reduced financial burden; better affordability in public system

Public Healthcare Utilisation	Rural OPD: 28% (2014) → 35% (2025)	Increased trust and reliance on public health facilities
Epidemiological Transition	→ Infectious diseases → NCDs (diabetes, CVDs)	Shift toward lifestyle diseases requiring long-term care

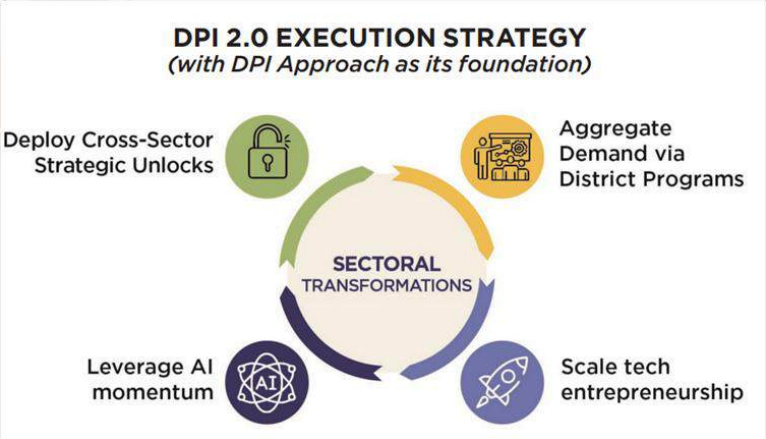
Significance:

- Greater reliance on public facilities ensures healthcare reaches vulnerable populations.
- Reduced out-of-pocket expenditure enhances affordability and prevents poverty traps.
- Early diagnosis and primary care expansion reduce long-term disease burden.
- Reflects success of schemes providing free drugs, diagnostics, and insurance.

NITI Aayog Launches DPI@2047 Roadmap to Advance Inclusive and Productivity-Led Growth

Context:

NITI Aayog has officially launched the DPI@2047 for Viksit Bharat roadmap, a strategic initiative designed to propel India from foundational digital inclusion to a high-productivity, livelihood-led growth trajectory.



NITI Aayog Launches DPI@2047 Roadmap

AboutNITI Aayog Launches DPI@2047 Roadmap to Advance Inclusive and Productivity-Led Growth:

What it is?

- The DPI@2047 Roadmap is a strategic framework developed by the NITI Frontier Tech Hub (FTH) in partnership with EkStep Foundation and Deloitte. It charts the evolution of India's digital rails beyond welfare delivery into a comprehensive system that enables broad-based prosperity through enhanced human capability and market access.

Key Summary of the Report:

- Two-Phase Approach: The roadmap defines DPI 2.0 (2025–2035) to drive livelihood-led growth at scale, followed by DPI 3.0 (2035–2047) for widespread prosperity.

Phase 1: DPI 2.0 (2025–2035)

Theme:Realising Aspirations

- Core Goal: Empowering livelihoods at scale to build a broad base of capable citizens.
- Focus: Moving beyond foundational digital inclusion to drive productivity and opportunity.
- Target Sectors: Transforming MSMEs, agriculture, education, and healthcare through specialized digital rails.
- Aim: Establishing the necessary mass inclusion required for a high-income society.

Phase 2: DPI 3.0 (2035–2047)

Theme:Achieving Prosperity

- Core Goal: Enabling a compounding effect by fostering innovation at the grassroots level.
- Focus: Achieving sustained, high-value local economic growth across all regions.
- Aim: Transitioning India into a Viksit Bharat (Developed India) characterized by inclusive and non-linear prosperity.
- Outcome: Realizing the national ambition of a $30 trillion economy with a per capita income of $18,000.
- Mass Inclusion at Scale: Focuses on expanding market access for MSMEs, improving job discovery for local talent, and enhancing livelihoods for smallholder farmers.
- Foundations of Human Capability: Aims for universal health coverage and learner-centric education that uses local languages to bridge learning inequities.

- Systemic Enablers: Prioritizes democratizing access to credit through asset tokenization, enabling decentralized energy markets, and proactive benefit delivery.
- Digital Rails 2.0: Moves beyond identity and payments to integrate engines of livelihoods, productivity, and non-linear growth.
- Four Execution Imperatives: Identifies aggregating demand via districts, scaling tech entrepreneurship, leveraging AI, and deploying cross-sectoral strategic unlocks.
- Strategic Unlocks: Recommends unlocking data for insights, democratizing AI for personalized guidance, and expanding digital transactions through open networks.
- Economic Impact: Projects that DPI initiatives could contribute up to 4% of India's GDP by 2030.

Challenges Associated:

- Structural Bottlenecks: High transaction costs, language barriers, siloed data, and a lack of trust in digital systems often hinder small enterprise growth.
- Fragmented Ecosystem: A lack of a sufficient local ecosystem of entrepreneurs ready to meet the new digital demand created by DPI.
- Knowledge and Capacity Gaps: Difficulty for citizens to navigate complex procedures or access specialized expert guidance in their local languages.
- Implementation Sinks: The technology looking for a problem trap, where digital tools are built without a clear, market-driven pull factor.
- Platform Dependency: Traditional platform-centric models often create walled gardens that exclude small providers and MSMEs from participating in larger value chains.

Recommendations ofNITI Aayog:

- Decentralized State-Led Execution: Implementation should be driven by States and districts to ensure solutions are hyper-localized and context-specific.
- Iterative Transformation Cycles: Adoption of 2-year iterative cycles, starting with MSME and Agriculture in 2026-2027, to build replicable models before scaling.
- District-Level Demand Aggregation: Use district programs to aggregate demand for digital solutions, providing a predictable pipeline for local tech entrepreneurs.
- AI-DPI Convergence: Integrate AI as a first-response assistant to provide personalized, vernacular guidance to farmers, teachers, and small business owners.
- Neutral Global Body: Establish a globally focused neutral ecosystem body by 2027 to spearhead international collaboration and showcase India's DPI models.

Conclusion:

The DPI@2047 roadmap represents India's transition from providing basic digital access to fostering an environment of capability, productivity, and wealth creation at population scale. By combining open digital infrastructure with AI and entrepreneurship, India aims to transform every district into an engine of opportunity.

The Debate Over the 10th Schedule

Context:

The Supreme Court of India recently ruled that private schools cannot delay or refuse admission to students allotted by the State under the Right to Education (RTE) Act based on eligibility disputes.

The RTE Act

AboutThe RTE Act and the Idea of Social Inclusion:

What it is?

- The Right of Children to Free and Compulsory Education (RTE) Act, 2009, is a legislative tool to operationalize the fundamental right to education.
- Section 12(1)(c) specifically targets social inclusion by requiring private unaided schools to reserve 25% of seats for children from Economically Weaker Sections (EWS) and disadvantaged groups.

Key Features of the RTE Act

- Universal Access: Mandates free and compulsory education for all children aged 6–14. According to UDISE+ 2024-25 data, the Gross Enrolment Ratio (GER) at the primary level has been maintained at over 100%, indicating near-universal access.
- 25% Reservation: Requires private schools to admit marginalized children at the entry level (Class 1 or Pre-school).
- Infrastructure Standards: Lays down norms for school buildings and equipment. The Department of School Education & Literacy (DoSEL) reports that 99.3% of schools now have functional drinking water facilities as of 2025.
- Pupil-Teacher Ratio (PTR): Section 25 mandates a PTR of 30:1 for primary schools. UDISE+ 2024-25 statistics show the national PTR stands at 26:1 for primary, meeting the statutory requirement.
- No-Screening Policy: Section 13 prohibits schools from using any screening procedure for admitting children or their parents to prevent discrimination.
- Judgment: Lucknow Public School Eldico vs. State of UP & Ors.
- Mandatory Immediacy: Schools must admit state-allotted students the moment their names appear on the official list.
- Prohibition of Appeal: Private schools are legally barred from sitting in appeal over the State's selection decisions or withholding admission during a dispute.
- National Mission: The Court defined the 25% quota as a national mission to secure the preambular objective of equality of status.
- Judicial Expediency: Courts must provide efficient and expeditious relief to parents, ensuring judicial remedies against school inaction are redressed immediately.

Importance of the RTE Act in India:

- Social Integration: Shared classrooms reduce socio-economic prejudice.
- E.g: Research cited in Economic Survey 2024-25 highlights that integrated classrooms lead to a 12% increase in pro-social behavior among wealthy students toward their lower-income peers.
- Increased Transition Rates: The Act ensures students remain in the system.
- E.g: Ministry of Education (2025) data shows the transition rate from primary to upper primary has reached 92.2%, a significant rise from the pre-RTE era.
- Infrastructure Growth: The Act has forced a massive upgrade in basic school facilities.
- E.g: UDISE+ 2024-25 reports that functional girl's toilets are now available in 98.2% of schools nationwide, up from 88.7% in 2012-13.
- Teacher Professionalization: Mandated teacher qualifications have standardized education quality.
- E.g: Total teacher strength in India reached 1,01,22,420 in the 2024-25 cycle, with over 95% possessing professional qualifications as per NCTE norms.

Challenges Associated:

- Financial Reimbursement Arrears: State governments often fail to reimburse private schools for the 25% quota.
- E.g: As of April 2026, official state audit reports in Maharashtra indicate a pending reimbursement liability of ₹2,930 crore owed to private unaided schools.
- Low Seat-Fill Rates: Despite the 25% mandate, many seats remain vacant due to awareness and documentation gaps.
- E.g: A CAG Report (2025) noted that in certain states, seat-fill rates for the EWS quota remained as low as 27.5% due to complexities in the online application process.
- Learning Gaps: While access has increased, learning outcomes remain a concern.
- E.g: The NAS 2024 indicates that nearly 33% of students in Grade 5 fall below the basic proficiency level in mathematics and language.
- Documentation Barriers: Marginalized families often lack the necessary paperwork for admission.
- E.g: A Ministry of Tribal Affairs survey (2025) found that in remote districts, 40% of eligible children lacked the specific income or caste certificates required for RTE admission.

Way Forward:

- Automated Reimbursement: States should adopt a Direct Benefit Transfer (DBT) model to schools to ensure timely payment of the ₹2,930 crore (and similar arrears) to maintain school cooperation.
- Digital Literacy Campaigns: The Samagra Shiksha scheme should fund local helpdesks to assist parents in navigating the online lottery and documentation process.
- Learning Recovery Programs: Implement FLN (Foundational Literacy and Numeracy) missions as per NIPUN Bharat to bridge the proficiency gaps highlighted in the NAS 2024 report.
- Grievance Redressal: Strengthen the National Commission for Protection of Child Rights (NCPCR) monitoring systems to provide a 24/7 helpline for parents facing admission denial.

Conclusion:

The Supreme Court has solidified the RTE Act as a non-negotiable national mission that transcends administrative disputes. By ensuring immediacy in admissions, the judiciary has protected the fundamental rights of children from being stalled by institutional friction. For true inclusion, the State must now match this legal urgency with administrative efficiency in reimbursements and support systems

The Debate Over the 10th Schedule

Context:

The recent move by seven Aam Aadmi Party (AAP) Rajya Sabha MPs, to join the BJP has ignited a legal debate over the 10th Schedule of the Constitution.

The Debate Over the 10th Schedule

AboutThe Debate Over the 10th Schedule:

What it is?

- The 10th Schedule, popularly known as the Anti-Defection Law, seeks to prevent constitutional sin by disqualifying legislators who switch parties after being elected on a specific ticket. The current debate centers on Paragraph 4, which exempts members from disqualification if their original political party merges with another.

Origin of the 10th Schedule:

- Political Instability: Enacted in response to the Aaya Ram Gaya Ram culture of the 1960s and 70s, where frequent floor-crossing toppled several state governments.
- 52nd Constitutional Amendment (1985): Introduced during the Rajiv Gandhi administration to provide a legal deterrent against opportunistic defections.
- Vandana Kumar Committee: Its recommendations formed the basis for defining what constitutes a split and a merger.
- 91st Constitutional Amendment (2003): Strengthened the law by deleting the one-third split provision, making it mandatory for at least two-thirds to switch to avoid disqualification.
- Judicial Review: The Supreme Court in the Kihoto Hollohan case (1992) affirmed that the presiding officer's decision is subject to judicial review.

Key Features of the 10th Schedule

- Disqualification Grounds: Members are disqualified if they voluntarily give up party membership or vote/ abstain against party instructions (whip).
- Merger Exception: Disqualification does not apply if two-thirds of the members of a legislative party agree to a merger with another party.
- Presiding Officer's Authority: The Speaker or Chairman has the absolute power to decide on disqualification petitions.
- Nature of the Office: The presiding officer acts as a tribunal when deciding these cases.
- Independent andNominated Members: Independent members are disqualified if they join a party; nominated members have six months to join a party without penalty.

Success of the 10th Schedule So Far:

- Government Stability: It has significantly reduced the frequency of individual horse-trading and unstable Aaya Ram Gaya Ram scenarios.
- Party Discipline: Strengthened the authority of political parties over their elected representatives through the mandatory whip.
- Democratic Accountability: Ensures that legislators remain somewhat accountable to the party mandate on which they were elected.
- Judicial Oversight: Created a body of legal precedents that allow the judiciary to intervene when presiding officers act in a biased or delayed manner.

Issues with the 10th Schedule:

- Role of the Presiding Officer:Speakers are often members of the ruling party, leading to allegations of bias or intentional delays in deciding petitions.
- Legislative vs.Political Party: As seen in the Subhash Desai (2023) case, the law is often misinterpreted to suggest the legislative wing is superior to the political organization.
- Erosion of Individual Agency: The strict enforcement of whips prevents legislators from voting according to their conscience or local constituency needs.
- Wholesale Defection: The two-thirds rule effectively allows wholesale defection while only punishing retail (individual) defection.
- Lack of Time Limits: The law does not specify a timeframe for the presiding officer to rule, allowing them to sit on petitions for years.

Way Ahead:

- Independent Tribunal: Experts suggest shifting the power to decide disqualification cases from the Speaker to an independent permanent tribunal or the Election Commission.
- Defining Original Party: Clearer legislative definitions are needed to ensure the umbilical cord between the political party and its legislators is not severed.
- Limiting the Whip: The use of whips could be restricted only to motions that affect government stability, like No-Confidence Motions.
- Strict Timeframes: The Supreme Court's recommendation for deciding petitions within three months should be made a statutory requirement.
- Closing the Merger Loophole: Re-evaluating the two-thirds rule to ensure it is not used to hijack an entire political organization against its leadership's will.

Conclusion:

The AAP-BJP merger case highlights a critical vulnerability in the 10th Schedule: whether a legislative majority can override the will of the parent political party. While the Bombay High Court has previously allowed such mergers, the Supreme Court's Subhash Desai ruling emphasizes that the legislative wing cannot act independently of the political organization.

Nasha Mukt Bharat Abhiyaan (NMBA) 2.0 App

Context:

The Ministry of Social Justice and Empowerment has launched the upgraded Nasha Mukt Bharat Abhiyaan (NMBA) 2.0 App to strengthen real-time monitoring and coordination under the National Action Plan for Drug Demand Reduction (NAPDDR).

Nasha Mukt Bharat Abhiyaan (NMBA) 2.0 App

AboutNasha Mukt Bharat Abhiyaan (NMBA) 2.0 App:

What it is?

- The NMBA 2.0 App is an upgraded centralized digital platform designed to strengthen implementation, reporting, and monitoring of the Nasha Mukt Bharat Abhiyaan (NMBA) across India.

Aim:

- To improve real-time reporting, monitoring, and institutional coordination under the National Action Plan for Drug Demand Reduction (NAPDDR).

- To expand citizen participation in awareness, treatment access, and de-addiction support through digital tools and public engagement.

Key Features:

- Citizen Access and e-Pledge:Citizens can now directly access the app for undertaking e-Pledge activities, viewing IEC material, receiving helpline support, and locating nearby de-addiction centres.
- Real-Time Monitoring ofGrant-in-Aid Institutions (GIAs): GIAs receive role-based access for real-time reporting of activities, along with transparent tracking of Anudan (grant) status for better fund utilization and accountability.
- Nearest De-Addiction Centre and Feedback System:The app helps users identify the nearest de-addiction centre for faster treatment access and includes a public feedback mechanism for continuous policy improvement.

Significance:

- It enhances administrative efficiency and coordination among stakeholders, ensuring better implementation of India's anti-drug awareness and rehabilitation mission.
- By integrating helplines, de-addiction centres, and mental health support services like MANAS, it makes treatment pathways more accessible to vulnerable populations.

Defection

Context:

Seven Rajya Sabha MPs from the Aam Aadmi Party (AAP), representing more than two-thirds of the party's strength in the Upper House, have defected to the BJP.

Defection

About Defection:

What it is?

- Defection in a legislative context refers to the act of an elected member of a House voluntarily giving up the membership of their political party or voting against the party's directions without prior permission.
- Constitutional Amendments: To curb this instability, the 10th Schedule was added via the 52nd Amendment Act (1985) and later strengthened by the 91st Amendment Act (2003).

Key Features of the Anti-Defection Law

- Grounds for Disqualification: A member can be disqualified if they voluntarily resign from their party or defy a party whip (voting instruction) during a division in the House.
- Presiding Officer's Role: The Chairman of the Rajya Sabha or the Speaker of the Lok Sabha is the final authority to decide on disqualification petitions.
- Deemed Membership: An elected member is legally deemed to belong to the political party that set them up as a candidate for the election.
- Ministerial Caps: The 91st Amendment also limited the size of the Council of Ministers to 15% of the total strength of the House to discourage using ministerial berths as bait for defection.

Exemptions from Disqualification

- The Two-Thirds Rule: A member will not be disqualified if their original political party merges with another, provided that at least two-thirds of the members of the legislative party agree to the merger.
- Prior Split Provision (Repealed): Originally, a split involving one-third of the party members was recognized, but the 91st Amendment deleted this to make switching parties more difficult.
- Presiding Officer's Discretion: If the Chairman rules that a merger has occurred based on the two-thirds threshold, the defecting members are officially recognized as members of the new party.

Significance:

- The law was designed to prevent frequent horse-trading and ensure that governments elected by the people remain stable for their full term.
- It binds legislators to the party line, ensuring that the political mandate given by voters to a specific party is respected.

Real Equity Gap in Higher Education

Context:

The University Grants Commission (UGC) Promotion of Equity in Higher Education Institutions (HEIs) Regulations, 2026, have faced a stay by the Supreme Court, which observed that the rules are vague and potentially open to misuse.

Real Equity Gap in Higher Education an uneven ladder

About Real Equity Gap in Higher Education:

What it is?

- The real equity gap in higher education is defined by the disproportionate representation of various social groups in employment and leadership roles compared to their representation in student admissions.

Key Data and Statistics:

- Employment vs. Mandated Quotas: The share of SC (15%), ST (7.5%), and OBC (27%) groups across all levels of teaching and non-teaching jobs remains lower than their constitutionally mandated reservation levels.
- Hierarchical Disparity: The representation gap is notably larger at higher levels of employment (professorial/ leadership roles) compared to lower-level staff positions.
- Admission Success: Representation in admissions for UG, PG, and Ph.D. levels for all social groups is largely close to or, in the case of STs (1.5 to 2.7 times higher), even exceeding mandated levels.
- Complaint Disposal: In 2023-24, 378 complaints were reported by Equal Opportunity Cells across 704 universities, with a high disposal rate of 90% for SC/ST-related issues.

Equity Gap in Higher Education:

- Structural Employment Lag: Inequity is primarily a macro-level problem in employment rather than admissions, as the latter can be corrected annually while the former takes decades.
- Leadership Deficit: There is a critical lack of reserved category representation in senior academic and administrative leadership positions within Central universities.
- Policy Misalignment: UGC regulations focus heavily on penalizing discriminatory conduct rather than providing the proactive support needed to ensure fair employment outcomes.
- Data Limitations: A lack of disaggregated data on discrimination complaints across different social groups prevents a holistic assessment of institutional equity.
- Social Segregation Risks: Overly stringent anti-discrimination measures without integration efforts may inadvertently reinforce social segregation rather than harmony.

Causes for the Equity Gap:

- Historical Implementation Delays: The current gap in employment depends on the slow retirement of employees appointed during eras when reservations were not strictly enforced.
- Definition Confusion: The UGC regulations often confuse equity (targeted support for fair outcomes) with anti-discrimination (penalizing conduct).
- Proximity and Crime Patterns: Analysis suggests that reported caste-based crimes often occur within close social proximity; addressing these in isolation ignores broader social crime dynamics.
- Narrow Regulatory Scope: Current operative provisions are confined to helplines and grievance redressal rather than systemic recruitment reforms.
- Institutional Factionalism: Student and faculty politics often encourage factionalism based on identity, which can exploit social gaps for narrow gains rather than fostering inclusion.

Initiatives:

- UGC (Promotion of Equity in HEIs) Regulations, 2026: Designed to eradicate discrimination and provide a duty to promote equity in all institutions.
- Equal Opportunity Cells (EOCs): Established within universities to handle and resolve discrimination-related complaints.
- SC/ST Cells: Specialized institutional bodies focused on monitoring the implementation of reservation policies and addressing specific grievances.
- Equity Helplines: Mandatory communication channels established under the new regulations to provide immediate assistance for discrimination victims.

Way Ahead:

- Focus on Higher-Level Employment: Targeted efforts must be made to increase the representation of reserved categories in professorial and institutional leadership roles.
- Integration over Segregation: Promote measures that foster mutual respect and social integration across groups to naturally reduce the likelihood of identity-based conflicts.
- Broad Crime Reduction: Focus on reducing general crime rates within HEIs, as addressing identity crimes in isolation is often unrealistic and insufficient.
- Refining Regulations: Reform the 2026 Regulations to be less vague, ensuring they specifically address structural gaps rather than just procedural complaints.
- Curbing Factional Politics: Encourage institutional values that move away from identity-based student politics which exploit social divisions for petty gains.

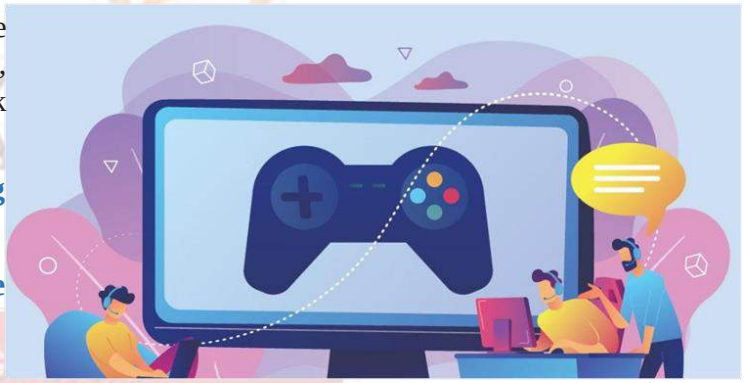
Conclusion:

True equity in higher education requires a shift from purely reactive anti-discrimination measures to proactive strategies that address the deep-seated representation gaps in institutional employment. By fostering genuine social integration and prioritizing leadership diversity, HEIs can create an inclusive environment that moves beyond procedural compliance.

The Promotion and Regulation of Online Gaming Rules, 2026

Context:

The Indian government has officially notified the Promotion and Regulation of Online Gaming Rules, 2026, to operationalize a unified national framework for the sector.



The Promotion and Regulation of Online Gaming Rules 2026

About The Promotion and Regulation of Online Gaming Rules, 2026:

What it is?

- The Promotion and Regulation of Online Gaming Rules, 2026, finalized by the Ministry of Electronics and Information Technology (MeitY), are scheduled to come into force on May 1, 2026. They serve as the operational guidelines for the parent Act passed in 2025.

Aim:

- To replace fragmented state regulations with a cohesive national framework.
- To address growing concerns regarding user addiction, financial fraud, and money laundering.
- To clearly categorize games and establish formal compliance standards for the rapidly expanding market.

Key Features:

- Establishment of OGAI: Creates the Online Gaming Authority of India (OGAI) under MeitY, a government-led body with representatives from the Home, Finance, I&B, Sports, and Law ministries.
- Game Categorization: Empowering OGAI to classify titles as Online Money Games (banned under the parent Act), Online Social Games, or esports.

- Selective Registration: Registration is not universally mandatory; it is only required for esports or specific categories notified by the government based on scale and transaction value.
- Financial Oversight: Brings banks and payment gateways into the regulatory net, requiring them to verify a game's status before facilitating any transactions.
- User Safety Mandates: Requires platforms to implement user safety features such as age-gating, time restrictions, parental controls, and integrity monitoring.
- Grievance Redressal: Mandates a two-tier system where complaints are first handled internally by the platform and can be escalated to the OGAI and an Appellate Authority.
- Data Localisation: Requires gaming platforms to store all traffic and related user data within India.

Significance:

- By turning the payment layer into an enforcement tool, the rules effectively block the operations of banned real-money gaming startups.
- Sets a precedent for a dynamic regulatory environment that can evolve as advertising and user safety risks change.

India's Rural Models and Development Diplomacy

Context:

India's flagship National Rural Livelihood Mission (NRLM) has evolved from a domestic poverty alleviation program into a cornerstone of its development diplomacy, specifically influencing rural policies across the Global South.

About India's Rural Models and Development Diplomacy:

What it is?

- India's rural development diplomacy refers to the strategic sharing of domestic social-sector innovations—primarily the NRLM and SHG-based frameworks—with other developing nations, particularly in Africa. Instead of just providing financial aid, India is now exporting institutional architectures that empower women, formalize financial inclusion, and build community-based governance at the grassroots level.

Key Data and Statistics:

- Massive Outreach: The NRLM is active in 742 districts, reaching over 100 million households and mobilizing more than nine million SHGs.
- Financial Scale: The mission has facilitated bank linkages amounting to ₹12 lakh crore and provided 51,368 crore in capitalization support.
- Women's Income: Over 20 million women members of SHGs now earn an annual income exceeding 1,00,000.
- Fiscal Commitment: The Union Budget 2026-27 allocated ₹19,200 crore to the NRLM, reaffirming its status as India's premier rural poverty intervention.

India's Rural Development Models:

- The SHG-Bank Linkage Model: A trust-based system that connects women's collectives to formal credit, enabling micro-enterprises without requiring traditional collateral.
- Federated Community Institutions: Organizing SHGs into village, cluster, and block-level federations to create a self-sustaining social and economic hierarchy.
- Community-Based Cadres: Utilizing trained local women (like Banking Sakhi) to deliver last-mile financial and government services.
- Livelihood Diversification: Encouraging rural households to shift from subsistence farming to gainful self-employment and skill-based non-farm activities.
- Digital Governance Integration: Using digital platforms to track financial discipline, loan repayments, and the distribution of benefits directly to women's accounts.

How Rural Models Shape Development Diplomacy?

- Institutional Export: India is shifting from providing Western knowledge templates to circulating its own locally rooted institutional practices.
- South-South Cooperation: Delegations from Ethiopia, Tanzania, Kenya, and Rwanda are using Indian models as a blueprint for peer learning rather than following developed-nation mandates.
- Entry for Digital & Agri-Tech: These models serve as an entry point for India to collaborate on digital governance, financial architecture, and modern agriculture with partner nations.
- Soft Power & Influence: By solving multidimensional poverty at scale, India establishes itself as a leader of the Global South, offering cost-effective and portable developmental solutions.

Challenges Associated with the Transition

- Political Economy Barriers: Local political structures in African nations may resist the decentralized, community-driven nature of the SHG model.
- Contextual Adaptation: Innovations shaped by Indian social structures (like the climate-caste nexus) may not translate perfectly to different cultural contexts.
- Resource Constraints: While the model is cost-effective, scaling it to tens of millions requires significant initial administrative and technical capacity in host countries.
- Digital Literacy Gaps: The success of India's model increasingly relies on digital architecture, which may be underdeveloped in parts of the Global South.
- Sustainability: Maintaining long-term financial discipline and accountability within community institutions remains a constant challenge across borders.

Way Ahead:

- Knowledge Exchange Platforms: Establish a dedicated Rural Livelihoods Knowledge Exchange Platform to link Indian state missions with foreign governments.
- Joint Pilot Projects: Launch collaborative pilots in African nations to adapt SHG-based initiatives to local tribal or community structures.
- Longer Fellowships: Expand training programs and immersion visits for African policymakers to understand the operational mechanics of the NRLM.
- Institutionalized Training: Link Indian training institutions with their African counterparts to create a permanent channel for technical assistance.
- Monitoring & Evaluation: Develop joint frameworks to measure the social and economic impact of these models in international settings to refine the export process.

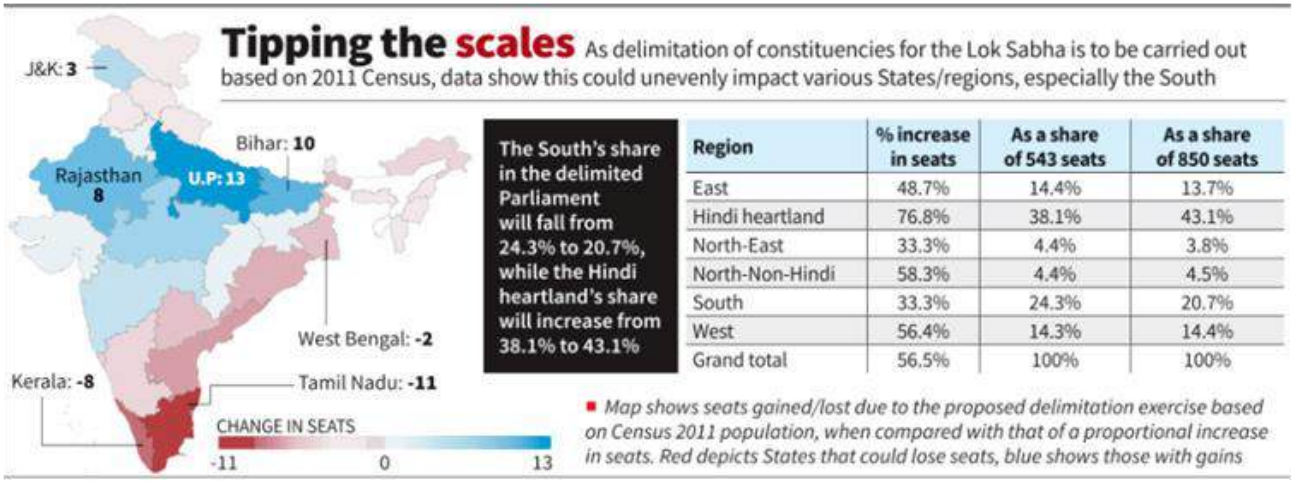
Conclusion:

The National Rural Livelihood Mission is no longer just a domestic success story; it is a transformative tool of Indian diplomacy that resonates deeply across the Global South. By sharing a model that prioritizes women's agency and financial inclusion, New Delhi is offering a credible, locally rooted alternative to traditional development paradigms. This shift reaffirms India's leadership in generating scalable solutions for global poverty alleviation and community empowerment.

The Constitution (131st Amendment) Bill, 2026

Context:

The Union Government has proposed The Constitution (One Hundred and Thirty-First Amendment) Bill, 2026, which seeks to increase the Lok Sabha's strength from 543 to 850 members.



Region	% increase in seats	As a share of 543 seats	As a share of 850 seats
East	48.7%	14.4%	13.7%
Hindi heartland	76.8%	38.1%	43.1%
North-East	33.3%	4.4%	3.8%
North-Non-Hindi	58.3%	4.4%	4.5%
South	33.3%	24.3%	20.7%
West	56.4%	14.3%	14.4%
Grand total	56.5%	100%	100%

About The Constitution (131st Amendment) Bill, 2026:

What it is?

- It is a landmark legislative proposal designed to overhaul the composition of the Indian Parliament and the process of redrawing electoral boundaries. It specifically targets Articles 81, 82, and 334A of the Constitution to address long-standing demographic shifts and gender representation gaps.

Aim:

- To expand the Lok Sabha to reflect India's significant population growth since the 1971 Census.
- To enable immediate implementation of 1/3rd reservation for women in the Lok Sabha and State Assemblies by decoupling it from the requirement of a post-2026 Census.
- To provide a modern legal framework for the Delimitation Commission to readjust seats based on the latest available demographic data.

Proposed Key Features:

- Increase in House Strength: Proposes that the Lok Sabha consist of not more than 815 members from States and 35 members from Union Territories, totaling 850 members.
- Amendment to Article 82: Seeks to delete the third proviso that mandates delimitation only after the first Census conducted after 2026. This allows the government to use pre-2026 Census data to redraw constituencies immediately.
- Expedited Women's Reservation: Amends Article 334A to allow the 1/3rd reservation for women to take effect immediately after delimitation, bypassing the delay originally stipulated in the 106th Amendment Act of 2023.
- Delimitation Commission 2026:
- Empowered to redraw constituencies and readjust seat allocations.
- Chaired by a Supreme Court Judge (serving or retired).
- Includes the Chief Election Commissioner and State Election Commissioners as ex-officio members.
- Will involve 10 associate members (5 MPs and 5 MLAs) per state, though they will lack voting rights.
- Seat Rotation: Seats reserved for women will be allotted by rotation among different constituencies in a State or Union Territory.
- Judicial Immunity: Orders issued by the Delimitation Commission and published in the Gazette will have the force of law and cannot be challenged in any court.

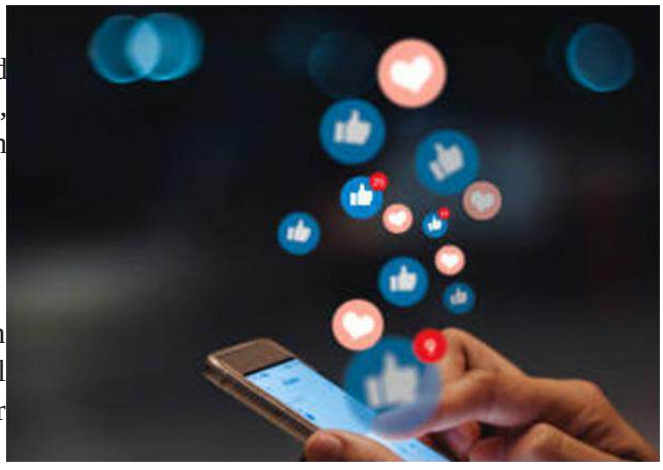
Significance:

- By increasing seats to 850, the Bill ensures that the ratio between the population and the number of representatives is more accurately reflected, potentially improving grassroots governance.
- It removes the constitutional bottleneck that would have delayed women's reservation until the 2030s, potentially transforming the political landscape in the very next general election.
- Redrawing constituencies based on current data addresses the demographic changes that have made the 1971-based seat allocation obsolete.

Social Media Addiction

Context:

Two landmark US court rulings in April 2026 have held Meta and YouTube liable for designing addictive platforms, awarding millions in damages for causing mental health issues and misleading users on child safety.



About Social Media Addiction:

What It Is?

- Social media addiction is a behavioral addiction characterized by being overly concerned about social media, driven by an uncontrollable urge to log on or use it, and devoting so much time and effort to it

that it impairs other important life areas. It utilizes the same dopamine-reward pathways in the brain as gambling or substance abuse.

Key Data and Stats

- Legal Precedent: A Los Angeles jury recently awarded million in damages to a plaintiff (KGM) who proved that platform design led to her compulsive use and body dysmorphia.
- Child Safety Penalties: A New Mexico jury imposed a staggering million penalty on Meta for misleading users regarding the safety of children on its platforms.
- Early Exposure: Evidence in recent trials showed that children as young as six years old are actively engaging with platforms, despite minimum-age stipulations.
- Corporate Awareness: Internal documents revealed that Big Tech executives were aware of the psychological risks to minors but prioritized profit over public health.

Recent Judgments on Social Media Addiction:

Case/Jurisdiction	Outcome/Penalty	Key Ruling
KGM vs. Meta & YouTube (Los Angeles)	million in damages	The jury accepted that the platforms were addictive by design, leading to depression and stress.
New Mexico vs. Meta	million penalty	Meta was found to have knowingly misrepresented the efficacy of its child safety features.

Factors Causing the Addiction

- Intermittent Reinforcement: Metrics such as likes, shares, and comments act as unpredictable rewards, keeping the user in a loop of constant checking.
- Beauty Filters: Tools designed to alter physical appearance can lead to body dysmorphia, as users compare their real selves to a make-believe digital version.
- Infinite Scroll: Design features like the bottomless feed remove natural stopping points, encouraging mindless consumption for hours.
- Algorithm-Driven Engagement: Content is specifically curated to capture the user's mind and maximize time spent to increase advertising revenue.

Implications:

- Mental Health Crisis: Excessive use is directly linked to anxiety, depression, and psychotic conditions among the youth.
- Developmental Risks: The Catch 'em young business model targets children during critical developmental phases, potentially altering social and cognitive growth.
- Legal Shift: These rulings shift the narrative from user responsibility to designer responsibility, similar to how tobacco companies were held liable for nicotine addiction.
- Regulatory Friction: Efforts to regulate these platforms often run into resistance due to free-speech considerations, creating a complex policy environment.

Way Ahead:

- Age-Verification Technologies: Implementing robust, non-circumventable age-gating to protect younger children from addictive algorithms.
- Design Regulation: Formulating policies that prohibit persuasive design elements like infinite scroll or predatory notifications for minors.
- Transparency Mandates: Requiring Big Tech to open their internal research on user well-being to independent third-party auditors.
- Digital Literacy: Enhancing public awareness about the psychological mechanics of social media to empower users to set boundaries.
- Balanced Policy: Developing a framework that protects free speech while enforcing the social responsibilities of Big Tech firms.

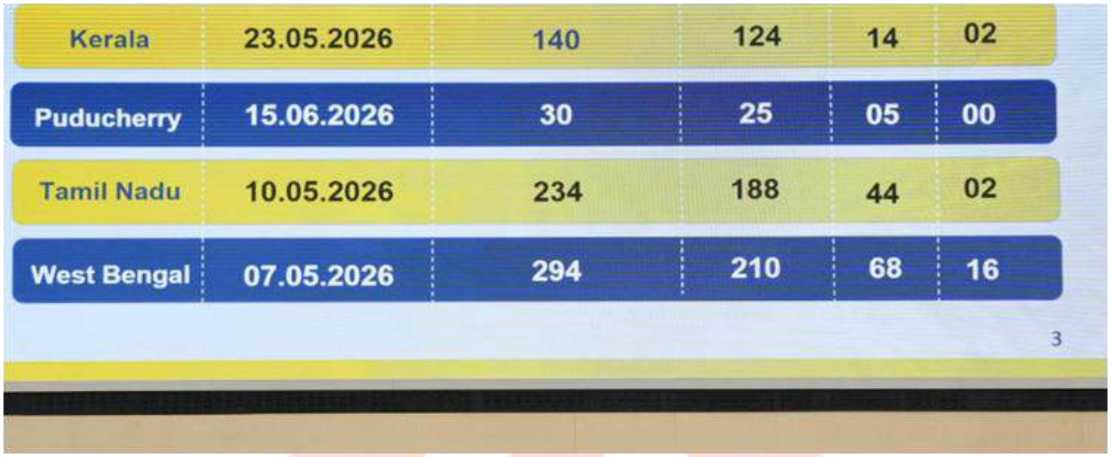
Conclusion:

The recent US court rulings represent a historic reckoning for Big Tech, proving that the era of unregulated addictive design is coming to an end. By prioritizing engagement metrics over the mental welfare of children, these platforms have invited a wave of litigation that mirrors the downfall of the tobacco industry.

ECI Transfer Controversy

Context:

The Election Commission of India (ECI) triggered a major constitutional debate, after transferring top-tier officials, including the Chief Secretary and DGP of West Bengal, following the announcement of the 2026 Assembly polls.



Kerala	23.05.2026	140	124	14	02
Puducherry	15.06.2026	30	25	05	00
Tamil Nadu	10.05.2026	234	188	44	02
West Bengal	07.05.2026	294	210	68	16

3

About ECI Transfer Controversy:

What It Is?

- The controversy centers on the ECI's practice of overnight transfers of senior IAS and IPS officers in election-bound states (West Bengal, Assam, Kerala, Tamil Nadu, and Puducherry). While the ECI cites the need for free and fair elections, state governments argue these unilateral moves lack statutory backing and violate the principles of administrative federalism.

Power of the EC under the Indian Constitution:

- Article 324: Vests the superintendence, direction, and control of elections in the ECI.
- Plenary Powers: The Supreme Court (SC) has described this as a reservoir of power to act where the law is silent.
- Judicial Limits: In the landmark Mohinder Singh Gill (1978) case, the SC clarified that Article 324 is not absolute. It must:

1. Conform to existing laws made by Parliament or State Legislatures.
2. Adhere to the rule of law and principles of natural justice.

Provisions of Laws:

- Representation of the People Act (1950 & 1951): These Acts define election procedures but do not explicitly grant the ECI power to transfer senior-most state officials without consultation.
- Section 13CC (RPA 1950): States that officers on election duty are deemed to be on deputation to the ECI and subject to its discipline.
- All India Services Act: Governs IAS/IPS officers, stipulating that their administrative control and transfer are the exclusive prerogative of the State Government.

Need for Transfer During Elections:

- Ensuring Neutrality: To remove officers perceived as being biased toward the ruling party or those who have stayed in one location for too long (usually 3+ years).
- Level Playing Field: To prevent the misuse of official machinery for campaigning.
- Public Confidence: Transfers are often based on perceived bias to ensure voters feel the process is impartial and fear-free.

Challenges Associated:

- Administrative Paralysis: Abruptly removing the Chief Secretary or DGP can leave a state's top leadership vacant, hindering day-to-day governance.
- Demoralization of Services: Branding senior officers as biased without specific evidence or a transparent inquiry can damage the morale of the civil services.
- Federal Tensions: Unilateral transfers infringe upon the Seventh Schedule, which places State Public Services under the exclusive control of State Governments.
- Opacity of Process: There is often no clear criteria or public justification provided for why specific officers are deemed unsuitable.

Way Ahead:

- Standardized SOPs: The ECI should develop a transparent, criteria-based Standard Operating Procedure for transfers to avoid the charge of being arbitrary.
- Consultative Mechanism: While the ECI has overriding authority, a brief consultative window with the state government could prevent administrative shocks.
- Judicial Review: There is a need for a modern SC clarification on whether plenary powers can truly override the All India Services Act during an election.
- Institutional Balance: Strengthening the deputation model rather than unilateral removal to maintain both electoral integrity and federal harmony.

Conclusion:

The 2026 transfer controversy highlights a delicate constitutional friction between the ECI's mandate for fair polls and the state's right to manage its own administration. While the reservoir of power under Article 324 is essential for democracy, it must not function as an imperium in imperio (a state within a state) that ignores the rule of law. Ultimately, the legitimacy of an election depends as much on the fairness of the process as it does on the respect for established constitutional boundaries.

Politicization of Anti-Corruption Bodies

Context:

The high-profile Delhi excise policy corruption case recently collapsed after a trial court declined to even frame charges, citing a lack of prima facie evidence of bribery or conspiracy.

About Politicization of Anti-Corruption Bodies:

What are Anti-Corruption Bodies?

Anti-corruption bodies are specialized institutional mechanisms designed to prevent, detect, and investigate corruption in public and private sectors. In India, the primary agencies include:

- Central Bureau of Investigation (CBI): The premier investigating agency for anti-corruption and major economic crimes.
- Enforcement Directorate (ED): Responsible for enforcing economic laws and fighting financial crimes like money laundering.
- Central Vigilance Commission (CVC): An apex advisory body that oversees vigilance administration in the central government.
- Lokpal/Lokayuktas: Statutory bodies at the central and state levels to inquire into allegations of corruption against public functionaries.

Factors Leading to Politicization:

- Extraneous Pressures on FIR Registration: Investigations may be driven by political momentum rather than solid evidence.
- Example: Speculation of extraneous pressure arose when the Delhi excise case collapsed at the threshold stage despite months of sensationalist narratives.
- Structural Dependence on the Executive: Agencies often function as tools of the political executive, affecting their institutional legitimacy.

- Example: The arrest and prolonged incarceration of top political leaders like Arvind Kejriwal and Manish Sisodia shaped electoral narratives before any charges were proven.
- Use of Criminal Law as a Partisan Tool: Arrests and prosecutions are increasingly perceived as weapons in political hands rather than legal necessities.
- Example: High-profile arrests in cases involving major public contracts often dominate television debates and public perception during election seasons.
- Reliance on Suspicions Over Forensic Evidence: Agencies frequently initiate magnitude-heavy prosecutions based on suspicion rather than a forensic financial foundation.
- Example: The excise policy case failed because the prosecution failed to produce material establishing a prima facie case of criminal conspiracy.

Implications:

- Erosion of Institutional Legitimacy: When cases fail to cross the basic threshold for trial, public confidence in anti-corruption bodies is irreparably damaged.
- Deepening Public Cynicism: Constant allegations surrounding large contracts that rarely lead to convictions make the public skeptical of the entire justice system.
- Reputational and Personal Damage: Politicized cases lead to long periods of incarceration and reputational harm for individuals before they are even tried.
- Example: Former Delhi ministers spent months in custody and underwent prolonged interrogation before the court found no clear evidence of personal gain.
- Misallocation of Resources: Focusing on politically sensitive cases with weak evidence diverts attention from genuine climate or economic mitigation plans that require vital funds.
- Example: Researchers warn that misusing institutional funds for over-optimistic or poorly-grounded projects risks missing fruitful mitigation goals.

Challenges Associated with Countering Politicization:

- Difficult Nature of Proving Corruption: Corruption rarely leaves visible evidence, moving instead through shell companies or favourable regulatory decisions that are hard to criminalize.
- Judicial Hesitation on Policy Decisions: Courts are reluctant to infer criminal intent from policy decisions unless there is explicit evidence of personal gain.
- Example: The Supreme Court maintains that policy shifts cannot be automatically treated as crimes without robust proof of dishonest intent.
- Inadequate Investigative Capacity: Many Indian agencies rely on witness statements rather than advanced forensic financial analysis and data analytics used globally.
- Fragmented Investigative Ecosystem: A lack of coordination between multiple agencies (CBI, ED, etc.) prevents a unified and expert-led approach to complex financial crimes.

Way Ahead:

- Strengthen Forensic Capacity: Investigative agencies must adopt sophisticated tools like forensic accounting and data analytics to trace beneficial ownership and financial flows.
- Institutional Independence: Ensure that the decision to register an FIR and initiate prosecution is grounded strictly in evidence, free from political momentum.
- Adherence to Judicial Standards: Prosecutors should only bring cases to court that satisfy the complex evidentiary architecture required to prove criminal intent.
- Bipartisan Restraint: Political leaders must resist utilizing criminal law as a tool for partisan contests to preserve the integrity of the democratic process.
- Unified Coordination: Streamline the investigative ecosystem to mirror the specialized expertise seen in agencies like those of Singapore or Hong Kong.

Conclusion:

The collapse of the Delhi excise policy case serves as a critical institutional warning against prioritizing political suspicion over rigorous evidentiary standards. To restore public trust, anti-corruption bodies must pivot toward forensic-led investigations and operate with absolute professional autonomy. Ultimately, criminal law must remain a shield for justice rather than a sword for partisan advantage.

The Mahanadi River

Context:

The Mahanadi Water Disputes Tribunal (MWDT) has issued a final warning to the states of Odisha and Chhattisgarh to reach a mutual water-sharing agreement.

The Mahanadi River

About The Mahanadi River:

What it is?

- The Mahanadi (Sanskrit for Great River) is a major seasonal river in East Central India and is the lifeblood of the states it traverses.
- Location: It flows through the states of Chhattisgarh and Odisha before emptying into the Bay of Bengal.
- Origin: Its farthest headwaters originate near Pharsiya village in Nagri Sihawa, located in the Dhamtari district of Chhattisgarh, about 442 meters above sea level.
- Total Length: The river stretches approximately 851 km to 900 km.

Tributaries of the Mahanadi River:

- The river is a combination of numerous mountain streams and major tributaries:
- Left Bank Tributaries: Shivnath, Hasdeo, Mand, and Ib.
- Right Bank Tributaries: Jonk, Ong, and Tel.

Key Geological Features:

- Hirakud Dam: Located near Sambalpur, it is the longest earthen dam in the world (26 km including dykes) and was India's first major multipurpose river valley project after independence.
- Satkosia Gorge: A 64-km long gorge where the river forces its way through the Eastern Ghats, flanked by dense forests.
- Hirakud Reservoir: The largest artificial lake in Asia, covering 784 square kilometers at full capacity.
- Mahanadi Delta: A massive combined delta formed with the Brahmani River, entering the sea via channels like the Kathjori, Birupa, and Devi.
- Seasonal Discharge: During peak monsoon, its discharge rate reaches 2 million cubic feet per second, comparable to the Ganges, though it remains a narrow channel for most of the year.

Significance:

- The Mahanadi valley is renowned for its fertile soil and flourishing agriculture, supporting 80,000 square kilometers of culturable area.
- The basin has an annual surface water potential of 66.9 cubic km, of which 50 cubic km is usable.
- The hydropower potential of the basin is assessed at 627 MW at a 60% load factor.

The Fertilizer Challenge Amid the Iran War

Context:

The ongoing US-Israel vs. Iran conflict and the closure of the Strait of Hormuz since February 2026 have triggered a massive supply shock in the global fertilizer market.

• DOUBLE WORRY: RISING PRICES, FALLING STOCKS

Sale of fertiliser products (in lakh tonnes)

	APR-MAR 2024-25	APR-FEB 2024-25	APR-FEB 2025-26
Urea	387.92*	371.04	376.90*
Ammonium Sulphate	8.76	8.12	9.94
Ammonium Chloride	0.49	0.45	0.53
DAP	92.81	90.14	89.59
TSP	3.28	3.15	6.46
MAP	0.19	0.19	0.01
MOP	22.02	20.43	20.89
SSP	49.28	47.28	52.75
NPKS Complexes	142.14	136.01	134.41
TOTAL	706.91	676.81	691.48

DAP: DI-AMMONIUM PHOSPHATE; TSP: TRIPLE SUPER PHOSPHATE; MAP: MONO AMMONIUM PHOSPHATE; MOP: MURIATE OF POTASH; SSP: SINGLE SUPER PHOSPHATE; *INCLUDES 0.18 LAKH TONNES OF SULPHUR COATED UREA; **INCLUDES 0.20 LAKH TONNES OF SULPHUR COATED UREA.
SOURCE: THE FERTILISER ASSOCIATION OF INDIA.

Fertiliser Requirement vs Availability (in lakh tonnes)

*AS ON APRIL 2, 2026.
SOURCE: DEPARTMENT OF AGRICULTURE & FARMERS WELFARE.

About The Fertilizer Challenge Amid the Iran War:

What it is?

- The fertilizer challenge refers to India's acute vulnerability to maritime disruptions in the Persian Gulf, which serves as the primary corridor for both finished fertilizers and the Liquefied Natural Gas (LNG) required to manufacture them domestically.

Data and Statistics on Fertilizer Imports:

- Price Surge: Urea import bids jumped from $510 per tonne in February to $950 per tonne in April 2026 due to the Hormuz blockade.
- Urea Supply Gap: For Kharif 2026, the requirement is 19.4 million tonnes (mt), but opening stocks were only 5.5 mt.
- Feedstock Disruptions: India typically produces 2.5 mt of urea monthly, but output fell to 1.5 mt in March 2026 due to LNG shortages.
- Import Dependence: The Gulf Cooperation Council (GCC) countries—Oman, Qatar, Saudi, UAE, and Bahrain—account for 40% of India's urea imports and over 60% of its LNG imports.

India's Dependence on Fertilizers for Agriculture:

- High Consumption: India annually consumes 39–40 mt of urea, which remains the most critical nutrient for staple crops like rice and wheat.
- Food Security: Fertilizers are the backbone of the Green Revolution model; any shortfall directly translates to lower grain yields and potential food inflation.
- Soil Nutrient Imbalance: Heavy subsidies on urea (46% Nitrogen) have led to its over-application, making the agricultural system highly sensitive to its availability.
- Inter-Seasonal Linkage: While India may pull through the Kharif season using existing stocks, the Rabi season (October–December) is at high risk if supply lines remain blocked.
- Intermediate Reliance: Beyond finished products, India depends on the Gulf for raw materials like Sulphur and Ammonia, which have seen prices triple to over $900 per tonne.

Initiatives Taken So Far:

- Global Sourcing Diversification: India has shifted sourcing for ammonia and DAP to countries like Morocco, Jordan, Indonesia, and Malaysia to bypass the Persian Gulf.
- Emergency Tendering: Indian Potash Limited (IPL) issued a massive tender for 2.5 mt of urea in April to secure stocks before the peak sowing season.
- Extension of Loading Dates: The government has extended last loading dates for import vessels to accommodate ships stuck or delayed near the maritime chokepoints.
- Promoting Alternatives: Encouraging the use of Single Super Phosphate (SSP) and Triple Super Phosphate (TSP) as substitutes for the scarce DAP.

Challenges Associated with the Crisis:

- Maritime Chokepoint: The closure of the Strait of Hormuz is a physical barrier that prevents ships from exiting the Gulf, regardless of the price India is willing to pay.
- Fiscal Burden: Doubling import prices will lead to a massive spike in the government's fertilizer subsidy bill, straining the national exchequer.
- Logistics and Freight: Heightened insurance premiums and war-related risks have made shipping companies reluctant to enter the West Asia maritime corridor.
- Domestic Production Hit: Even domestic plants are running at 60-70% capacity because they cannot access the Qatar-sourced LNG used as a feedstock.
- Black Market Risks: Shortages often lead to hoarding and black-marketing, which disproportionately affects small and marginal farmers.

Way Ahead:

- Fertilizer Fortification: Allow companies to coat urea/DAP with micronutrients (Zinc, Boron) to increase grain yields and reduce the quantity of base fertilizer needed.
- Boost Biostimulants: Scale up the use of microbe-derived biostimulants and seaweed extracts that improve nutrient use efficiency, allowing plants to grow more with less chemical input.
- Nano-Fertilizers: Accelerate the deployment of Nano Urea and Nano DAP, which can be applied via foliar spray, reducing the reliance on bulk imported bags.
- Phosphate Solubilizing Bacteria: Use microbes to unlock phosphorus already present in the soil, potentially reducing the immediate requirement for imported DAP.
- Diplomatic Corridors: Work with international partners to secure a neutral trade corridor for essential commodities like fertilizers and LNG through the conflict zone.

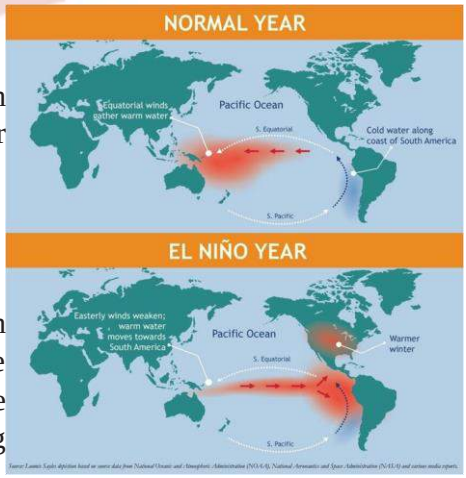
Conclusion:

The Iran war has exposed the fragile thermal injustice of India's energy and food security link, where a conflict thousands of miles away can dictate the fate of the Indian farmer. While short-term emergency imports may save the Kharif crop, the long-term solution lies in a radical shift toward nutrient-efficient fortified fertilizers and biological alternatives. Bridging this gap is essential to ensuring that India's silos remain full during the upcoming Rabi season.

Super El Niño

Context:

Experts warn of a potential Super El Niño later this year, which could push global temperatures to record heights in 2027 and trigger devastating weather extremes worldwide.



About Super El Niño:

What is El Niño?

- El Niño is the warm phase of the El Niño-Southern Oscillation (ENSO) cycle, characterized by the unusual warming of surface waters in the central and eastern tropical Pacific Ocean. It is a climate pattern that disrupts normal weather conditions, typically occurring every three to seven years.

How it is Formed?

Under normal conditions, trade winds blow from east to west along the equator, pushing warm surface water toward Asia and allowing cold, nutrient-rich water to rise (upwelling) near South America.

1. Weakening Winds: During El Niño, these trade winds soften or shift direction (becoming westerly wind bursts).
2. Heat Migration: Without strong winds to hold it back, warm water slides eastward toward the Americas in the form of a Kelvin wave.
3. Thermocline Shift: This warm pulse pushes down the thermocline (the boundary between warm surface water and cold depths), preventing cold water from reaching the surface.
4. Atmospheric Response: The warmer ocean surface heats the atmosphere above it, altering global jet streams and precipitation patterns.

About Super El Niño:

What is a Super El Niño?

- A Super El Niño is an exceptionally strong event defined by sea surface temperature anomalies in the Niño 3.4 region spiking by at least 2OC (3.6OF) above the long-term average. Only a few such events have occurred since 1950, with some models now predicting the strongest event in 140 years for the 2026–27 cycle.

Factors Affecting/Causing It:

- Subsurface Heat Buildup: A massive buildup of heat below the ocean surface is already feeding into seasonal forecasts, often a precursor to rapid surface intensification.
- Westerly Wind Bursts: Strong bursts of wind from the west act as fuel, racing more warm water eastward and preventing the system from neutralizing.
- Underlying Global Warming: The general rising trend in ocean temperatures makes modern El Niños appear stronger than historical ones, as the baseline temperature of the Pacific is already elevated.

Implications of a Super El Niño

Global Implications:

- Temperature Records: A strong event could make 2027 the hottest year on record, supercharging the effects of human-induced climate change.
- Jet Stream Alteration: The jet stream typically bends south over North America, bringing wetter conditions to the southern U.S. and milder, less stormy weather to the north.
- Hurricane Suppression: Stronger high-altitude winds in the Atlantic can shred young hurricanes, often leading to a quieter Atlantic hurricane season but a more vicious one in the Central Pacific.
- Regional Disasters: It historically unleashes deluges and flooding in Peru and the Middle East, while causing severe droughts in Ethiopia and Central Africa.

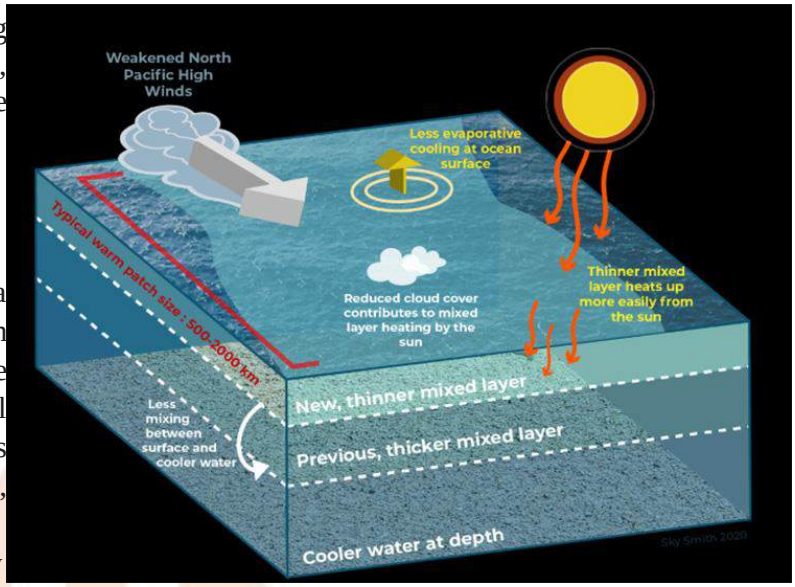
Impact on India:

- Monsoon Disruption: El Niño is strongly associated with deficient monsoon rainfall in India. A supercharged event could lead to widespread drought, impacting agriculture and rural livelihoods.
- Agricultural Stress: Reduced rainfall during the crucial Kharif season can lower crop yields for rice, pulses, and sugarcane, leading to food inflation.
- Heatwaves: It often correlates with more intense and prolonged heatwaves during the Indian summer, further straining the energy grid and public health.
- Economic Loss: According to the WMO, such shifts can cause millions of dollars in economic losses in climate-sensitive sectors like agriculture and water management.

Marine heatwaves

Context:

A new study reveals that tropical cyclones passing over marine heatwaves are far more destructive, resulting in 60% more billion-dollar disasters due to rapid intensification.



About Marine heatwaves:

What are Marine Heatwaves?

- A marine heatwave (MHW) is a prolonged period of unusually high ocean temperatures in a specific region. They are defined by their duration (lasting several days to months) and intensity (deviations from average sea surface temperatures, known as temperature anomalies).
- While exact thresholds vary, an anomaly of 1 degree Celsius to 3 degree Celsius above the long-term average for a particular season is typically characterized as a marine heatwave event.

Factors Affecting Marine Heatwaves:

- The severity and frequency of MHWs are influenced by several global and local factors:
- Climate Change: Rising greenhouse gas emissions lead the oceans to absorb over 90% of excess heat in the climate system, raising the baseline temperature.
- Ocean Currents: Changes in large-scale currents can move massive pools of warm water into typically cooler regions.
- Atmospheric Pressure: Systems like the North Pacific High influence wind patterns that either cool or allow the ocean surface to heat up.
- Climate Oscillations: Events such as El Niño significantly raise sea surface temperatures across the Pacific, often triggering the largest recorded MHWs.

How They Are Formed?

- Marine heatwaves primarily form through a breakdown in the ocean's natural cooling mechanisms:
- Weakening Winds: Winds normally cool the ocean through evaporation and by mixing the warm upper layer with cooler, deeper waters.
- Stratification: When these winds weaken, the top layer of the ocean becomes thinner and trapped at the surface.
- Solar Heating: This thin surface layer absorbs solar radiation more rapidly. Without the ability to mix with deeper, colder water, the temperature spikes, creating a localized heat dome in the ocean.

Implications:

The consequences of MHWs extend from the deep sea to coastal economies:

- Supercharging Storms: MHWs provide high-octane fuel for tropical cyclones, leading to Rapid Intensification (RI). This boosts wind speeds and rainfall, causing storms to stall longer over land and decay more slowly.
- Economic Loss: MHW-influenced cyclones are 1.6 times more likely to become billion-dollar disasters, as seen with Hurricanes Helene and Milton in 2024.
- Biodiversity Loss: Warmer waters disrupt fish reproduction and migration. While some species (the Winners) expand their range north, others (the Losers, like cold-water salmon) face mass die-offs.
- Harmful Algal Blooms: Unusually warm water serves as a habitat for toxic algae. These blooms can produce toxins like domoic acid, which move up the food chain and force the closure of key commercial fisheries.
- Ecosystem Collapse: MHWs contribute to massive coral bleaching events and the destruction of kelp forests, which are vital carbon sinks and nurseries for marine life.

Andaman Sea

Context:

A boat carrying approximately 250 Rohingya refugees and Bangladeshi nationals capsized in the Andaman Sea.

About Andaman Sea:

What it is?

- The Andaman Sea is a significant marginal sea of the northeastern Indian Ocean. It serves as a vital maritime link between Southeast Asia and the Indian subcontinent, historically facilitating trade and modern-day shipping routes between India and China.

Located in:

- Geographic Position: Situated in Southeast Asia, it connects the Bay of Bengal to the west with the South China Sea to the east via the Strait of Malacca.
- Coordinates: It lies roughly between 4°N to 20°N latitude and 92°E to 100°E longitude.

Border Nations and Territories:

- North: The Irrawaddy River delta of Myanmar (Burma).
- East: Peninsular Myanmar, Thailand, and Malaysia.
- South: The Indonesian island of Sumatra.
- West: The Andaman and Nicobar Islands, a Union Territory of India.

Origin of the Name:

- The name Andaman is widely believed to be derived from Handuman, the Malay form of the Hindu deity Hanuman.
- Ancient traders and sailors, influenced by the Ramayana, likely bestowed this name as they plied these waters.

Key Geological Features:

- Basin Metrics: The sea spans approximately 308,000 square miles (798,000 sq km) with an average depth of 3,609 feet (1,100 meters).
- Submarine Valleys: While much of the northern/eastern third is shallow (under 600 feet) due to Irrawaddy silt, submarine valleys east of the Andaman-Nicobar Ridge exceed depths of 14,500 feet (4,400 meters).
- Active Tectonics: The seabed marks the boundary between the Burma Plate and the Sunda Plate. This tectonic activity makes it a high-seismic zone, notably responsible for the massive 2004 tsunami.

- Volcanism: It is home to Barren Island, the only active volcano in the Indian subcontinent.
- Climate Influence: The South Asian monsoon regime governs its salinity; heavy summer runoff from Myanmar drastically lowers surface salinity in the northern third.

Significance:

- It forms a critical part of the global shipping corridor through the Strait of Malacca, connecting the Indian and Pacific Oceans.
- While not exceptionally rich in general marine life, its coastal waters support intensive fishing and tin deposits off Malaysia and Thailand.

Earthquake Lights (EQL)

Context:

Following a seismic event in Turkey, widespread reports of floating, glowing lights in the sky have transitioned from folklore to a subject of serious scientific investigation.

- Known as Earthquake Lights (EQL), these rare atmospheric phenomena are being documented by global satellite networks.

About Earthquake Lights (EQL):

What It Is?

- Earthquake Lights (EQL) are rare, luminous atmospheric phenomena that appear in the sky shortly before, during, or after an earthquake. While historically dismissed as myths or UFO sightings, they are now recognized by organizations like the USGS as co-seismic or pre-seismic optical events caused by extreme tectonic stress in the Earth's crust.

How It Forms?

The formation of EQL is a complex geophysical process involving energetic coupling between the ground and the atmosphere:

- Tectonic Stress: Massive pressure builds up in the lithosphere, especially in crustal materials like igneous rocks.
- Charge Carriers (p-holes): This intense stress activates charge carriers known as p-holes (positive holes) within the rocks.
- Ionization: These charges travel rapidly to the surface through fault systems, which act as high-speed conduits.
- Plasma Discharge: Upon reaching the surface and contacting the atmosphere, the charges ionize the air, creating a luminous plasma-like discharge or glow.
- Atmospheric Coupling: NASA research indicates that the transient electric potential in the crust couples with the lower atmosphere and ionosphere, manifesting as floating lights.

Key Characteristics

- Diverse Forms: EQL can appear as luminous spheres (ball lightning), vertical beams, sheet lightning, streamers, or a steady, localized glow.
- Location Specificity: Approximately 97% of documented cases occur at or near rift zones or sub-vertical fault systems where tectonic plates are separating.
- Timing: These lights are observed during periods of extreme crustal movement or shortly before the main seismic shock.
- Silent Phenomenon: Unlike traditional lightning associated with storms, EQL is often a silent atmospheric discharge.

Significance:

- Because they often occur shortly before an earthquake, EQL could potentially serve as a visual early-warning signal for impending seismic activity.

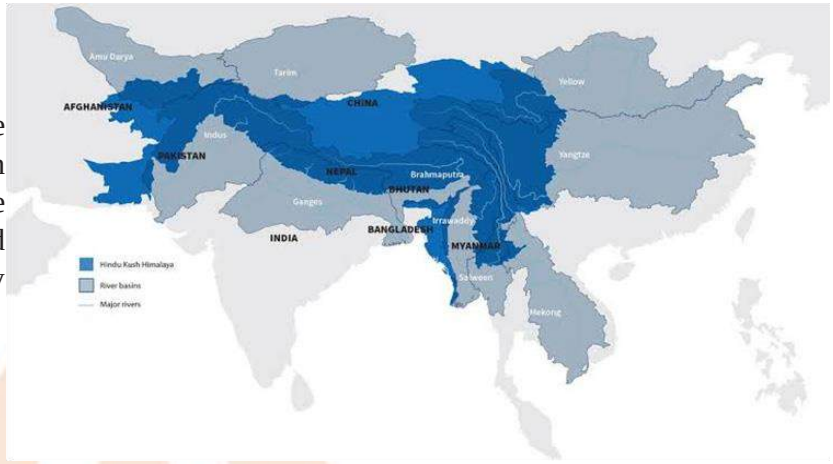
- They provide a unique opportunity for scientists to study lithospheric-atmospheric coupling and the electrical properties of the Earth's crust under stress.

The Hindu Kush

Context:

A magnitude 5.9 earthquake struck Afghanistan's Hindu Kush region, with the epicenter near Jurm.

About The Hindu Kush:



What It Is?

- The Hindu Kush is a formidable 800-kilometre-long mountain range in Central and South Asia. It is part of the Great Alpine-Himalayan system and represents one of the most seismically active regions in the world.

Located In:

- The Hindu Kush mountain range is spread over the following 8 nations: Afghanistan, Pakistan, India (specifically the union territory of Ladakh), Tajikistan, Kyrgyzstan, Uzbekistan, China, Iran.
- Its western end transitions into lower hills in Iran, while its eastern end merges with the Karakoram Range and the Pamir Knot.

Origin

- Tectonic Collision: The range originated from the ongoing collision between the Indian and Eurasian tectonic plates.
- Seismic Vulnerability: Because these plates are still pushing against each other, the region is riddled with major fault lines, making it prone to frequent and deep-seated earthquakes.

Key Characteristics:

- High Altitude: The range features several peaks exceeding 7,000 metres, with Tirich Mir (7,708 m) in Pakistan being the highest point.
- Rugged Terrain: Characterized by steep, jagged peaks and narrow valleys, it has historically acted as a significant barrier to movement.
- Hydrographic Significance: It serves as a major watershed, feeding important river systems like the Amu Darya (Oxus) to the north and the Indus River tributaries to the south.
- Passes: Famous mountain passes like the Khyber Pass and the Salang Pass (which contains a critical tunnel) are located here, serving as historic trade and invasion routes.
- Climate: The region experiences extreme weather, with heavy snowfall in winters and arid conditions in the rain-shadow areas.

Significance:

- Historically, the Hindu Kush has been a crossroads of civilizations, marking the boundary between Central Asia, the Middle East, and the Indian subcontinent.
- The glaciers and snowmelt from these mountains provide essential water for agriculture and hydroelectric power for millions of people in Afghanistan and Pakistan.

Chapter-
4

ENVIRONMENT

Historic First — Coal Mine Development Agreements with Underground Coal Gasification (UCG)

Context:

The Ministry of Coal has signed Coal Mine/Block Production and Development Agreements (CMDPAs) for four coal mines under the 14th round of commercial coal auctions with embedded Underground Coal Gasification (UCG) provisions.

Historic First — Coal Mine Development Agreements with Underground Coal Gasification (UCG)

AboutHistoric First — Coal Mine Development Agreements with Underground Coal Gasification (UCG):

What it is?

- Coal Mine/Block Production and Development Agreements (CMDPAs) are formal agreements signed between the Ministry of Coal and successful bidders for the development and production of commercial coal blocks.

Aim:

- To maximize the utilization of deep, thin, and otherwise uneconomical coal reserves through advanced UCG technology.
- To strengthen India's energy self-reliance by reducing dependence on imported fuels, fertilizers, and petrochemical feedstocks.

Key Features:

- First-Ever UCG Integration: Four coal mines—Recherla, Chintalpudi Sector A1, Dip Extension of Belpahar, and Tangardihi East—include embedded UCG provisions under the 14th auction round.
- Cleaner Coal Utilization: UCG converts in-situ coal into syngas, reducing the need for physical extraction and enabling more efficient and relatively cleaner energy generation.
- Strategic Industrial Feedstock: The syngas can be used for domestic production of urea, ammonia, methanol, dimethyl ether (DME), and synthetic fuels, reducing import dependence.

Significance:

- Unlocks previously inaccessible coal reserves and expands India's exploitable domestic energy resource base.
- Helps reduce dependence on imported natural gas, naphtha, and fertilizer inputs, strengthening both energy and food security.
- With 138 CMDPAs now signed, the mines are expected to generate ₹42,980 crore annual revenue, attract ₹48,231 crore investment, and create around 4.34 lakh jobs.

Leaf Spot Disease (LSD)

Context:

Premier government institutes in Karnataka are completing the first year of a three-year field demonstration project this June to manage leaf spot disease (LSD) in arecanut plantations.

Leaf Spot Disease (LSD)

AboutLeaf Spot Disease (LSD):

What it is?

- Leaf spot disease is a pathological condition that weakens trees and shrubs by interrupting photosynthesis, the process by which plants produce energy. While often a minor stressor, it can become a critical threat if it persists over several growing seasons.
- Vector/Spread: Pathogens are primarily spread by wind or splashing rain and irrigation, which carry spores to susceptible plant tissue.
- Causes: Most leaf spot diseases are caused by fungi, though some are triggered by bacteria or other pathogens. They thrive in environments with high humidity or water remaining on leaves for 12 to 24 hours.

Key Features and Identification:

- Appearance: Spots can be angular or rounded, raised or sunken, with smooth or fringed edges. Colors range from yellow and orange-red to brown or black.
- Infection Pattern: Symptoms usually appear first on lower and inner branches where humidity is higher.
- Age Indicators: Smaller spots typically represent younger infections, while larger spots indicate older ones where fungal spores may be visible at the center.
- Survival: Pathogens can survive the winter in infected leaf debris, buds, or young twigs.

Treatment and Management:

- Managing LSD requires a package of practices rather than isolated chemical treatments.
- Sanitation: Raking and destroying fallen leaves before snowfall prevents the pathogen from re-infecting plants in the next season.
- Cultural Practices: Proper drainage of excess rainwater, pruning to improve air circulation, and spacing plants to avoid overcrowding.
- Soil Health: Liming acidic soils based on soil tests and balanced application of nutrients, micronutrients, and neem cake.

Chemical/Biological Control:

- Application of Trichoderma to reduce soil-borne infection.

- Spraying Bordeaux mixture during the monsoon.
- Targeted use of fungicides like Propiconazole, Tebuconazole, or Propineb following the removal of infected fronds.

Fossil bed dating back to Holocene period discovered in Tamil Nadu

Context:

Union Environment Minister announced the discovery of a significant fossil bed from the middle-to-late Holocene period in the Panaiyur area of Thoothukudi, Tamil Nadu.

Fossil bed dating back to Holocene period discovered in Tamil Nadu

AboutFossil bed dating back to Holocene period discovered in Tamil Nadu:

What it is?

- A newly identified fossil bed containing remains that significantly enrich the Quaternary fossil record of India. The discovery represents a major addition to India's Quaternary fossil record, providing a window into the region's ancient biological history.
- Discovery: The site was revealed at Panaiyur in the Thoothukudi district following heavy rains in 2023.
- Scientific Assessment: The Zoological Survey of India (ZSI) conducted a swift scientific response to assess and safeguard the natural heritage at the spot.

AboutThe Holocene Period:

What it is?

- The Holocene is the latter of the two epochs making up the Quaternary Period, following the Pleistocene. The Holocene is the current geological epoch, characterized by the stabilization of the global climate and the rise of human civilization.
- Period: It spans approximately the last 11,700 years, with the Thoothukudi discovery specifically dating back roughly 8,000 to 12,000 years.

Key Characteristics:

- Post-Glacial Warming: It began after the last major ice age, leading to a warmer and more stable global climate.
- Sea Level Rise: The melting of large ice sheets during this transition resulted in a significant rise in global sea levels.
- Faunal Shifts: This period saw the extinction of many megafauna and the adaptation of modern wildlife species to current environments.
- Human Dominance: It is often noted as the period during which human agricultural practices and permanent settlements began to flourish.

Significance of the Discovery:

- The discovery helps scientists better understand the ancient wildlife that inhabited India during the transition into the modern epoch.
- It provides critical data for reconstructing India's ancient environment and regional climate patterns.
- The find significantly enriches the Quaternary fossil record, which is essential for studying the most recent geological history of the subcontinent.

Petersberg Climate Dialogue

Context:

The 17th Petersberg Climate Dialogue recently convened in Berlin as a critical precursor to COP31, focusing on implementing the Paris Agreement amid a global energy crisis triggered by Middle East tensions.

Petersberg Climate Dialogue

AboutPetersberg Climate Dialogue:

What It Is?

- An informal meeting space for ministers and high-level officials from over 30 countries to discuss climate issues outside formal negotiating settings. The Petersberg Climate Dialogue is a high-level annual international forum designed to facilitate informal political discussions on climate action.
- Established In: The dialogue has been organized annually by the German government since 2010.
- History: It was launched following the Copenhagen Climate Change Conference (COP15) to maintain political momentum and prepare the ground for subsequent COP negotiations.

Aim:

- To foster open and honest exchange between countries on implementing the Paris Agreement.
- To build consensus on international climate finance and energy transition strategies.
- To prepare the administrative and political groundwork for the upcoming United Nations Climate Change Conference (COP).

Key Features:

- Informal Setting: Unlike formal UN negotiations, it allows for candid dialogue to resolve deadlocks.
- Strategic Partnerships: The 17th edition was organized by Germany alongside the COP31 Presidency of Türkiye and the COP31 Presidency of Negotiations Australia.
- Focus on Electrification: A major theme of the 2026 dialogue is centering electrification in the clean energy agenda, particularly for mobility and heating.
- Geopolitical Resilience: The dialogue emphasizes how transitioning to renewables like solar and wind can mitigate vulnerabilities exposed by fossil-fuel-based energy shocks.
- Multi-Sectoral Representation: It involves input from the International Energy Agency (IEA) and civil society to link climate policy with global energy security.

Significance:

- It serves as the first major climate ministerial of the year, setting the tone for the COP31 summit in Antalya, Türkiye.
- The dialogue acts as a bridge between the Global North and Global South, though challenges remain regarding the delivery of climate finance for developing nations.

Nilgiri Tahr

Context:

The Tamil Nadu Forest Department, in coordination with Kerala, is conducting the third synchronized Nilgiri Tahr survey.

Nilgiri Tahr

AboutNilgiri Tahr:

What it is?

- The Nilgiri Tahr (Nilgiritragus hylocrius) is the only mountain ungulate in southern India among the 12

species found in the country. It serves as a vital indicator of the health of the Western Ghats' high-altitude ecosystems.

Habitat and Distribution:

- Altitude: They inhabit open montane grassland habitats at elevations ranging from 1200 to 2600 meters.
- Geographic Range: Their distribution is currently restricted to a narrow 400 km stretch of the Western Ghats, from the Nilgiris in the north to the Kanyakumari hills in the south.
- Key Strongholds: The largest population is found in Eravikulam National Park (Kerala), with other significant populations in the Nilgiris and Anamalai hills.
- Fragmented Pockets: While they historically spanned the entire Western Ghats, they are now found only in small, fragmented pockets due to habitat loss.

IUCN Red List: Listed as Endangered.

Key Characteristics:

- Sure-footedness: They are exceptionally agile and sure-footed ungulates, adapted to navigating steep, rocky terrain.
- Advanced Monitoring: Modern surveys utilize scientific methods like the Varudai mobile app for standardised reporting and real-time tracking.
- Reproduction: They have a winter calving season, which is followed by surveys to ensure young tahr are visible and counted.
- Social Behavior: They live in herds; behavioral studies are currently used to evaluate the potential for translocation to improve genetic diversity.
- Health Indicators: Research is conducted on the prevalence of tumors in specific herds to assess the overall health of the species.

Significance:

- State Identity: It is the State Animal of Tamil Nadu.
- Endemic Value: As an endemic species to the Western Ghats, its survival is critical to maintaining the biodiversity of this global heritage site.

40 years of the Chernobyl Disaster

Context:

The world marks the 40th anniversary of the Chernobyl disaster, which remains the most expensive man-made catastrophe in history with costs exceeding $700 billion.

40 years of the Chernobyl Disaster

About40 years of the Chernobyl Disaster:

What It Is?

- The Chernobyl disaster is the worst accident in the history of nuclear power generation. It involved a catastrophic meltdown and explosions at Unit 4 of the Chernobyl nuclear power station, located near the industrial town of Pripyat in the former Soviet Union (now Ukraine).

What Happened?

- Failed Experiment: On April 25-26, 1986, technicians attempted an experiment to test the Unit 4 RBMK reactor's safety systems.
- Reactor Design Flaws: The RBMK reactor was a graphite-moderated system that lacked a pressure-retaining containment structure—a final physical barrier to limit radioactive releases.
- Catastrophic Failure: On April 26, the chain reaction went out of control, leading to explosions that blew off the reactor's heavy lid and dispersed 3.5% of the nuclear fuel into the atmosphere.

- Environmental Dispersal: A resulting graphite fire drove prolonged radioactive emissions for several days, which were carried across Ukraine, Belarus, Russia, and as far as Sweden by air currents.

Impacts:

- Contamination: Approximately 150,000 square km across Ukraine, Belarus, and Russia were contaminated by radiation.
- Human Relocation: Within 36 hours, the town of Pripyat was evacuated; eventually, around 200,000 people were relocated from their homes.
- Health Consequences: Between 1991 and 2005, at least 5,000 cases of thyroid cancer were documented in children who lived in the affected regions.
- Economic Toll: The total cost of the accident is estimated to have exceeded $700 billion over three decades, covering cleanup, healthcare, and new settlements.

Current Status

- Exclusion Zone: A 30-kilometre radius around the plant remains a strictly controlled exclusion zone where human habitation is restricted due to soil contamination.
- The Sarcophagus: The Unit 4 reactor remains entombed in a massive concrete and steel structure designed to contain the remaining radioactive material.

Significance:

- Chernobyl serves as a global turning point for nuclear energy, exposing the catastrophic risks of flawed reactor designs and the absence of a rigorous safety culture.
- It remains the benchmark for the largest anthropogenic disaster in the history of humankind, forcing international shifts in how nuclear safety, containment, and emergency responses are managed worldwide.

Heatwaves

Context:

The Andhra Pradesh State Disaster Management Authority (APSDMA) has issued a severe heatwave warning for 14 mandals and heatwave conditions for 28 others across the state.

The Heatwaves

About Heatwaves:

What is a Heatwave?

- A heatwave is a period of abnormally high temperatures, more than the normal maximum temperature, that occurs during the summer season. It is a condition of air temperature which becomes fatal to the human body when exposed. Qualitatively, it is defined based on the temperature thresholds over a region in terms of actual temperature or its departure from normal.

Key Data and Stats on Heatwaves in India

- Recent Extremes: Over 207 mandals in Andhra Pradesh recorded temperatures exceeding 41°C.
- Peak Recorded Temperature: Salur in the Manyam district recorded a maximum temperature of 45.2°C.
- Widespread Impact: Severe heat is currently impacting 14 mandals specifically in Srikakulam and Parvathipuram Manyam districts.
- Historical Trend: Disasters like heatwaves are estimated to cost India up to 2% of its GDP annually while eroding government revenue.

Factors Causing Heatwaves

- Climate Change: The world is facing more frequent and extreme weather events due to shifting global climate patterns.
- Anticyclonic Circulation: Large-scale sinking of air which compresses and heats the lower atmosphere, preventing cloud formation.

- Urban Heat Island Effect: Urbanization and the use of concrete in cities trap heat, leading to higher localized temperatures compared to rural areas.
- El Niño Modoki: Variations in ocean temperatures that can alter wind patterns and bring dry, hot air over the Indian subcontinent.

Challenges Associated with Heatwaves:

- Public Health Risks: Extreme heat and humidity increase the risk of heatstroke, dehydration, and related fatalities among vulnerable populations.
- Impact on Agriculture: Farmers are at high risk while working and are cautioned against taking unsafe shelter under trees during associated thunderstorms.
- Economic Productivity: Severe heat leads to reduced labor hours, particularly in outdoor sectors like construction and farming.
- Power Grid Strain: Surges in the use of cooling systems can lead to grid overloads and frequent power outages.

Initiatives Taken:

- Early Warning Systems: APSDMA issues real-time press releases and warnings to specific districts and mandals to prepare the public.
- Public Advisories: The government provides specific health guidance, such as consuming lemon water, buttermilk, and coconut water to maintain hydration.
- National Infrastructure Pipeline (NIP): Integrating disaster resilience into infrastructure to protect assets from climate-related fiscal shocks.
- Heat Action Plans (HAPs): Implementation of state-level plans that include "cool roofs" and public cooling centers to mitigate temperature impacts.

Way Ahead:

- Urban Greening: Increasing vegetation and water bodies in cities to counteract the urban heat island effect.
- Resilient Infrastructure: Mainstreaming disaster resilience into project scale to ensure assets can withstand extreme thermal stress.
- Localized Cooling Solutions: Expanding the use of traditional hydration methods and providing widespread access to public drinking water facilities.
- Data-Driven Planning: Utilizing tools like the Resilience Cost-Benefit Analysis (RCBA) to quantify the economic benefits of early heatwave interventions.

Conclusion:

The recurring severe heatwaves in Andhra Pradesh underscore the urgent need for both immediate public health precautions and long-term structural resilience. By combining real-time disaster management with climate-resilient infrastructure, India can better protect its citizens and economy from rising temperatures. Proactive measures today are essential to securing public safety and development gains against the intensifying threat of extreme heat.

Climate Change as a Public Health Emergency

Context:

The health experts including warned that climate change has transitioned from an environmental threat to a full-blown medical emergency in India.

About Climate Change as a Public Health Emergency:

What is Climate Change?

- Climate change refers to long-term shifts in temperatures and weather patterns, primarily driven by human activities like burning fossil fuels, which release greenhouse gases.

Key Data and Stats:

- Extended Disease Windows: In Delhi-NCR, the peak for Dengue has shifted from September to November due to prolonged warm and rainy cycles.

- Geographic Expansion: Malaria is now being reported in cooler, high-altitude regions like Himachal Pradesh, where it was historically non-existent.
- Pollution Impact: Higher energy demand for cooling has increased PM2.5 levels, microscopic pollutants that damage the lungs, heart, and kidneys.
- Heat Mortality: Rising nighttime temperatures in cities like Mumbai and Delhi are eliminating the human body's recovery window, leading to a surge in heat-stroke-related deaths.

Factors Raising Climate Change Concerns:

- Urban Heat Island Effect: Cities trap heat due to concrete structures, leading to dangerously high nighttime temperatures.
- Sanitation Overload: Frequent urban flooding (e.g., in Mumbai) overwhelms drainage, causing outbreaks of Cholera and Typhoid.
- Feedback Loops: Increased use of air conditioning to combat heat leads to higher emissions, which in turn traps more heat in the atmosphere.
- Water Scarcity: Prolonged droughts force rural communities to use unsafe water sources, rising the burden of diarrhoeal diseases.
- Agricultural Disruption: Unseasonal rains and heat stress reduce crop yields and the nutritional quality of food, leading to chronic malnutrition.

Implications of the Health Crisis:

- Vector-Borne Surge: Mosquitoes are migrating to newer territories, exposing populations with no prior immunity to Malaria and Zika.
- Chronic Organ Damage: PM2.5 pollutants penetrate the bloodstream, accelerating atherosclerosis and increasing the risk of stroke and heart attack.
- Maternal and Infant Risks: Extreme heat exposure is now scientifically linked to preterm births and low birth weight in newborns.
- Renal Stress: Chronic dehydration and heat stress are contributing to a silent rise in Chronic Kidney Disease (CKD) among outdoor manual laborers.
- Food & Milk Insecurity: Heat stress in cattle reduces milk production, directly compromising the nutrition of infants and growing children.

Way Ahead:

- Climate-Resilient Healthcare: Upgrading hospital infrastructure to handle surge capacity during extreme heatwaves and floods.
- Early Warning Systems: Using meteorological data to predict disease outbreaks and issuing health alerts to vulnerable outdoor workers.
- Urban Greening: Implementing Cool Roof technologies and increasing urban forest cover to mitigate the heat island effect.
- Clean Energy Transition: Reducing reliance on fossil fuels for cooling to break the emission-heat feedback loop.
- Nutritional Safeguards: Developing heat-resistant crop varieties and supporting dairy farmers to maintain food security during climate shocks.

Conclusion:

Climate change is no longer a distant environmental forecast; it is a present-day medical crisis that is quietly redrawing the health map of India. Treating this as a purely ecological issue overlooks the profound human cost, from impaired infant health to the expansion of deadly infections. Recognizing it as a public health emergency is the essential first step toward building a resilient India capable of surviving a warming planet.

Indian Softshell Turtles

Context:

- Police in Greater Noida rescued 16 Indian Softshell turtles from a smuggler during a routine check.
- The turtles, native to the Ganga river system and protected under Schedule I of the Wildlife Protection Act, were being illegally transported.

About Indian Softshell Turtles:

What It Is?

- The Indian Softshell Turtle (Nilssonia gangetica), also known as the Gangetic Softshell Turtle, is a large freshwater reptile. Unlike most turtles that have a hard, bony scute, these belong to the family Trionychidae, characterized by a leathery shell that lacks a traditional keratinized cover.

IUCN Status and Legal Protection:

- IUCN Red List: Endangered.
- Wildlife Protection Act (1972): Schedule I (India's highest level of legal protection, equivalent to that of the Tiger).
- CITES: Appendix I.

Habitat and Distribution:

- Primary Range: Found predominantly in the Ganges, Indus, and Mahanadi river systems.
- Environment: They prefer deep, turbid rivers, streams, large canals, lakes, and ponds with mud or sand bottoms where they can easily bury themselves.
- Geographic Spread: Distributed across India, Pakistan, Bangladesh, and Nepal.

Key Characteristics:

- Soft Shell: It has a flat, oval, and leathery carapace (upper shell) that is olive-green or dull green in color.
- Distinct Head: The head is large with a distinctive snout-like proboscis (pointed nose) that allows it to breathe while remaining submerged.
- Size: They are massive, with the carapace length reaching up to 94 cm.
- The 20-Claw Myth: Poachers specifically target individuals with 20 claws (five on each limb), as they are falsely believed to bring good luck or have higher medicinal value in the black market.
- Diet: They are omnivorous scavengers, feeding on fish, mollusks, frogs, and occasionally rotting vegetation or carcasses.

Significance:

- As scavengers, they play a vital role in the river ecosystem by consuming organic waste and dead matter, helping to keep the Ganges and other rivers clean.
- Their presence indicates the health of the freshwater riverine systems.

Road Accident and Wildlife

Context:

A recent multi-institutional study published in the Journal of Wildlife Science has revealed that 6,507 animals belonging to 239 species were killed in road collisions across the Western Ghats between 1997 and 2023.

About Road Accidents and Wildlife:

What it is?

- Road accidents involving wildlife, commonly referred to as roadkill, denote the mortality of wild animals caused by collisions with moving vehicles on highways, state roads, and rural transport corridors.

Key Data / Stats

- Scale of Mortality: A total of 6,507 animals across 239 species were recorded as roadkill in the Western Ghats during 1997–2023, highlighting the ecological impact of road expansion.
- Taxonomic Spread: Of the total deaths, 4,960 were vertebrates and 1,547 were invertebrates, showing broad biodiversity loss.
- Ecological Concern: About 51% of affected vertebrates are endemic, while 18 species are IUCN threatened and 103 are protected under the Wildlife (Protection) Act, 1972.
- Most Vulnerable Groups: Amphibians (52%) and reptiles (30%) formed the highest share of vertebrate deaths along the 26,482 km road network.

Implications:

- Biodiversity loss: Threatens endemic and endangered species of the Western Ghats.
- Habitat fragmentation: Roads divide ecosystems and disrupt animal movement
- Genetic isolation: Reduced mobility can affect breeding and gene flow.

Nagoya Protocol on Access and Benefit-sharing (ABS)

Context:

India has emerged as the global leader in biodiversity compliance, issuing 3,561 Internationally Recognized Certificates of Compliance (IRCCs), which accounts for over 56% of the total certificates issued worldwide under the Nagoya Protocol.

About Nagoya Protocol on Access and Benefit-sharing (ABS):

What it is?

- The Nagoya Protocol is a supplementary agreement to the Convention on Biological Diversity (CBD). It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

Adopted in: October 29, 2010, in Nagoya, Japan.

Entered into Force: October 12, 2014.

Members:

- There are currently 141 parties to the Nagoya Protocol (including 140 UN member states and the European Union).

India and the Nagoya Protocol:

- Signatory: India signed the protocol in 2011 and ratified it in 2012.
- Legal Framework: India implements the protocol through the Biological Diversity Act, 2002, and the Biological Diversity Rules, 2004.
- Authorities: The National Biodiversity Authority (NBA), headquartered in Chennai, acts as the primary body.

Key Features:

- Access Obligations: Creates predictable conditions for access to genetic resources, ensuring Prior Informed Consent (PIC) is obtained from the provider country.
- Benefit-Sharing Obligations: Ensures that benefits (monetary or non-monetary) are shared fairly with the provider country based on Mutually Agreed Terms (MAT).
- Compliance Obligations: Requires parties to take measures to ensure that genetic resources utilized within their jurisdiction have been accessed in accordance with the provider country's laws.

- Traditional Knowledge: Covers traditional knowledge associated with genetic resources held by indigenous and local communities.
- ABS Clearing-House: An IT platform for exchanging information to help implement the protocol.

About Internationally Recognized Certificates of Compliance (IRCCs):

What It Is?

- An IRCC is an electronic permit generated through the ABS Clearing-House that serves as official evidence that a user has legally accessed a genetic resource.
- It proves that Prior Informed Consent (PIC) was granted and Mutually Agreed Terms (MAT) were established between the user (e.g., a researcher or company) and the provider (e.g., a local community or national government).

How It Works?

1. Application: A user applies to the National Competent Authority (in India, the NBA) for access to a biological resource.
2. Agreement: The authority ensures the user has obtained consent (PIC) and negotiated how benefits will be shared (MAT).
3. Permit Issuance: Once the national permit is granted, the authority uploads the information to the international ABS Clearing-House.
4. Generation of IRCC: The Clearing-House then converts this national permit into an IRCC, making the legal status of that resource visible to all parties globally.

Significance:

- Provides users with clean legal titles to the resources they are using, which is often required for patent applications or product commercialization.
- Allows provider countries to track how their genetic resources are being used across international borders.

Chapter-
5

SCIENCE & TECHNOLOGY

Ru-Soam Engineering

Context:

UNESCO and the Government of Sikkim have partnered to systematically document the Ru-Soam indigenous engineering practices of the Lepcha community.

Ru-Soam Engineering

AboutRu-Soam Engineering:

What it is?

- Ru-Soam refers to the traditional cane and bamboo footbridges engineered by the Lepcha community in Sikkim, particularly within the Khangchendzonga Biosphere Reserve.These structures are living expressions of indigenous ingenuity, crafted entirely from locally available, renewable materials.
- Origin: This engineering practice originated with the Lepcha people, the ancient indigenous inhabitants of the remote Dzongu region.

Aim:

- To analyze the environmental and engineering principles of the structures through field research and technical assessments.
- To assess their relevance for contemporaryclimate adaptation and resilient infrastructure planning in disaster-prone areas.

Key Structural Features:

- Ru-Soam bridges are mechanical marvels that mirror the principles of modern suspension bridges without using carbon-heavy materials like steel or concrete.
- Main Support (Soamgyang): Two parallel canes serve as the main cables, bearing vertical loads. These are tied to large trees at either end, which act as towers to keep the bridge suspended.
- Suspender Loops (Ahool): Swinging cane loops connect the main cables to the bridge deck, functioning similarly to suspender cables in modern engineering.
- Bridge Deck (Soamgur): The walking surface is made of bamboo, providing a lightweight yet sturdy platform for foot traffic.
- Flexibility and Strength: Horizontal bamboo braces and rails provide longitudinal flexibility, while vertical posts (struts) offer flexural strength and prevent the braces from sagging.
- Material Properties: Primarily made from bamboo species like mahlu and podiyang, these structures leverage bamboo's green steel properties—high tensile strength (averaging 225 MPa), durability, and corrosion resistance.
- Dimensions: These footbridges can span up to 100 metres and typically support the weight of two or three people crossing simultaneously.

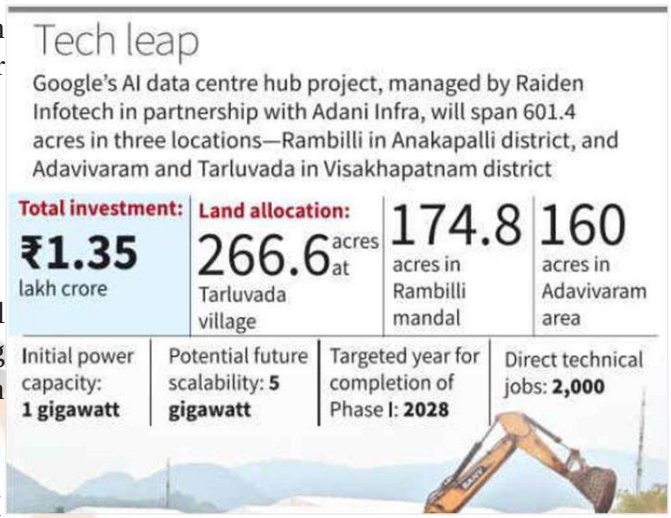
Significance:

- Unlike steel or concrete, bamboo and cane leave a minimal carbon footprint and take only 3–5 years to regrow, making them a renewable resource for infrastructure.
- Due to their lightweight nature and flexibility, bamboo structures are often more resilient than concrete against the deformations caused by seismic waves.

Google AI Data Hub

Context:

Andhra Pradesh Chief Minister is set to lay the foundation stone for Google's $15 billion AI Data Centre Hub near Visakhapatnam.



Google AI Data Hub

AboutGoogle AI Data Hub:

What it is?

- The Google AI Data Hub is a large-scale artificial intelligence-driven data centre campus being developed by Google through its subsidiary Raiden Infotech in partnership with Adani Infra.
- It is designed to serve as a high-capacity digital infrastructure hub for cloud computing, AI operations, cybersecurity, and global data connectivity.
- Located In: Tarluvada and Adavivaram in Visakhapatnam district, and Rambilli in Anakapalli district, Andhra Pradesh.

Aim:

- To establish Google's first major AI-focused data centre campus in India and strengthen India's digital infrastructure ecosystem.
- To position Visakhapatnam as a global technology and cloud-computing hub with advanced AI capabilities and international connectivity.

Key Features

- Massive Capacity: The hub is planned with a capacity of 1 gigawatt, making it one of the largest data centre campuses in India.
- Global Connectivity: It will include high-capacity submarine cable landing stations and dedicated fibre networks for low-latency international connectivity.
- Digital Ecosystem Growth: The project is expected to support Andhra Pradesh's vision of creating a 6.5 GW digital ecosystem, including allied sectors like renewable energy and advanced manufacturing.

Significance:

- It is expected to generate thousands of high-value jobs in AI, cybersecurity, cloud services, and data science, boosting regional employment.
- As one of India's largest FDI projects, it strengthens India's position as a preferred destination for global digital infrastructure investments.

Printed Circuit Boards (PCB)

Context:

The conflict in the Middle East has triggered a global supply chain crisis, causing printed circuit board (PCB) prices to surge by as much as 40% in April 2026 due to the disruption of critical raw materials like PPE resin.

Printed Circuit Boards (PCB)

AboutPrinted Circuit Boards (PCB):

What It Is?

- A rigid or flexible board used to electrically connect and mechanically support electronic components using conductive tracks, pads, and other features etched from one or more sheet layers of copper.

Raw Materials Used:

- Resins: High-purity Polyphenyleneether (PPE) and epoxy resins serve as critical base materials for laminates.
- Copper Foil: Conductive material that typically accounts for approximately 60% of total raw material costs.
- Glass Fiber: Used as a reinforcing material within the substrate to provide strength and insulation.

Manufacturing Process:

- Lamination: Base materials like resin and glass fiber are bonded together to create the substrate.
- Etching: Excess copper is removed from the board to leave behind only the specific conductive pathways (traces) required for the circuit.
- Multi-layering: High-end boards, particularly for AI servers, involve stacking multiple layers of circuitry to increase complexity and performance.

Key Features:

- High-Purity Substrates: Advanced boards require specialized resins (like PPE) to maintain signal integrity in high-speed applications.
- Thermal Resistance: Designed to withstand the heat generated by powerful processors and chips.
- Scalability: Can range from simple single-layer designs to complex multi-layer structures costing thousands of dollars per square meter.
- Reliability: Provides a stable and permanent platform for soldering components, reducing the risk of loose wires or short circuits.

Applications:

- Consumer Electronics: Found in nearly all devices, including smartphones and computers.
- Advanced Infrastructure: Essential for AI servers used by cloud service providers.
- Industrial Use: Integrated into factory automation and large-scale manufacturing equipment.
- Semiconductor Support: Serves as the interface for components produced by companies like Samsung, SK Hynix, AMD, and Nvidia.

Artemether-Lumefantrine for Infants

Context:

The World Health Organization (WHO) has cleared the first child-friendly version of artemether-lumefantrine specifically designed for newborns and infants weighing between 2 and 5 kg.

Artemether-Lumefantrine for Infants

AboutArtemether-Lumefantrine for Infants:

What it is?

- A child-friendly formulation of a standard malaria therapy, now prequalified by the WHO for use in newborns and very young infants. Artemether-lumefantrine is a specialized two-drug combination therapy used to treat malaria by targeting the parasites in the bloodstream at different stages of their lifecycle.
- Aim: To close a long-standing treatment gap for babies weighing 2 to 5 kg, ensuring they receive quality-assured medicine instead of adjusted doses of adult or older-child formulations.

Key Features:

- Dual-Action Therapy: The medication combines two components: artemether, which acts rapidly to reduce the number of parasites in the blood, and lumefantrine, which stays in the system longer to clear remaining parasites and prevent the illness from returning.

- Precision Dosing: Unlike previous methods that required adjusting doses meant for older children—which risked harmful mistakes or side effects—this drug is specifically formulated for the weight class of newborns.
- WHO Prequalification: This status allows global agencies and public health programs to procure the medicine reliably for high-burden regions.
- Target Population: Specifically designed for the most vulnerable group—infants weighing as little as 2 kg.

Significance:

- It provides a safer and more effective tool to combat a disease that has historically claimed the lives of millions of children.
- By providing a dedicated pediatric formulation, it removes the need for doctors to perform risky manual dose adjustments.

Cyborg Botany

Context:

Scientists are advancing a field known as cyborg botany to bridge the gap between biological signals and electronic data, allowing plants to communicate their internal health in real time.

Cyborg Botany

AboutCyborg Botany:

What It Is?

- A hybrid system at the intersection of biology, engineering, and materials science that turns plants into living circuit boards. Cyborg botany is an emerging hybrid field that integrates living plants with electronic components to create cybernetic organisms capable of sensing and communicating biological information.

How It Works?

- Direct Embedding: Scientists embed nanowires and electronic transistors directly into plant cell walls to act as biosensors.
- Conductive Polymers: Biodegradable, electrically conductive materials like PEDOT act as living wires within plant tissue, carrying biochemical signals to external devices.
- Signal Conversion: The system taps into the plant's natural biochemical responses to light, moisture, and pests, converting these internal signals into digital data.
- Aim: To detect biotic and abiotic stressors at their source—the cellular or genetic level—to allow for intervention before visible damage occurs.

Key Features:

- Real-Time Data: Transmits information about the plant's condition directly to mobile devices or computers.
- Bio-Hybrid Robotics: Uses a plant's own electrical signals to power or direct mechanical movement, such as moving toward light.
- Early Detection: Identifies moisture deficits, nitrogen levels, or disease outbreaks days or weeks before physical symptoms like yellowing leaves appear.
- Self-Powering Potential: Researchers are exploring using plants as living generators to power the very sensors embedded within them.

Significance:

- Enables farmers to use water, nutrients, and agrochemicals precisely where and when needed, reducing waste and improving yields.
- Cyborg plants can act as biological sensors to detect pollutants in soil and water or monitor ecological changes.

SAF-Blended Aviation Fuel

Context:

The Indian government has amended the Aviation Turbine Fuel (ATF) (Regulation of Marketing) Order, 2001, to officially bring SAF-blended fuel under its regulatory ambit.

SAF-Blended Aviation Fuel

About SAF-Blended Aviation Fuel:

What it is?

- Sustainable Aviation Fuel (SAF) blended with traditional Aviation Turbine Fuel (ATF) is a drop-in fuel solution designed to reduce the carbon footprint of the aviation industry without requiring modifications to existing aircraft engines or infrastructure.

Composition and Nature:

- Chemical Similarity: SAF consists of specially processed aviation-grade hydrocarbons that are chemically similar to traditional petroleum-based ATF.
- Compatibility: It is fully compatible with existing aircraft engines and fueling systems.
- Feedstocks: SAF is a renewable fuel derived from alternative feedstocks, including crops, biogenic residues, and various waste materials.
- Standards: To be used in aviation, it must undergo rigorous testing recognized by the International Civil Aviation Organization (ICAO) and meet ASTM International standards.

Governance and Regulation:

- Regulatory Order: It is now governed under the Aviation Turbine Fuel (Regulation of Marketing) Order, 2001 (ATF Control Order).

Technical Specifications:

- IS 1571: The standard for petroleum-based ATF and co-processed SAF.
- IS 17081: The specific standard for SAF that is blended with traditional ATF.
- Sustainability Criteria: For international use, SAF must meet CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) sustainability criteria to qualify as CORSIA-eligible fuel (CEF).

Key Features:

- Emission Reduction: Offers significant reductions in greenhouse gas (GHG) emissions compared to conventional fossil fuels.
- Performance: It does not alter the fundamental safety, nature, or performance of aviation fuel.
- Global Alignment: The use of SAF is a key component of ICAO's CORSIA scheme, which requires international flights to offset emissions starting with a mandatory phase in 2027.

New Changes (April 2026 Amendment)

- Expanded Definition: Previously, ATF was defined strictly as petroleum-based fuel; the definition now includes SAF co-processed in refineries and SAF blended with ATF.
- Administrative Ambit: Bringing SAF under the ATF Control Order allows the government to regulate its marketing and supply chain effectively.

MandatoryBlending Targets: The government has set indicative targets for international flights:

- 1% blending in 2027.
- 2% blending in 2028.
- 5% blending in 2030.

Implications:

- Helps Indian carriers meet international emission offsetting requirements, potentially reducing the financial burden of purchasing carbon credits.
- Keeps India aligned with international markets like the EU, UK, and Singapore, which have already introduced similar SAF mandates.
- Encourages the strengthening of domestic production capabilities within petroleum refineries.

Haemophilia

Context:

The World Health Organization (WHO) advanced a new resolution to improve care equity for haemophilia, highlighting that India currently carries the world's second-largest burden with nearly 1.4 lakh estimated cases.

About Haemophilia:

What it is?

- Haemophilia is a rare, inherited bleeding disorder characterized by the blood's inability to clot properly. This occurs because the blood lacks sufficient clotting factors—specialized proteins that work with platelets to stop bleeding after an injury.

There are two primary types:

- Haemophilia A: The most common type, caused by a deficiency in Factor VIII.
- Haemophilia B: Also known as Christmas Disease, caused by a deficiency in Factor IX.

Causes and Genetic Pattern:

- X-Linked Recessive Inheritance: The condition predominantly affects males because the genes for clotting factors are located on the X chromosome. Females, having two X chromosomes, are usually carriers but can occasionally experience mild symptoms.
- Spontaneous Mutations: Approximately one-third of all cases occur due to a spontaneous genetic mutation where there is no previous family history of the disorder.
- Protein Deficiency: The root cause is the low or absent levels of essential proteins (Factors VIII or IX) that act as the glue in the body's clotting mechanism.

Signs and Symptoms:

The severity of symptoms depends on the level of clotting factors present in the blood:

- Prolonged Bleeding: Bleeding that lasts much longer than normal after minor cuts, dental work, or surgery.
- Easy Bruising: Large, deep bruises resulting from minor bumps.
- Haemarthrosis (Joint Bleeding): Spontaneous internal bleeding into joints (knees, elbows, ankles), causing swelling, pain, and stiffness.
- Life-Threatening Crises: Severe cases can involve spontaneous brain hemorrhages or bleeding into vital organs, which can be fatal without immediate intervention.
- Chronic Damage: Repeated joint bleeds lead to progressive joint deformity and long-term disability.

Key Features

- Diagnostic Tools: Diagnosis involves physical exams and specific blood tests like Complete Blood Count (CBC), aPTT (clotting time), and factor activity assays.
- Severity Levels: Classified as mild, moderate, or severe based on the percentage of clotting factor in the blood.
- Prophylaxis: A key management feature involving regular infusions of clotting factors to prevent bleeding before it starts, rather than just treating it after an injury.
- Modern Therapies: Advances include non-factor therapies (like emicizumab) and gene therapy, which aims to provide a long-term cure by enabling the body to produce its own clotting factors.

Significance:

- India's massive undiagnosed population (nearly 1 lakh people) represents a significant hidden health crisis that requires urgent registry and screening.
- Haemophilia is at the forefront of gene therapy research, serving as a model for how genetic engineering can potentially eliminate inherited diseases.

G20 Satellite

Context:

Indian Space Research Organisation Chairman V. Narayanan announced that the proposed G20 Satellite is expected to be launched in 2027 for G20 member nations.

About G20 Satellite:

What it is?

- The G20 Satellite is a proposed collaborative Earth observation satellite being led by India for the benefit of G20 countries.
- It is designed to study climate change indicators, monitor air pollution patterns, and improve global weather observation and forecasting systems.

Aim:

- To provide shared satellite-based data for climate monitoring, disaster forecasting, and environmental management among G20 nations.
- To strengthen India's leadership in global space diplomacy and promote cooperative scientific solutions for sustainable development.

Key Features:

- Climate Observation Platform: It will monitor atmospheric changes, greenhouse gas patterns, and climate-sensitive environmental parameters across regions.
- Air Pollution Tracking: The satellite will help map aerosol concentration, pollution hotspots, and transboundary pollution flows for better policy intervention.
- Weather and Disaster Monitoring: It will support early warning systems for cyclones, floods, droughts, and extreme weather events using real-time Earth observation data.

Significance:

- It supports evidence-based climate action and strengthens collective environmental responsibility among G20 nations.
- India's lead role enhances its position as a major space power and expands its soft power through technology diplomacy.

Bacille Calmette-Guérin (BCG) Vaccine

Context:

India has delivered 13 tonnes of Bacille Calmette-Guérin (BCG) vaccines and related materials to Afghanistan's Ministry of Public Health.

About Bacille Calmette-Guérin (BCG) Vaccine:

What it is?

- The BCG vaccine is a live attenuated (weakened) vaccine primarily used to provide protection against Tuberculosis (TB). It is the only licensed vaccine available against TB and is one of the most widely administered vaccines in the world, typically given to newborns.
- Developed By: It was developed by French scientists Albert Calmette and Camille Guérin at the Pasteur Institute. After 13 years of research, it was first administered to humans in 1921.

Aim:

- To prevent severe forms of childhood TB, such as TB meningitis and disseminated TB.
- To reduce the overall global burden of tuberculosis, especially in endemic regions.
- To provide cross-protection against other mycobacterial diseases like Leprosy and Buruli ulcer.

Components of the Vaccine:

- Active Ingredient: A live attenuated strain of Mycobacterium bovis, a bacterium that causes TB in cattle but is weakened for human use.
- Excipients: Typically includes stabilizers like glycerol, citric acid, and various salts (sodium, potassium, magnesium) to maintain potency.
- Dry Materials: As seen in the Afghanistan shipment, the vaccine is often supplied in a freeze-dried (lyophilized) form requiring diluents for reconstitution.

How it Works?

- The vaccine introduces a weakened form of the bacteria into the body, which primes the immune system to recognize mycobacterial proteins.
- This stimulates the production of T-cells and antibodies without causing the disease itself. Upon future exposure to Mycobacterium tuberculosis, the immune system can mount a rapid and effective defense.

Key Features

- Administration: Injected intradermally (into the skin), usually in the upper left arm.
- The BCG Scar: A common and expected feature where a small blister or ulcer forms at the injection site, eventually leaving a permanent flat scar.
- Target Population: Most effective when given to infants and young children in countries with high TB prevalence.
- Treatment Use: Beyond prevention, it is used as a form of immunotherapy to treat certain types of bladder cancer.

Significance:

- It remains the foundation of TB prevention programs, helping to drastically reduce childhood mortality related to TB meningitis.
- For nations like India, providing BCG vaccines is a critical tool of vaccine diplomacy, fostering international solidarity and supporting fragile health systems.
- It offers 70–80% protection against the most severe forms of TB in children, though its effectiveness against adult pulmonary TB is more variable.

Keytruda

Context:

Recent investigations have exposed a dangerous counterfeit market for Keytruda in India, where hospital-level breaches and high drug prices have led to fakes being sold to desperate patients.

About Keytruda:

What it is?

- Keytruda is the brand name for Pembrolizumab, a revolutionary immunotherapy drug used to treat various advanced and aggressive cancers.
- Unlike traditional treatments that attack the tumor directly, Keytruda is a checkpoint inhibitor that helps the body's own immune system identify and destroy cancer cells.
- Developed By: It is manufactured by the U.S.-based global pharmaceutical giant Merck & Co. (known as MSD outside the U.S. and Canada).
- Aim: The primary goal of Keytruda is to remove the brakes on the immune system. Specifically, it seeks to prevent cancer cells from hiding from the body's T-cells, thereby allowing the immune system to launch an effective attack against the tumor.

Key Features of Keytruda:

- Mechanism of Action: It binds to a protein called PD-1 on the surface of T-cells. This prevents the T-cells from binding with PD-L1 on cancer cells, a handshake that usually allows cancer to evade the immune system.
- Broad Spectrum Utility: First approved for advanced skin cancer (melanoma) in 2014, it is now used for lung, cervical, renal cell, and aggressive breast cancers, among others.
- Targeted Therapy: Unlike chemotherapy, which kills both healthy and cancerous cells, Keytruda is highly targeted, meaning it generally spares healthy tissue and reduces certain side effects.
- Monoclonal Antibody: It belongs to a class of laboratory-made molecules designed to restore, enhance, or mimic the immune system's attack on cancer cells.
- Patient Access Programme: In India, Merck provides a buy five, get 30 free scheme to help eligible patients (those with insurance/income below ⊠25 lakh) manage the high cost of treatment.

Implications for India's Cancer Fight

- Rising Burden: With India's cancer cases projected to surge by nearly 74% by 2045, drugs like Keytruda are critical for managing the increasing healthcare crisis.
- Affordability vs. Access: The extreme cost creates a dual-tier health system where only the wealthy or those with specialized insurance can access top-tier care, leading to the rise of dangerous counterfeit markets.

India First Fast Breeder Reactor (FBR) Achieve Criticality

Context:

Prime Minister of India congratulated scientists as India's first indigenous Prototype Fast Breeder Reactor (PFBR) at Kalpakkam, Tamil Nadu, successfully attained criticality.

About India First Fast Breeder Reactor (FBR) Achieve Criticality:

What is Fast Breeder Reactor (FBR)?

- A Fast Breeder Reactor is an advanced nuclear reactor that generates more fissile material (fuel) than it consumes while producing electricity. It is fast because it uses high-energy (fast) neutrons to sustain the fission chain reaction, unlike conventional reactors that use slow neutrons.

What is Criticality?

- In nuclear physics, criticality is the state in which a nuclear fuel sustains a self-supporting chain reaction. It is the point at which the number of neutrons produced by fission is exactly equal to the number of neutrons lost (through leakage or absorption) plus those causing new fissions.
- Developed By: The 500 MWe PFBR has been developed by Bharatiya Nabhikiya Vidyut Nigam Ltd (BHAVINI).

How It Works?

1. Fuel: It uses a Uranium-Plutonium Mixed Oxide (MOX) fuel.
2. The Breeding Process: The reactor core is surrounded by a blanket of fertile material (Uranium-238). When these U-238 atoms capture fast neutrons, they undergo transmutation to become Plutonium-239, which is a high-grade nuclear fuel.
3. Coolant: Instead of water, it uses Liquid Sodium as a coolant because sodium does not slow down neutrons, allowing the fast reaction necessary for breeding.
4. Heat Exchange: The heat generated by fission is transferred to the liquid sodium, which then heats water to produce steam to turn turbines.

Aim:

- To create a surplus of Plutonium fuel to power future fast reactors.
- To act as a bridge to the third stage of India's nuclear programme, where Thorium-232 will be converted into Uranium-233.
- To provide a sustainable, long-term solution to India's energy needs by extracting significantly more energy from uranium than conventional reactors.

Key Features:

- Indigenous Design: Built almost entirely with Indian technology and materials.
- MOX Fuel Technology: Utilizes recycled fuel from the first stage (Pressurized Heavy Water Reactors).
- Passive Safety: Equipped with advanced safety systems that can automatically shut down the reactor during emergencies without human intervention.

- High Efficiency: Operates at higher temperatures than conventional reactors, leading to better thermal efficiency.

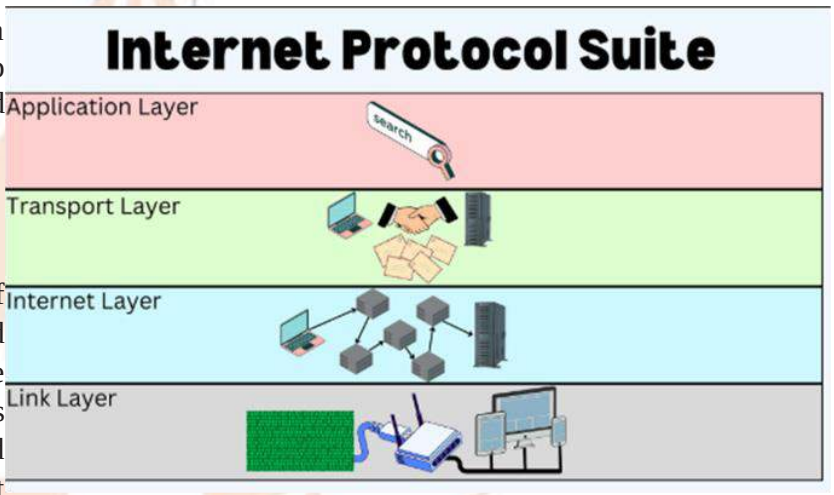
Significance:

- Attaining criticality is the final scientific green light before the reactor begins generating electricity for the grid.
- It proves that the reactor's core geometry, fuel arrangement, and engineering calculations are accurate and functional.
- For India, PFBR criticality signals the formal operational start of the Second Stage of its nuclear roadmap, moving the country closer to utilizing its vast thorium reserves.

Internet Protocols

Context:

A study of six major Indian ISPs reveals a haphazard and inconsistent internet censorship regime, where only 1,414 out of 43,083 blocked domains were restricted across all providers.



About Internet Protocols:

What It Is?

- An Internet Protocol (IP) is a set of rules that govern how data is sent and received over the internet. Much like a postal system, it ensures that packets of digital information are addressed correctly and delivered to the right destination.

How It Works?

When you access a website, your request is broken down into small data packets.

1. Addressing: Each packet is given an IP address (source and destination).
2. Routing: Routers and switches use these protocols to determine the most efficient path for the packets across various networks.
3. Reassembly: Once the packets reach the destination, the protocols ensure they are put back together in the correct order to display the webpage or file.

Common Types of Protocols:

- DNS (Domain Name System): The phonebook of the internet. It translates human-readable names into machine-readable IP addresses.
- HTTP/HTTPS (Hypertext Transfer Protocol): The foundation of data exchange on the web; the 'S' stands for secure (encrypted).
- TLS (Transport Layer Security): Provides authentication and encryption to ensure that the data being transferred remains private.
- TCP (Transmission Control Protocol): Works with IP to ensure that data is delivered reliably and in the correct sequence.

Internet Censorship in India:

Legal Framework

- IT Act, 2000: Section 69A empowers the Central Government to issue blocking orders in the interest of national sovereignty, integrity, defense, or public order. Section 79 provides the framework for intermediaries (like ISPs) to follow these directions.
- Licensing Agreements: ISPs are legally bound by their license to block sites identified by the Licensor (Government), often under strict confidentiality.

Methods of Implementation:

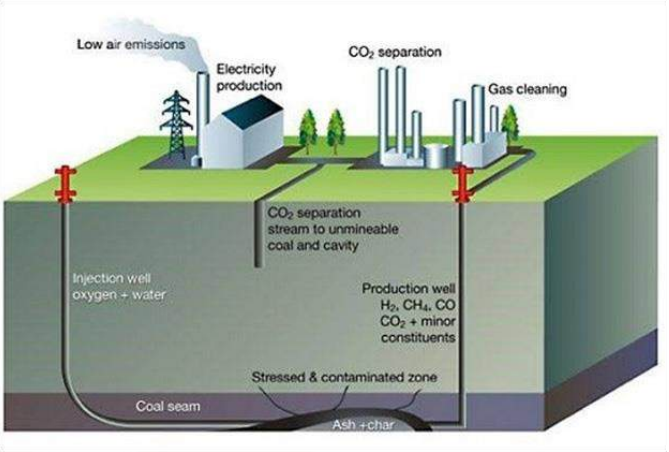
ISPs typically use three main layers to enforce blocks:

1. DNS Poisoning: The most common and cheapest method. When a user requests a blocked site, the ISP's DNS server returns a false IP address or a Not Found message.
2. HTTP/URL Filtering: The ISP examines the web address (URL) and blocks the request if it matches a restricted list.
3. Deep Packet Inspection (DPI): A more advanced and expensive method where the ISP analyzes the actual content of the data packets to block specific traffic.

Coal Gasification

Context:

Union Minister announced, that the Indian government is looking to provide financial incentives to foreign entities investing in the country's coal gasification landscape



About Coal Gasification:

What It Is?

- Coal gasification is a thermo-chemical process that converts solid coal into a pressurized gas mixture called syngas (synthesis gas). This process is considered a cleaner alternative to traditional coal burning because it allows for the removal of impurities like sulfur and nitrogen before the gas is used for energy or chemical production.

How It Works?

1. Reaction: Coal is reacted with steam and controlled amounts of oxygen or air under high pressure and temperatures.
2. Partial Oxidation: Unlike traditional combustion, the coal is not burned but undergoes partial oxidation to break down its molecular structure.
3. Syngas Formation: The primary result is a mixture consisting mainly of carbon monoxide (CO), hydrogen (H2), and sometimes methane (CH4).
4. Cleaning: The raw syngas is cleaned to remove particulate matter, sulfur, and mercury.
5. Utilization: The refined syngas can be used to produce electricity in gas turbines or as a feedstock to create chemicals, fertilizers (like urea), and liquid fuels.

Key Features

- Versatility: Can be performed on the surface (Surface Coal Gasification) or directly within the coal seam (Underground Coal Gasification) to reach deep-seated reserves.
- Pre-combustion Cleaning: Emissions are easier to manage because pollutants are removed from the syngas before it is utilized.
- Lower Water Intensity: Modern gasification plants often require less water per unit of energy produced compared to traditional coal-fired power plants.
- By-product Value: The process produces valuable by-products like slag (used in construction) and elemental sulfur.

Significance:

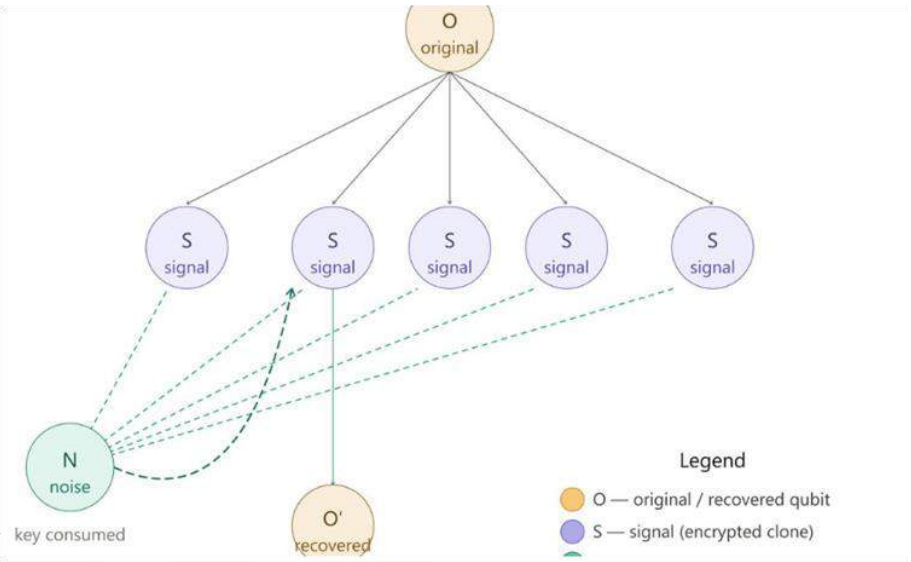
- Reduces India's heavy reliance on expensive natural gas and crude oil imports by utilizing vast domestic coal reserves.
- Provides a steady source of feedstock for the fertilizer and chemical industries, which are critical for India's agricultural sector.

- Offers a pathway to utilize coal—India's dominant energy source—more cleanly as the nation transitions toward its climate commitments.

The No Cloning Theorem

Context:

Physicists have discovered a loophole in a fundamental law of physics by creating perfect copies of quantum data that remain encrypted and scrambled until a specific decryption key is used.



About the no-cloning theorem:

What It Is?

- In simple terms, the no-cloning theorem is a rule of quantum mechanics that says you cannot make an exact, identical copy of an unknown quantum state.
- Unlike a digital photo or a text file on a regular computer, which can be copied perfectly millions of times, quantum information is unique and cannot be duplicated without destroying the original or getting a blurry, imperfect result.

Key Features of the Theory:

- Unknown states only: The rule applies to unknown qubits. A known prepared state can be recreated, but an unknown mystery qubit cannot be copied.
- Fidelity limit: Only approximate copies were previously possible, and these are too noisy for precise computation.
- Linearity principle: Quantum mechanics does not permit a universal copy operation; any attempt to measure and copy disturbs the state.
- Encrypted loophole: Information may be distributed across multiple qubits as noise-like data, but recovery requires a single-use key.

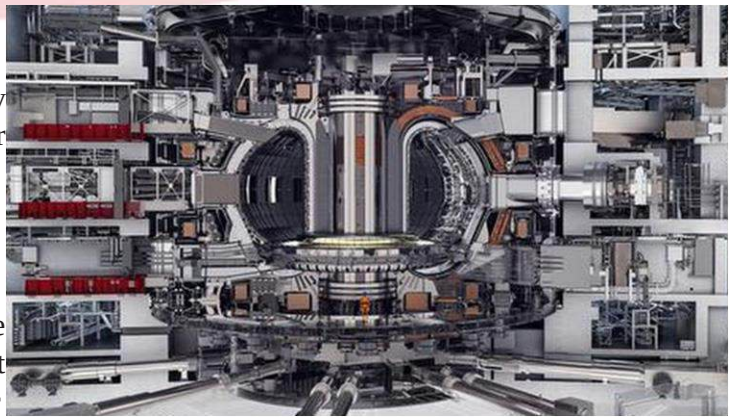
Importance in Quantum Physics:

- Quantum security: Forms the basis of quantum cryptography, since interception leaves detectable traces.
- Error correction: Since direct copying is impossible, protection relies on entanglement-based error correction.
- Quantum-classical divide: Clearly distinguishes classical copyable information from fragile quantum information.
- Storage innovation: Drives development of quantum storage and cloud backup methods using secure encoded states.

Nuclear Fusion

Context:

Scientists have published an analysis in Nature Energy warning that current economic models for nuclear fusion are over-optimistic.



About Nuclear Fusion:

What It Is?

- Nuclear fusion is the process that powers the sun and other stars. It occurs when two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy. It is often considered the holy grail of clean energy because it produces no long-lived radioactive waste and uses abundant fuel sources.

How It Works?

1. Plasma State: Fuel (usually isotopes of hydrogen like Deuterium and Tritium) is heated to millions of degrees Celsius until it becomes a plasma, a state of matter where electrons are stripped from nuclei.
2. Overcoming the Coulomb Barrier: At these extreme temperatures, the nuclei move with enough kinetic energy to overcome the Coulomb Barrier (the electrostatic force that repels positively charged nuclei).
3. The Strong Force: Once the nuclei get close enough, the Strong Nuclear Force takes over, pulling them together into a single, heavier nucleus (like Helium).
4. Mass-Energy Conversion: The mass of the resulting single nucleus is slightly less than the sum of the two original nuclei. This missing mass is converted into a vast amount of energy, following Einstein's equation $E=mc^2$.
5. Energy Capture: In a reactor, this energy is released as heat, which is then used to boil water, create steam, and turn turbines to generate electricity.

Difference Between Nuclear Fusion and Fission:

Feature	Nuclear Fusion	Nuclear Fission
Process	Joining two light nuclei into one.	Splitting one heavy nucleus into smaller ones.
Fuel	Isotopes of Hydrogen (Deuterium/ Tritium).	Heavy elements like Uranium or Plutonium.
Energy Release	Significantly higher energy per unit of mass.	High energy, but less than fusion.
Waste	No long-lived radioactive waste; Helium is a byproduct.	Produces radioactive waste that stays dangerous for thousands of years.
Risk	No risk of a meltdown; the reaction stops if conditions fail.	Risk of meltdown if the chain reaction is not controlled.
Current Status	Still in experimental/research phase (e.g., ITER).	Widely used in power plants globally.

Limitations of Nuclear Fusion:

- Extreme Complexity: Fusion reactors are described as far more complex than fission reactors, with one expert calling fission trivial by comparison.
- Energy Requirements: A plant must produce hundreds of megawatts just to overcome the energy needed to run its own massive heating and cooling systems.
- Structural Rigidity: Magnetic fusion devices use onion-like structures where changing one small part requires redesigning the entire system.
- Lack of Mass Production: Facilities must be customized for local seismic risks and water access, preventing the cost-saving benefits of mass production

Piped Natural Gas (PNG)

Context:

Top officials from the Ministry of Petroleum and Natural Gas (MoPNG) held a joint review meeting, to expedite the expansion of Piped Natural Gas (PNG) networks.

About Piped Natural Gas (PNG):

What It Is?

- Piped Natural Gas (PNG) is a safe, convenient, and environment-friendly fuel used for domestic, commercial, and industrial purposes.
- It primarily consists of methane and is delivered directly to the point of use through a network of pipelines, eliminating the need for cylinder storage and heavy-duty transport.

How It Works?

- Source and Transmission: Natural gas is transported from production fields or import terminals through high-pressure trunk pipelines.
- City Gas Distribution (CGD): CGD entities receive the gas at City Gate Stations, where the pressure is reduced for safe urban distribution.
- Local Network: Gas is moved through a primary network of steel pipes and then into a secondary network of Polyethylene (PE) pipes laid across neighborhoods.
- Last-Mile Connectivity: The gas is finally delivered to individual households, kitchens, or industrial units through small-diameter GI (Galvanised Iron) or copper pipes.
- Integrated Planning: To avoid delays, these networks are now being mapped on the PM Gati Shakti National Master Plan portal for coordinated underground utility integration.

Key Characteristics:

- Continuous Supply: PNG is available 24/7, removing the hassle of booking, waiting for, or changing heavy LPG cylinders.
- Safety: Natural gas is lighter than air; in the event of a leak, it disperses rapidly into the atmosphere, significantly reducing the risk of fire or explosion compared to LPG.
- Space Saving: Since the fuel is piped, there is no need for space to store cylinders or bulky fuel tanks.
- Economical and Efficient: It is generally more affordable than traditional fuels and requires no manual handling, which minimizes transit losses and theft.
- Billing Accuracy: Consumption is measured through a meter, ensuring users only pay for the exact amount of gas used.

Significance:

- Expanding PNG networks reduces the country's over-reliance on bottled LPG and diversifies the energy mix.
- As a cleaner-burning fossil fuel, PNG helps reduce urban air pollution and aligns with global climate mitigation goals.

E20 Petrol

Context:

India has officially mandated the nationwide use of E20 petrol as the primary fuel at all petrol pumps starting April 1, 2025.

About E20 Petrol:

What It Is?

- E20 petrol is a specialized fuel blend consisting of 20% ethanol and 80% petrol.
- The ethanol used in this blend is a biofuel derived from organic agricultural sources such as sugarcane, maize, and various grains.
- Organisation Involved: Ministry of Petroleum and Natural Gas and Bureau of Indian Standards (BIS).

Aim:

- To significantly cut the costs associated with importing crude oil from global markets.
- To improve India's energy self-reliance, especially during periods of geopolitical tension and supply disruptions.
- To provide a boost to the domestic agricultural sector by creating a steady demand for ethanol-producing crops.

Key Characteristics:

- High Octane Rating: E20 typically has a higher octane rating of approximately 95 RON, compared to the 91–92 RON of regular petrol, leading to smoother engine combustion.

Compatibility:

- Newer Vehicles: Most modern cars are designed with upgraded engines and fuel systems specifically to handle E20 blends.
- Older Vehicles: While these can use E20, they may experience a minor drop in fuel efficiency and potential wear on engine components not designed for ethanol.
- Environmental Impact: Because ethanol is plant-based, it can partially offset carbon emissions as crops absorb CO2 during growth.
- Energy Density: Compared to E10 (10% ethanol), E20 offers potentially cleaner combustion but may result in a slight reduction in fuel efficiency for certain vehicles.

Significance:

- By shifting to domestically produced ethanol, India can save substantial foreign exchange that would otherwise be spent on fuel imports.
- The move is a critical part of India's broader strategy to achieve cleaner mobility and meet international emission reduction targets.
- Utilizing home-grown biofuels helps insulate the Indian economy from the volatility of global oil prices.

Space Governance

Context:

Space governance is facing a critical failure as Earth's orbits become increasingly crowded and vulnerable to debris, with current regulations failing to keep pace with rapid commercial expansion.

About Space Governance:

What It Is?

- Space governance refers to the international and national frameworks of treaties, laws, and ethical norms designed to manage human activities in outer space. It encompasses the regulation of satellite launches, the mitigation of orbital debris, the management of radio frequencies, and the establishment of liability for space-related accidents.

Key Laws Governing Space:

- Outer Space Treaty (1967): The foundational pillar of international space law. Article VI makes states internationally responsible for national activities in space, including those by private entities, while Article VII establishes liability for damage caused by space objects.
- Liability Convention (1972): Elaborates on Article VII of the Outer Space Treaty, providing specific procedures for claiming compensation for damage caused by space objects.
- National Licensing Regimes: The primary modern mechanism used by countries to enforce orbital responsibility (such as requiring disposal plans) before a mission is approved for launch.

Importance of Governing Space:

1. Preventing Collisions: Effective governance ensures satellites are moved or de-orbited safely. Even debris smaller than a coin can destroy active satellites due to high orbital velocities.
2. Mitigating Cumulative Harm: Governance is needed to address long-term congestion rather than just individual accidents. Current laws fail to prevent irreversible harm from thousands of fragments generated by each collision.

3. Ensuring Intergenerational Equity: Stewardship ensures future generations can still access space. Principles from environmental law suggest our current use should not foreclose future access to orbital resources.
4. Protecting Global Services: Reliable governance secures the infrastructure for weather forecasting, GPS, and communication. These essential services are threatened by an ethically under-governed and fragile orbital environment.
5. Establishing a Duty-of-Care: Standardized rules create an ethical threshold for acceptable congestion. Without it, responsible operators absorb higher costs while others ignore risks for commercial gain.

Challenges Associated with Space Governance:

1. Verification Gap: There is no regular way to confirm if operators actually de-orbit satellites once missions end. Regulators often rely on what companies say they will do rather than what they can confirm in orbit.
2. Debris Tracking Limitations: Much of the debris capable of causing significant damage is impossible to track consistently. Authorities often can only identify the source of a fragment after damage has already occurred.
3. Information Asymmetry: Access to accurate data about object locations is uneven across countries. Information is often withheld for commercial reasons or kept secret for national security.
4. Outdated Legal Assumptions: Existing treaties were written when space was state-controlled and innovation was slow. They do not address the modern era of frequent private launches and massive satellite constellations.
5. Permissive Regulatory Forum Shopping: Regulators in different jurisdictions ask for varying levels of detail. This allows operators to register in permissive environments to bypass strict safety standards.

Way Ahead:

- Standardize Licensing: Implement uniform global licensing conditions to prevent operators from choosing the most permissive regulatory environments.
- Mandatory Data Sharing: Move beyond voluntary guidelines to legally mandated data sharing to improve global space situational awareness.
- Enforceable Mitigation Thresholds: Require launch operators to meet measurable and verifiable debris-mitigation and end-of-life disposal thresholds.
- Integrate Environmental Principles: Embed principles like precaution and proportionality into space policy to ensure uncertainty does not excuse inaction.
- India's Leadership Role: As India develops its national space legislation, it has a unique opportunity to embed orbital responsibility as a mandatory legal requirement for its expanding commercial sector.

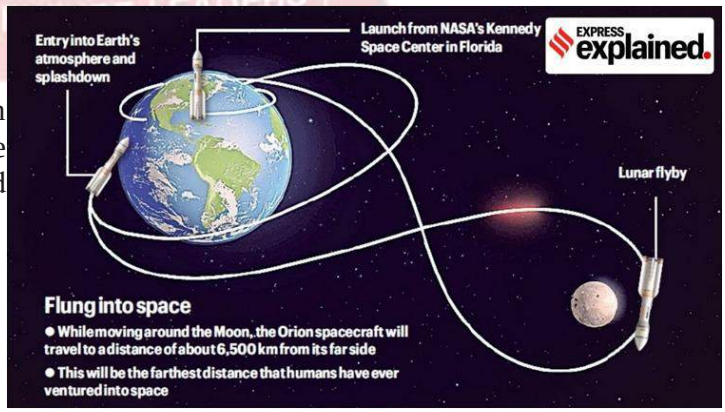
Conclusion:

Earth's orbital environment has shifted from a vast frontier to a fragile resource threatened by a significant gap in ethical and legal governance. Relying on voluntary compliance is no longer sustainable as debris risks multiply and commercial actors increase. For space to remain a viable resource, the international community must transition to enforceable, standardized, and verifiable stewardship.

Artemis II Mission

Context:

NASA is set to launch the Artemis II mission on Wednesday, April 1, 2026, marking the first time humans will venture to the Moon's neighbourhood since the Apollo 17 mission in 1972.



About Artemis II Mission:

What It Is?

- Artemis II is the first crewed mission under NASA's Artemis program. It is a test-ride mission designed to fly a crew of four astronauts around the Moon and back to Earth without landing on the lunar surface.
- Organisation Involved: National Aeronautics and Space Administration (NASA).

Timeline & Current Status

- Debut of Systems: The SLS rocket and Orion spacecraft first debuted during the uncrewed Artemis I mission in 2022.
- Artemis II Launch: Scheduled for Wednesday, April 1, 2026.
- Aim: The primary objective is to test and validate the Space Launch System (SLS) rocket and the Orion spacecraft's life-support systems with a crew on board. It serves as a foundational step for deeper space exploration and future lunar landings.

How It Works?

1. Launch: The mission uses the SLS rocket, the most powerful launch vehicle currently available to NASA.
2. Earth Orbits: The Orion spacecraft will complete two rounds of the Earth to gain necessary velocity and test systems before departing for the Moon.
3. Lunar Transit: It will take three to four days to reach the Moon's neighborhood, following a quicker, high-power trajectory similar to the Apollo missions.
4. Lunar Flyby: Orion will circle the Moon, reaching a distance of approximately 6,500 km from the far side of the lunar surface.
5. Return: After the flyby, the spacecraft will embark on a return journey, concluding the 10-day mission with a splashdown on Earth.

Key Features:

- Crewed Debut: This is the first time the SLS rocket and Orion spacecraft are being used to carry human astronauts.
- Powerful Propulsion: Unlike fuel-efficient uncrewed missions (like Chandrayaan-3) that take weeks, Artemis II uses a powerful SLS rocket to reach the Moon in just a few days.
- Deep Space Trajectory: The spacecraft will travel farther into space than any previous human mission, exceeding the 110 km altitude reached by Apollo missions on the far side of the Moon.

Significance:

- It represents the first human return to the lunar vicinity in over five decades.
- By reaching 6,500 km from the Moon's far side, the crew will venture farther into space than humans have ever gone before.

Chapter-
6

ECONOMY

EPF Aadhaar-Based Access Portal for Tracking Inoperative Accounts (E-PRAAPTI)

Context:

The Employees' Provident Fund Organisation (EPFO) is set to launch E-PRAAPTI, a dedicated digital platform designed to help members identify, track, and link old, inoperative EPF accounts with their Universal Account Number (UAN).

EPF Aadhaar-Based Access Portal for Tracking Inoperative Accounts (E-PRAAPTI)

AboutEPF Aadhaar-Based Access Portal for Tracking Inoperative Accounts (E-PRAAPTI):

What it is?

- E-PRAAPTI is a streamlined digital solution developed to bridge the gap between physical-mode legacy accounts and the current digital UAN ecosystem.
- Launched By: The Employees' Provident Fund Organisation (EPFO), under the direction of Union Labour and Employment Minister Mansukh Mandaviya.
- Aim: To facilitate the identification, tracking, and activation of old EPF accounts that lack UAN linkage, ensuring members can securely access and claim their long-pending deposits.

Key Features:

- Aadhaar-Based Authentication: Provides a secure verification mechanism that allows members to access old accounts using their Aadhaar credentials.

Phased Rollout:

- Phase 1: The portal will initially require a Member ID to track accounts.
- Phase 2: The scope will expand to include members who cannot recall or access their old Member IDs.
- Profile Updating: Enables members to initiate profile updates directly through the portal, followed by seamless UAN linking and account activation.
- ReducedManual Intervention: The platform is designed to minimize physical documentation and the need for employer intervention or visits to EPF offices.
- System Migration: To implement this new system, the existing EPFO portal will undergo a brief migration period of 1–2 days.

Significance:

- The portal is critical for addressing the 31.83 lakh inoperative accounts, some of which have been idle for over 20 years.
- It specifically helps members who retired after age 55 or whose accounts became inoperative after three years of no contributions.
- By utilizing auto mode processing and Aadhaar authentication, the platform builds on EPFO's success in settling a record 8.31 crore claims in FY26.

India-New Zealand Free Trade Agreement (FTA)

Context:

India and New Zealand signed a historic Free Trade Agreement (FTA), marking one of the fastest trade negotiations in India's history.

India-New Zealand Free Trade Agreement (FTA)

AboutIndia-New Zealand Free Trade Agreement (FTA):

What it is?

- The India-New Zealand FTA is a comprehensive economic partnership designed to deepen bilateral ties across trade, investment, and mobility. It represents a significant milestone in India's strategy of global engagement, fostering a stable and rules-based trade environment between two vibrant democracies.

Key Features of the FTA:

- Tariff Elimination: New Zealand will remove tariffs on 100% of goods imported from India, while India will remove or reduce tariffs on 95% of current imports from New Zealand.
- Investment Commitment: New Zealand has committed to facilitating $20 billion in investments into India over the next 15 years, aligned with the Make in India initiative.
- Strategic Exclusions: India has successfully protected sensitive sectors by excluding all dairy products (milk, cheese, etc.), specific vegetables (onions, chana), sugar, honey, and gems and jewelry.
- Mobility Provisions: The agreement includes frameworks to enhance the mobility of skilled professionals and students, making it easier for Indian talent to access the New Zealand market.
- SME & Artisan Focus: Specific provisions are designed to benefit MSMEs, artisans, and women entrepreneurs by opening new market access in textiles, pharmaceuticals, and engineering.

Pre-FTA Trade Data:

- Export Growth: India's exports to New Zealand grew by 32.1%, reaching approximately $711.1 million.
- Import Surge: Imports from New Zealand saw a sharp increase of 75.2%, totaling $587.1 million.
- Trade Balance: India maintained a positive trade balance with New Zealand prior to the signing of the agreement.
- Core Sectors: Primary trade consisted of pharmaceuticals, precious metals, and textiles from India, while New Zealand exported wood, fruits, and specialized machinery.

Opportunities for Trade:

- Manufacturing Ecosystems: The $20 billion investment is expected to spur the development of industrial infrastructure and innovation clusters across India.
- Service Exports: Massive potential for growth in IT & ITES, business services, education, and health services for Indian firms.
- Agricultural Productivity: Collaboration in agricultural technology can help Indian farmers improve yields and processing capabilities.

- Start-up Synergy: New avenues for startups in both nations to collaborate on innovation and technology-driven solutions.
- Supply Chain Resilience: The deal provides a predictable framework for businesses, reducing uncertainty amid global geopolitical tensions.

Challenges Associated:

- Dairy Sensitivity: While excluded now, the dairy sector remains a point of high interest for New Zealand, posing potential friction in future reviews.
- Regulatory Alignment: Harmonizing standards and rules of origin can be complex for small-scale Indian exporters.
- Competition for MSMEs: Increased imports of specialized New Zealand goods could pressure some local Indian manufacturers in high-tech segments.
- Ratification Process: The deal must still pass through the New Zealand Parliament, where domestic political shifts could influence the final implementation.
- Infrastructure Gaps: To fully utilize the $20 billion investment, India must continue to rapidly improve its logistics and ease-of-doing-business metrics.

Way Ahead:

- Swift Ratification: Both nations must prioritize the legislative process to ensure the deal comes into force before the end of 2026.
- Sectoral Roadmaps: Industry bodies like FIEO and CII should create specific guides for MSMEs to navigate the new market access.
- Focus on‘Make in India’: Directing New Zealand’s investments toward high-growth sectors like semiconductors and green energy.
- Skill Harmonization: Accelerating the recognition of professional qualifications to maximize the mobility provisions of the pact.
- Regular Review Mechanisms: Establishing a joint committee to address non-tariff barriers and trade disputes promptly as they arise.

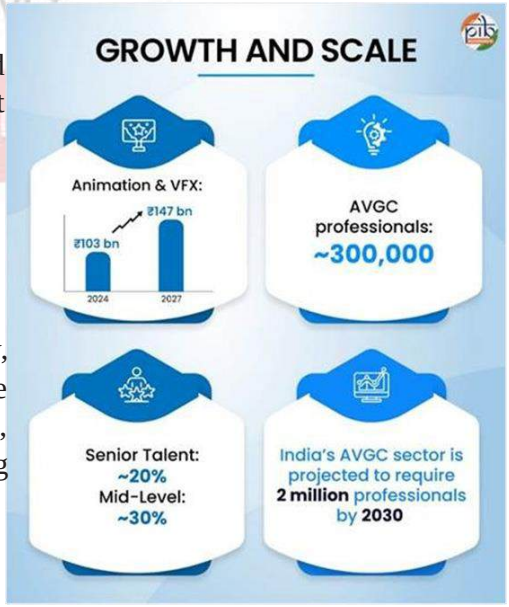
Conclusion:

The India-New Zealand FTA serves as a blueprint for rapid, high-trust trade negotiations that balance economic ambition with domestic sensitivities. By securing massive investment commitments and protecting critical sectors like dairy, India has positioned itself as a primary beneficiary of this partnership.This agreement not only strengthens economic ties but reinforces a shared vision for a prosperous and dynamic Indo-Pacific region.

The Orange Economy in India

Context:

India is shifting its growth strategy to centralize creativity, culture, and content through the Orange Economy, aiming to transform its vast cultural assets into scalable global Intellectual Property (IP).



The Orange Economy in India

AboutThe Orange Economy in India:

What it is?

- The Orange Economy is an economic model powered by creativity, cultural expression, and intellectual property. It spans diverse fields such as design, film, animation, VFX, gaming, fashion, digital media, and immersive storytelling, focusing on monetizing cultural assets as internationally scalable and reusable resources.

Data and Statistics:

- Digital Reach: India has over 1.028 billion internet subscribers, including more than one billion broadband users, making it a premier market for digital entertainment.

- Gaming Sector: India is the world's second-largest gaming market with approximately 42.5 crore gamers; the sector reached ₹16,428 crore in FY23 with a 28% CAGR.
- Creator Impact: Between 2 to 2.5 million active creators in India influence $350–400 billion in consumer spending, a figure projected to hit $1 trillion by 2030.
- Economic Contribution: YouTube's creative ecosystem alone contributed over ₹16,000 crore to India's GDP in 2024 and supported over 930,000 full-time equivalent jobs.

Orange Economy as an Engine of Growth:

- Monetization ofCultural Assets: By transforming myths, languages, and local traditions into owned IP (characters and franchises), India can extract long-term value rather than just one-time production fees.
- Multidisciplinary Convergence: The intersection of design, film, and gaming creates multi-layered, globally impactful experiences that are more adaptable and monetizable than isolated disciplines.
- Employment Generation: The government's AVGC-XR initiative is projected to generate 20 lakh direct and indirect jobs over the next decade.
- Creator-Led Entrepreneurship: The creator economy acts as a potent distribution engine, helping Indian narratives reach niche global audiences and build community-led cultural momentum.
- Strategic Infrastructure: Treating culture as strategic national infrastructure allows for the development of studio-scale IP that travels across cinema, streaming, and merchandise.

Challenges Associated:

- Platform Dependency: Much of the creator economy's visibility and monetization is controlled by foreign platforms' algorithms and policies.
- Lack ofIP Ownership: India often produces high volumes of creative content but extracts little value because it lacks ownership of the underlying characters or storytelling systems.
- Fragmented Training: Current educational systems often focus on narrow specializations rather than the fluid, cross-disciplinary creative intelligence needed for modern markets.
- Monetization Fragility: Creator wealth is often unstable, relying on advertising markets rather than proprietary formats or licensing.
- Funding and Legal Literacy: There is a need for greater access to capital and improved legal literacy regarding IP ownership and international distribution.

Way Ahead:

- Reform Creative Training: Move beyond narrow specializations to integrate storytelling, design systems, and business models into core curricula.
- Prioritize Ownership: Encourage creators and studios to move beyond platform reach into proprietary formats, licensing, and paid communities.
- IntegrateAI Workflows: AI-supported workflows, licensing, and entrepreneurial thinking must become core components of professional creative training.
- Strengthen Global Distribution: Establish stronger, more confident distribution channels to ensure Indian narratives can scale internationally as reusable resources.
- Foster Cooperative Federalism: Align design education and policy across Union, State, and local levels to build a competitive national creative ecosystem.

Conclusion:

India's transition to an Orange Economy marks a pivotal move toward recognizing culture as a strategic economic asset capable of driving the next phase of national growth. By focusing on IP ownership and interdisciplinary innovation, the country can transform from a prolific content producer into a global leader in the creative industry.

Banking Regulation Act, 1949

Context:

The Reserve Bank of India (RBI) has officially cancelled the banking licence of Paytm Payments Bank Limited, under the Banking Regulation Act, 1949, due to persistent non-compliance with licensing conditions

Banking Regulation Act, 1949

About Banking Regulation Act, 1949:

What it is?

- The Banking Regulation Act, 1949, is a landmark legislation in India that provides the legal framework for the supervision and regulation of all banking firms in the country. It was originally passed as the Banking Companies Act, 1949, before being renamed in 1966 to reflect its broader application to various types of banking entities.

Aim:

- The primary goal is to safeguard the interests of depositors and ensure the stability of the financial system.
- To prevent the haphazard growth of banking companies and ensure they operate on sound financial principles.
- To provide the Reserve Bank of India (RBI) with the necessary legal authority to monitor, direct, and control the banking sector.

Key Features

- Licensing of Banks (Section 22): No company can carry out banking business in India without a licence from the RBI; the RBI also has the power to cancel such licences if a bank fails to meet stipulated conditions.
- Definition of Banking (Section 5b): It defines banking as the accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise.
- Prohibition of Trading (Section 8): To minimize risk, banking companies are generally prohibited from engaging directly or indirectly in the buying or selling of goods, except in connection with realized security.
- Minimum Capital Requirements: The Act specifies minimum paid-up capital and reserves that banks must maintain to ensure they are financially resilient.
- Inspection and Audit: The RBI is empowered to inspect the books and accounts of any banking company at any time to ensure compliance and financial health.
- Management Control: The RBI has the authority to remove or appoint directors and chairmen of banking companies if it is in the public interest or to prevent the affairs of a bank from being conducted in a manner detrimental to depositors.
- Winding Up andAmalgamation: The Act provides procedures for the voluntary or compulsory winding up (liquidation) of a bank, often involving an application to a High Court.

Significance:

- By regulating the entry and exit of banks, the Act ensures that only credible and stable entities operate in the market.
- It provides the RBI with the teeth needed to enforce monetary policies and credit control measures across the banking landscape.

Bharat Maritime Insurance Pool (BMI Pool)

Context:

The Union Cabinet has approved the creation of the Bharat Maritime Insurance Pool (BMI pool), backed by a ₹12,980 crore sovereign guarantee, to ensure uninterrupted insurance for Indian vessels.

About Bharat Maritime Insurance Pool (BMI Pool):

What it is?

- The BMI Pool is a domestic, state-backed insurance mechanism designed to provide comprehensive coverage for Indian-flagged, Indian-controlled, or India-bound vessels.
- It serves as a strategic financial shield, ensuring that Indian trade can continue even if international insurers withdraw coverage due to regional conflicts or sanctions.

Organizations Involved:

- Governing Body: A newly constituted body to oversee the formation and daily functioning of the pool.
- Domestic Insurers: Participating insurance companies that will act as Pool Members, utilizing a combined underwriting capacity of approximately ₹950 crore to issue policies.

Aim:

- To eliminate the high dependence of Indian shipping on the International Group of Protection and Indemnity (IGP&I) Club.
- To provide affordable insurance for vessels transiting volatile maritime corridors, preventing spikes in freight and trade costs.
- To maintain sovereign control over maritime trade routes and protect against the impact of international sanctions.

Key Features of the BMI Pool:

- Comprehensive Risk Coverage: Unlike many specialized international funds, the BMI pool covers all major maritime risks, including:
- Hull and Machinery (H&M): Physical damage to the ship.
- Cargo: Protection for the goods being transported.
- Protection and Indemnity (P&I): Third-party liabilities such as oil pollution, wreck removal, cargo damage, and crew injury.
- War Risk: Specialized coverage for vessels operating in conflict zones.
- Sovereign Guarantee: A massive ₹12,980 crore backstop provided by the Government of India, ensuring the pool can meet large-scale claims without insolvency.
- Broad Eligibility: Coverage extends to Indian-flagged vessels, Indian-controlled vessels, and even foreign vessels destined for or starting from Indian ports.
- Local Underwriting: Policies are managed and issued domestically, allowing for terms tailored specifically to Indian shipping conditions and regulatory needs.
- Expertise Development: Aims to cultivate specialized Indian talent in marine underwriting, claims management, and maritime legal expertise.

Significance:

- If international P&I clubs withdraw coverage due to unilateral sanctions the BMI pool ensures Indian energy and trade flows remain unaffected.
- By managing insurance locally, India reduces the significant outflow of foreign exchange currently paid as premiums to international groups.

Rising Labour Protests in India

Context:

Factory workers in industrial hubs like Noida and Manesar have launched violent protests over stagnant wages and poor working conditions.

About Rising Labour Protests in India:

What it is?

- Labour protests in India represent a growing friction between the industrial workforce and the state/employer apparatus. Currently, thousands of factory workers are agitating against the decoupling of wages from the rising cost of living, while also demanding clarity on the newly notified but yet-to-be-implemented Labour Codes.

Stats and Data on Labour Unrest:

- Inflation Gap: The all-India inflation rate for industrial workers (CPI-IW) rose by 24.8% between 2021 and 2026, while wage hikes in states like Haryana only averaged 15% in the same period.
- Minimum Wage Disparity: Before recent revisions, the monthly wage for unskilled workers in Haryana was 11,274.60, significantly lower than the Central Sphere rate of ₹20,358, causing widespread resentment.
- Revision Delays: Uttar Pradesh had not revised its base minimum wage since 2012, and Haryana delayed its revision for 10 years despite the five-year legal requirement.
- Living Costs: Migrant workers reported paying as much as ₹4,000 for LPG cylinders on the black market due to war-induced supply chain disruptions.

Factors Leading to Rising Labour Protests:

- Wage Stagnation vs. Inflation: Fixed base minimum wages have failed to adjust for the rapid spike in daily expenses, particularly food, rent, and fuel.
- Legislative Confusion: The notification of the four Labour Codes in November 2025 created expectations of higher pay and better social security that have not yet materialized on the ground.
- Flexible Working Hours: New codes allow a workday of up to 12 hours to facilitate a four-day work week, but workers fear this is being abused to increase workload without extra pay.
- Impact of External Conflicts: The Strait of Hormuz closure and West Asia war have increased input costs for factories, leading to delayed payments and job uncertainties.

Initiatives Taken So Far:

- Interim Wage Hikes: The Uttar Pradesh government announced an interim hike, raising Noida's unskilled wage to ₹13,690 to quell immediate violence.
- Haryana Notification: Following protests in Manesar, Haryana notified a 35% hike, bringing the minimum wage to ₹15,220.71.
- Central Notification (September 2024): The Union government revised minimum wages for central sphere establishments to over ₹20,000 per month to set a benchmark.
- Draft Rules Issuance: The Centre issued draft rules for the new Labour Codes in December 2025 to clarify spread-over hours and rest intervals.

Challenges Associated:

Internal India Challenges:

- Notification Lag: While the Codes were notified in 2025, the final rules are pending in most states, leading to an unexpected damage to lawmaking.
- Regional Disparities: Differences in state-level wage notifications create a race to the bottom where industries might migrate to states with lower labour costs.
- Erosion of Trade Unions: The new codes leave the recognition of trade unions to state discretion, weakening the collective bargaining power of workers.
- Lack of Awareness: Misinformation on social media regarding uniform ₹20,000 wages has created unrealistic expectations and friction.

External Challenges:

- Energy Crisis: High prices of LPG and cooking fuel due to global supply shocks disproportionately hit the disposable income of migrant workers.
- Global Trade Barriers: US tariffs and shipping disruptions have squeezed factory margins, making employers reluctant to pass on wage hikes.
- Strait of Hormuz Closure: This specific geopolitical event has crippled the flow of raw materials, causing industrial units to reel under intense input cost pressure.

Way Ahead:

- Standardize Base Revisions: Ensure that the five-year revision of the base minimum wage is mandatory and automatic across all states to prevent decade-long stagnations.
- Clarify Labour Code Rules: The Centre and States must urgently notify final rules for the 2025 Labour Codes to eliminate confusion regarding 12-hour shifts and overtime.

- Institutionalize Bargaining: Strengthen the process for recognizing trade unions to ensure that grievances are settled at the negotiating table rather than on the streets.
- CPI-IW Alignment: Update the variable component of wages more frequently to reflect the real-time inflation felt by industrial workers.
- Direct Benefit Support: During periods of extreme energy inflation (like the current LPG crisis), provide temporary energy subsidies to registered industrial workers.

Conclusion:

The current labour unrest in India's industrial hubs is a direct consequence of thermal injustice where workers' wages have failed to survive the heat of global inflation and local policy delays. Resolving this crisis requires the state to move beyond interim hikes and towards a transparent, rule-based implementation of the new Labour Codes. Only by restoring the link between productivity and real wages can India ensure long-term industrial peace and equitable growth.

The Nationalisation of Banks in India

Context:

The 55th anniversary of bank nationalisation in India remains a subject of intense economic debate, as the move continues to be regarded as one of the most transformative decisions since 1947.

About The Nationalisation of Banks in India:

What it is?

- Bank nationalisation refers to the historic process of bringing privately owned commercial banks under the ownership and control of the Government of India. This transition moved the commanding heights of the economy from private hands to the state, effectively turning bank employees into public servants and aligning credit flow with government priorities.

Years and Phases:

- Phase 1 (1955): The nationalisation of the Imperial Bank of India, which became the State Bank of India (SBI).
- Phase 2 (July 19, 1969): The most significant phase, where 14 major private banks with deposits exceeding ₹50 crore were nationalised via an Ordinance by the Indira Gandhi government.
- Phase 3 (1980): A second wave involving 6 more banks was nationalised, further consolidating state control over the banking sector.

Aim of Nationalisation:

- To expand banking services to rural and semi-urban areas that were neglected by profit-driven private banks.

- To ensure that credit reached vital but weak sectors such as agriculture, small-scale industries, and the self-employed.
- To mobilize resources for national development and reduce the concentration of wealth among a few industrial houses.
- To give the government direct access to public savings for use in Five-Year Plans and infrastructure projects.

Key Features:

- The ₹50 Crore Threshold: In 1969, the government chose banks with deposits of ₹50 crore or more, covering roughly 85% to 90% of the total banking business.
- Exclusion of Foreign Banks: Based on advice from officials like I.G. Patel, foreign-owned banks were left out of the nationalisation process.
- Social Control: The move was the culmination of social control policies aimed at making banks aware of the credit needs of society.
- Centralized Regulation: It significantly increased the power of the Reserve Bank of India (RBI) and the Finance Ministry over the day-to-day operations of the banking system.

Significance:

- It led to a massive branch expansion in villages, helping to institutionalize rural credit and weaken the grip of local moneylenders.
- By directing credit to farmers, nationalisation provided the financial backing necessary for the adoption of high-yielding varieties of crops.

Government Fertilizer Policy Reform

Context:

In the wake of a volatile ceasefire in the West Asia conflict, agricultural experts have highlighted India's dangerous 70% import dependency for fertilizers and feedstocks.

About Government Fertilizer Policy Reform:

What it is?

- Fertilizer policy reform refers to the transition from a highly subsidized, government-controlled pricing regime to a more efficient system—either through Direct Benefit Transfer (DBT) or quantitative rationing. The goal is to reduce the fiscal burden, stop the diversion of urea to non-agricultural uses, and correct the nutrient imbalance caused by the massive overuse of nitrogenous fertilizers.

Data and Statistics:

- Import Dependency: India relies on imports for 70% of its total chemical fertilizer needs and feedstocks.
- Urea Consumption: India consumes 40 million tonnes (MT) of urea annually, with 10MT imported and the rest produced using 85% imported gas.
- Price Volatility: Global urea prices rose 65% (from $482 to $795/tonne) in just 40 days due to the 2026 West Asia conflict.
- Efficiency Gap: Granular urea has a low Nutrient Use Efficiency (NUE) of only 35-40%, meaning 60% is lost to leaching or the atmosphere.
- Environmental Impact: Excess nitrogen turns into nitrous oxide, which is 273 times more potent as a greenhouse gas than carbon dioxide.

Current Fertilizer Policy in India:

- Urea Subsidy: The government fixes the Maximum Retail Price (MRP) of urea at a highly subsidized rate (currently less than $70/tonne), paying the difference between production cost and MRP as a subsidy to manufacturers.
- Nutrient Based Subsidy (NBS): Applied to Phosphatic (P) and Potassic (K) fertilizers, where a fixed amount of subsidy is decided based on the nutrient content, while MRPs are semi-deregulated.

- Neem Coating: 100% of urea is neem-coated to prevent its diversion for industrial use and to slow down nitrogen release into the soil.
- DBT in Fertilizers: A system where the subsidy is released to companies only after the actual sale to the farmer is verified via Point of Sale (PoS) machines using Aadhaar.

Importance of Fertilizer Policy to Agriculture:

- Ensuring Food Security: A stable supply of nutrients is essential to feed India's population; natural farming alone cannot meet current demand.
- Affordability for Farmers: Subsidies keep input costs low, protecting farmers from global price shocks in gas and minerals.
- Soil Health Management: Proper policy encourages the right N-P-K ratio, preventing soil degradation caused by nitrogen overuse.
- Crop Productivity: Timely access to fertilizers is the primary driver of high-yield varieties in the Green Revolution framework.
- Climate Mitigation: Efficient policies promote products like liquid urea, which has a 90% NUE via fertigation, reducing the carbon footprint of farming.

Challenges Associated with Fertilizer Policy:

- Massive Arbitrage: The gap between the domestic price ($70/tonne) and global price ($795/tonne) encourages smuggling and industrial diversion.
- Fiscal Burden: Rising global LNG and DAP prices lead to an unsustainably high subsidy bill for the Union Budget.
- Nutrient Imbalance: Cheap urea leads farmers to use four bags instead of the recommended two, causing severe soil and groundwater pollution.
- Import Vulnerability: Geopolitical tensions in the Strait of Hormuz or the Russia-Ukraine region can suddenly choke India's supply lines.
- Exclusion of Tenants: Existing schemes often fail to reach actual cultivators (tenants) because they lack formal land records.

Way Ahead:

- Quantitative Rationing: Implement a 10-15% cut in urea supplies to states, requiring them to allocate restricted amounts based on land records and crop types.
- Direct Cash Transfer: Club PM-KISAN funds with fertilizer subsidies to give a per-acre direct payment to both landowners and tenants.
- Price Liberalization: Free up the market prices of fertilizers once direct cash transfers are established to ensure efficient usage.
- Promote Alternatives: Incentivize Triple Super Phosphate (TSP) over DAP to save 18% nitrogen content and reduce the urea subsidy bill.
- Focus on Fertigation: Shift subsidies toward liquid urea and drip irrigation systems that offer double the efficiency of traditional granular urea.

Conclusion:

India's current fertilizer regime is an irrational system that fosters inefficiency, environmental damage, and fiscal instability in the face of global conflict. By transitioning to a direct cash transfer model and adopting quantitative rationing, the government can protect both the farmer and the exchequer. Securing the fertilizer value chain is not just an agricultural goal but a critical pillar of national sovereignty in an increasingly uncertain world.

Delhi–Dehradun Economic Corridor

Context:

The National Highways Authority of India, in collaboration with Wildlife Institute of India, has released the report Landscapes Reconnected, documenting active wildlife use of underpasses along the Delhi–Dehradun Economic Corridor.

About Delhi–Dehradun Economic Corridor:

What It Is?

- The Delhi–Dehradun Economic Corridor is a major greenfield highway and economic connectivity project designed to improve travel efficiency between Delhi and Dehradun.
- It is also being recognized as an eco-sensitive infrastructure model, integrating wildlife conservation features within highway development.

Located In:

- Stretch: Between Ganeshpur and Asharodi
- Region: Shivalik landscape

Aim:

- To improve connectivity and reduce travel time between Delhi and Dehradun.
- To ensure safe wildlife movement and ecological connectivity.
- To minimize human-wildlife conflict and habitat fragmentation.

Key Features:

- The corridor includes 97 km of wildlife underpasses across a 20-km eco-sensitive stretch, enabling safe animal crossings.
- It features one of Asia's largest wildlife elevated corridors, built at an average height of 6–7 metres for large mammals such as elephants.
- The project uses camera traps, acoustic recorders, and sound studies to improve corridor effectiveness and guide future noise barriers.

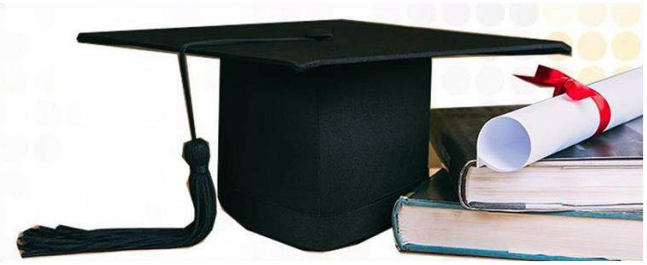
Significance:

- It demonstrates that economic growth and biodiversity protection can coexist through scientific, data-driven planning.
- The corridor supports long-term ecological balance by allowing species movement and reducing roadkill and habitat isolation.

Making Scholarships Integral to India's Academic Culture

Context:

The Gross Enrolment Ratio (GER) in Indian higher education remains low at 29.5%, leading experts to advocate for a shift in scholarships from peripheral financial plug-ins to an integral part of academic culture.



About Making Scholarships Integral to India's Academic Culture:

What it is?

- Scholarships are currently treated as marginalized financial aid rather than core academic pathways. Integrating them into India's academic culture means reimagining them as multi-year commitments that provide not just tuition, but also mentorship, leadership development, and a sense of academic community.

Education Data and Statistics:

- National GER: India's Gross Enrolment Ratio in higher education stands at 29.5% for the year 2022-23.
- Institutional Growth: The number of higher educational institutions grew from 51,534 in 2014-15 to over 70,000 as per the 2025-26 Economic Survey.
- Government Support: The Central Sector Scheme of Scholarship provides up to 82,000 scholarships annually across undergraduate and professional courses.
- Private Benchmarks: Institutions like Ashoka University provide financial support to nearly 50% of their students, with 20% receiving full 100% scholarships.

Importance of Scholarships in India:

- Bridging the GER Gap: They are critical to moving the enrolment ratio toward 50% by supporting students held back by cost and distance.
- Molding Life Beyond Finance: Beyond material aid, they offer leadership development, career guidance, and exposure to a wider world of interests.
- Ensuring Quality and Diversity: Confident institutions use scholarships to ensure that merit and diversity strengthen, rather than dilute, academic life.
- Strengthening National Skills: Linking scholarships to vocational areas like AI, healthcare, or advanced manufacturing fills regional labor gaps.
- Discovery of Talent: They act as a primary instrument for discovering and developing distributed talent that lacks formal opportunity.

Associated Scholarship Schemes:

- Central Sector Scheme of Scholarship: Provides up to 82,000 scholarships each year for undergraduate and professional courses.
- National Scholarship Portal: Functions as a common window for various State and Ministerial scholarship programmes.
- Corporate and Trust Programmes: Merit-cum-means programmes created by non-profits and foundations in fields like engineering and management.

Challenges Associated with Scholarships:

- Peripheral Treatment: Most scholarships are currently seen as narrow financial plug-ins rather than long-term academic pathways.
- Limited Numbers: Existing programmes, while meaningful, are still too limited in scale to impact the national GER significantly.
- Region-Specific Density: There is a mismatch between institutional density and underserved districts that need targeted aid.
- Economic Risk: For many families in tier-2 and tier-3 towns, the cost and risk of participation remains the primary barrier to enrolment.
- Fragmented Information: While the National Scholarship Portal exists, navigating various Ministerial and State schemes remains complex for students.

Way Ahead:

- Reimagine Representation: Design scholarships as multi-year commitments to give students stability to plan their entire academic lives.
- Targeted Design: Implement region-based scholarships focused on underserved states and districts with low participation.
- Incentivize Philanthropy: Provide tax benefits for endowments and matching funds to attract long-term private capital into scholarship funds.
- Need-Sensitive Admission: Adopt admission processes that evaluate financial aid independently of academic admission decisions.
- Performance Frameworks: Create regulatory frameworks that reward institutions demonstrating strong outcomes in merit and need-based support.

Conclusion:

Scholarships sit at the vital intersection of equity, quality, and national growth, determining who ultimately enters and graduates from higher education. Shifting them from the margins to the center of India's strategy will ensure that capable students are inspired to look ahead, regardless of their background. Ultimately, this ecosystem will define how India discovers and develops its vast pool of talent for a more mobile and capable future.

First-ever Annual Survey of Incorporated Services Sector Enterprises (ASISSE)

Context:

The National Statistical Office (NSO) launched the first-ever Annual Survey of Incorporated Services Sector Enterprises (ASISSE) for the reference period 2024-25.

About First-ever Annual Survey of Incorporated Services Sector Enterprises (ASISSE):

What It Is?

- ASISSE is a newly established annual statistical exercise designed to collect data from the incorporated (registered) services sector in India. It covers companies registered under the Companies Act (1956/2013) and Limited Liability Partnerships (LLPs) to provide a clear picture of the formal services economy.

Organisation Involved:

- National Statistical Office (NSO): The primary wing responsible for conducting the survey.

Aim:

- To develop a comprehensive and granular database of the incorporated services sector.
- To bridge the data gap in the non-agricultural economy, complementing existing surveys like the Annual Survey of Industries (ASI) for manufacturing and ASUSE for the unincorporated sector.
- To provide policymakers with reliable operational and economic indicators for better planning and analysis.

Key Features:

- Coverage: Includes trade, transport, hospitality, IT, education, health, and other professional services across all States and Union Territories.
- Sampling Frame: The survey utilizes the GSTN (Goods and Services Tax Network) database as the frame to identify and sample enterprises.
- Sample Size: Approximately 21 lakh enterprises will be surveyed in this inaugural round.
- Digital Collection: Data is collected through a secure, web-based portal to ensure accuracy and speed.
- Legal Framework: Conducted under the Collection of Statistics Act, 2008, and updated provisions of the Jan Vishwas Act, 2023.

Significance:

- The services sector contributes over 50% of India's GDP; ASISSE provides the first formal mechanism to track its incorporated segment annually.
- By using the GSTN frame, the survey tracks the health of the formalised service economy.
- It will offer critical data on employment generation within the most dynamic component of the Indian economy.

Jan Vishwas (Amendment of Provisions) Bill, 2026

Context:

The Jan Vishwas (Amendment of Provisions) Bill, 2026, has been passed by both the Lok Sabha and Rajya Sabha to decriminalize minor offences and promote a trust-based governance framework.

About Jan Vishwas (Amendment of Provisions) Bill, 2026:

What It Is?

- The Jan Vishwas Bill, 2026, is a comprehensive piece of legislation that rationalizes more than 1,000 offences by removing or decriminalizing minor legal violations. It replaces an earlier 2025 version of the Bill after a Select Committee, chaired by Shri Tejasvi Surya, recommended expanding its scope to include a total of 80 Central Acts.

Aim:

- To foster a regulatory environment based on trust between the government, citizens, and businesses.
- To reduce the legal and compliance burden on individuals and commercial entities by ensuring proportionate regulation.
- To create a more conducive ecosystem for business operations by removing the fear of imprisonment for minor technical lapses.

Key Features:

- Decriminalization and Civil Penalties: The Bill converts several criminal offences into civil ones. For example, contraventions under the Drugs and Cosmetics Act, 1940, previously punishable by imprisonment, now carry a civil penalty of₹1 lakh or three times the value of confiscated goods.
- Removal of Imprisonment: For various offences under the Electricity Act, 2003, and the Indian Succession Act, 1925, the Bill removes jail terms entirely, replacing them with fines.
- Omission of Minor Offences: Several redundant or minor offences have been omitted entirely, such as giving a false fire alarm under the Delhi Police Act or failing to report births and deaths under the Delhi Municipal Corporation Act.

Tiered Warnings and Notices:

- Advisories and Warnings: Under the Apprentices Act, 1961, a first contravention results in an advisory and a second in a warning before any civil penalty is applied.
- Improvement Notices: Introduced under the Legal Metrology Act, 2009, these notices allow businesses a specified time to rectify non-compliance before facing penalties.
- Automatic Revision of Fines: The Bill provides that fines and penalties will increase by 10% of the minimum amount every three years, unless a specific Act already has its own revision method.
- Adjudication Mechanism: It provides for the appointment of adjudicating officers to conduct inquiries and appellate authorities to hear appeals against penalty decisions.
- Municipal Tax Reforms: Specifically for New Delhi, the Bill establishes a Municipal Valuation Committee to determine property tax for buildings and vacant lands and removes the advertisement tax.

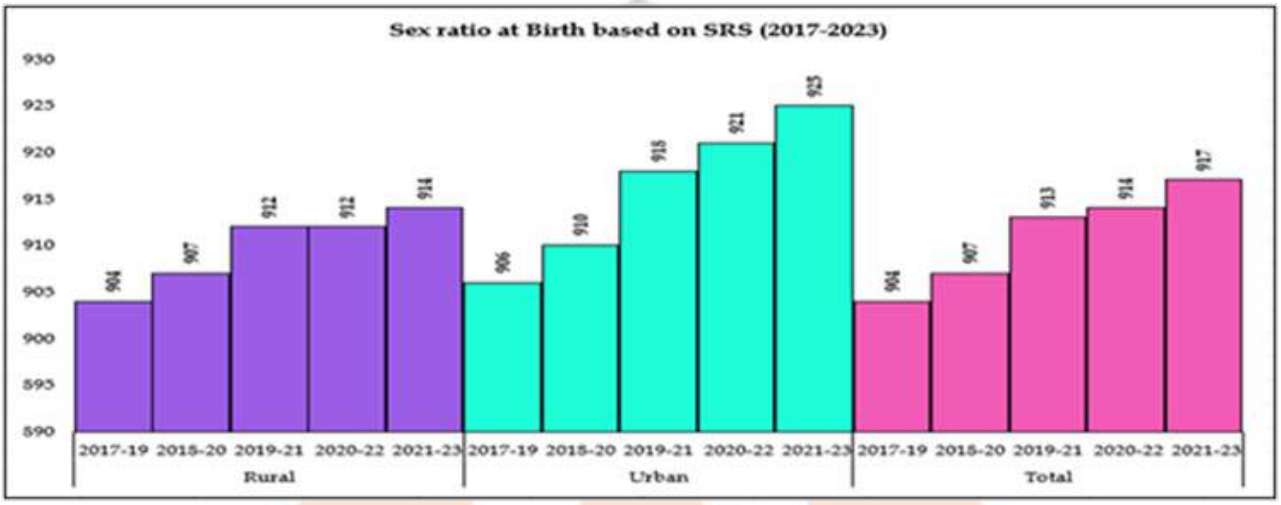
Significance:

- It updates colonial-era and outdated laws to reflect modern administrative needs and proportionate justice.
- By decriminalizing 717 provisions, the Bill removes the criminal stigma from minor business errors, encouraging entrepreneurship.

Women and Men in India 2025 Report

Context:

The Ministry of Statistics and Programme Implementation (MoSPI) released the 27th edition of its report, Women and Men in India 2025, in Bhubaneswar.



AboutWomen and Men in India 2025 Report:

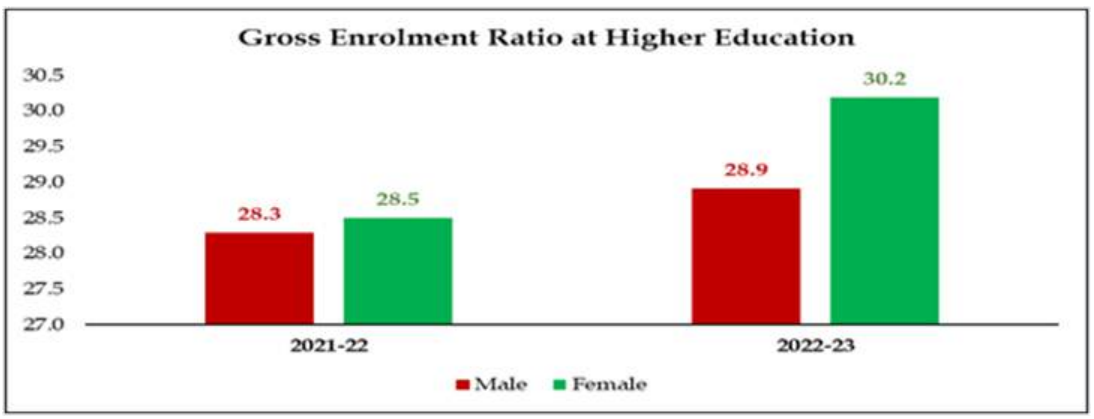
What it is?

- This annual publication, institutionalized in 1995, serves as a vital statistical compendium on the socio-economic status of both genders across India. It draws from various ministries and administrative data to cover domains such as population, health, education, economic participation, and violence against women.

Socio-economic status

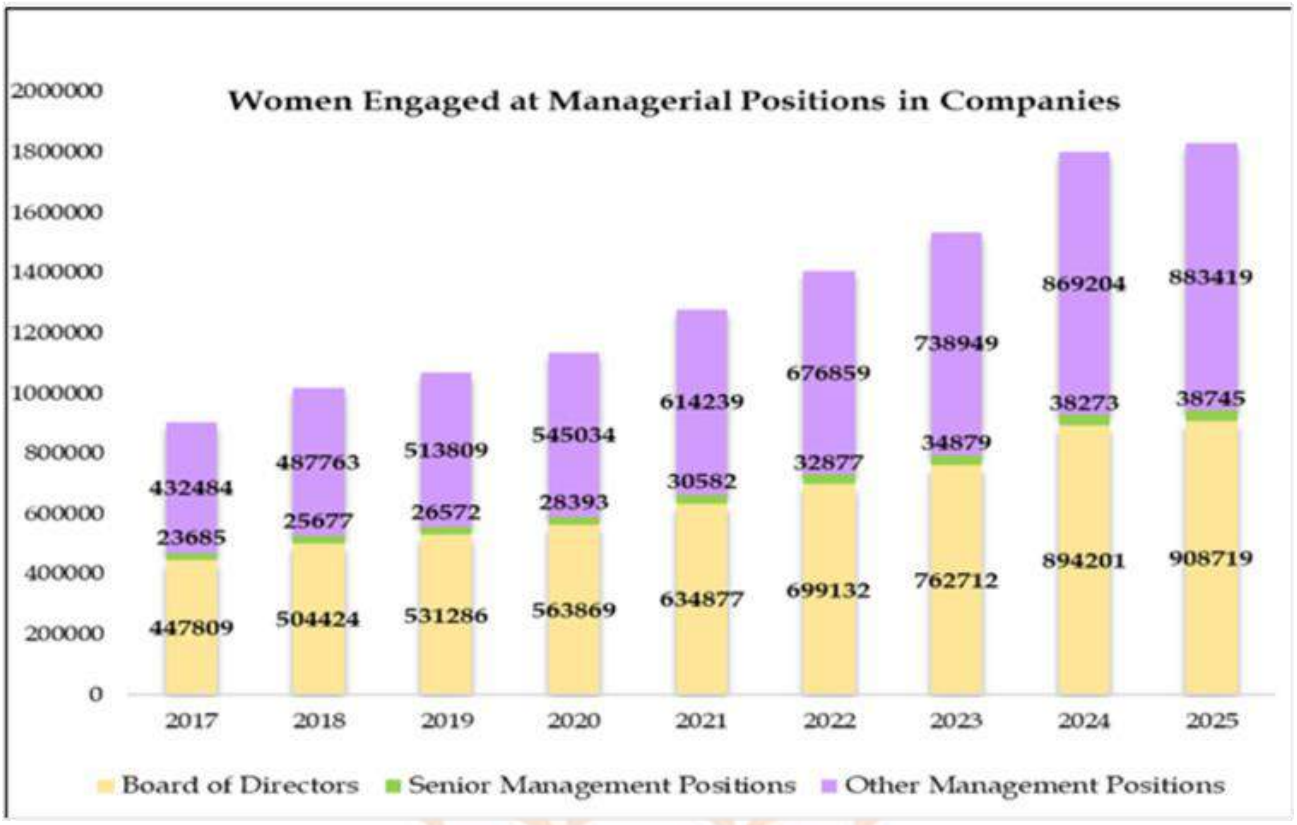
Key Data and Statistics:

- Sex Ratio at Birth: The ratio increased from 904 (2017-19) to 917 (2021-23), signaling improved survival rates for females.
- Infant Mortality: Both female and male infant mortality rates saw a sustained decline between 2008 and 2023.
- School Parity: India has achieved gender parity across all levels of school education, from Primary to Higher Secondary.
- Higher Education Enrolment: Gross Enrolment Ratio (GER) for females rose from 28.5 to 30.2 between 2021-22 and 2022-23.



Gross Enrolment Ratio

- Labour Force Participation: The LFPR for those aged 15+ has increased for both genders, with rural females showing the highest growth.
- RuralFemale LFPR: Participation for rural women rose significantly from 37.5% to 45.9% between 2022 and 2025.
- Managerial Positions: Between 2017 and 2025, women in managerial roles grew by 102.54%, outpacing the 73.80% increase for men.



Managerial Positions

- Fertility Trends: The Adolescent (15-19) Fertility Rate has shown a sustained downward trend since 2021.

Rise of Equality:

- Educational Parity: Gender parity is now consistent across all school stages, ensuring girls have equal foundational opportunities.
- E.g.: GER in Higher Education for females (30.2) is now higher than for males (28.9) as of 2022-23.
- Economic Breakthrough: Women are entering the professional workforce and leadership roles at a much faster rate than in previous decades.
- E.g.: The 102.54% spike in women managers highlights a major shift in corporate and administrative leadership.
- Health Outcomes: A steady decline in Maternal Mortality Ratio (MMR) and Infant Mortality indicates better healthcare access for women.
- E.g.: MMR reduced from 254 (2004-06) to 88 (2021-23), meeting significant development targets.
- Marital Age Shift: The mean age at marriage for women has shown a steady increase from 2021 onwards.
- E.g.: The mean age at marriage reached 24.3 in 2023, allowing for longer educational and professional development.
- Decision-Making: Increased participation in the Labour Force suggests women are gaining more financial autonomy and household influence.
- E.g.: Rural female LFPR jumped nearly 8.4 percentage points in just three years.

Persistent Inequalities:

- Health Screening Gaps: Despite progress, very few women undergo critical screenings for cervical or breast cancer.

- E.g.: Only 1.7% of women have ever undergone a cervical cancer screening test as of the NFHS-5 cycle.
- Literacy Gaps: A significant 14.4 percentage point literacy gap remains between men and women aged 7 and above.
- E.g.: While youth literacy is high, older cohorts still reflect historical disadvantages in female education.
- Unpaid Care Work: Women continue to spend disproportionately more time on unpaid domestic activities compared to men.
- E.g.: Time Use Survey data shows a stark divide in paid vs. unpaid minutes spent daily.
- Digital Fraud Risks: Women often lack the necessary digital literacy to report or prevent cybercrimes effectively.
- E.g.: Reports show women are frequently targeted by cybercrime, yet complaint rates remain lower than those for men.

Way Forward:

- Strengthen Health Screenings: Prioritize awareness campaigns for cervical and breast cancer screenings in rural areas to bridge the urban-rural health gap.
- Targeted LFPR Support: Sustain the growth in female labour participation by providing skill-development programs tailored for rural women.
- Close theLiteracy Gap: Focus adult literacy programs on older female cohorts to reduce the overall 14.4% gender disparity.
- Evidence-Based Interventions: Use the 50 key indicators and metadata provided in this report to design gender-responsive local policies.
- Enhanced Reporting: Improve the accessibility of help desks and digital reporting portals to ensure women can safely report cyber and physical crimes.

Conclusion:

The 2025 report demonstrates that India is making historic strides in female education and leadership, with women's growth in managerial roles now doubling that of men. However, the 14.4% literacy gap and low health screening rates remind us that structural hurdles still remain. True gender parity will require a sustained commitment to translating these positive data trends into lived realities for every woman.

Tathagata Buddha

Context:

The Sacred Holy Piprahwa Relics of Tathagata Buddha have arrived in Leh, Ladakh, for a historic public exposition beginning on Buddha Purnima 2026.

Tathagata Buddha

AboutTathagata Buddha:

What it is?

- The term Tathagata is a profound title used in Buddhist texts to refer to a Buddha, particularly Shakyamuni Buddha. It translates to one who has thus come or one who has thus gone, signifying a being who has attained full enlightenment and transcended the cycle of birth and death.

The Five Tathagatas (Wisdom Buddhas):

- In Mahayana and Vajrayana traditions, the Five Tathagatas represent different facets of enlightened wisdom and compassion, forming a mandala of spiritual balance.

Buddha	Wisdom / Symbol	Color	Direction	Mudra (Gesture)
Vairocana	Wisdom of the Dharmadhatu (Ultimate Reality)	White	Center	Dharmachakra (Wheel of Dharma)

Akshobhya	Mirror-like Wisdom (Unchanging clarity)	Blue	East	Bhumisparsha (Earth-Touching)
Ratnasambhava	Wisdom of Equality (Oneness of beings)	Yellow	South	Varada (Gesture of Giving)
Amitabha	Discriminating Wisdom (Compassion)	Red	West	Dhyana (Meditation)
Amoghasiddhi	All-Accomplishing Wisdom (Fearless action)	Green	North	Abhaya (Fearlessness)

Key Features of the Tathagatas:

- Transmutation of Negative Emotions: Each Buddha transforms a specific human failing into wisdom; for example, Akshobhya changes anger into reflexive insight, while Amitabha replaces possessive desire with non-possessive love.
- Mandala Positioning: Vairocana sits at the center as the hub or source from which the other four Buddhas emanate, representing the unity of truth.
- Symbolic Tools: Certain Tathagatas are associated with specific objects, such as Akshobhya's Vajra (diamond-like will) or Ratnasambhava's Jewel (richness of wisdom).
- Directional Significance: Amitabha is placed in the West, associated with the setting sun and the Pure Land of Sukhavati.

Significance:

- Practitioners use the Five Tathagatas as a framework for meditation, aiming to integrate their diverse qualities of wisdom and compassion into daily life.
- The Piprahwa relics of the Tathagata serve as a global bridge of devotion, having been exhibited in countries like Russia, Singapore, Thailand, and Sri Lanka to draw collective reverence.

Asia's First UNESCO Chair on Gender Inclusion

Context:

India has successfully launched Asia's first UNESCO Chair on Gender Inclusion and Skill Development at Symbiosis Skills and Professional University (SSPU) in Pune.

Asia's First UNESCO Chair on Gender Inclusion

AboutAsia's First UNESCO Chair on Gender Inclusion:

What it is?

- The UNESCO Chair on Gender Inclusion and Skill Development is a prestigious international initiative aimed at bridging the gender gap in technical and vocational education.

Launched In: April 24, 2026, in Pune, Maharashtra.

Organisations Involved:

- Ministry of Skill Development & Entrepreneurship (MSDE).
- UNESCO (United Nations Educational, Scientific and Cultural Organization).
- Symbiosis Skills and Professional University (SSPU), Pune.
- Aim: To ensure women are at the forefront of emerging economic sectors and to promote equity in skilling that drives both social transformation and economic progress.

Key Features:

- Sectoral Focus: Prioritizes training for women in sunrise sectors and new-age technologies, including semiconductors, advanced manufacturing, AI, robotics, and defense technology.

- Global Collaboration: The launch was part of the Women Leading the Future of Work conference, involving experts from the International Labour Organization (ILO), UNESCO-UNEVOC (Germany), and the UNESCO Global Skills Academy (Paris).
- Inclusive Outreach: Specifically targets women from underserved communities to provide them with industry-aligned skills that lead to real-world employment opportunities.
- Expert Integration: Features a network of over 40 distinguished industry champions and policymakers to align academic skilling with actual industry demand.
- Dual Ministry Support: Supported by both the Ministry of Skill Development and the Ministry of Education to integrate gender-inclusive skilling into the broader educational framework.

Significance:

- Positions India as a global leader in inclusive workforce transformation by hosting the first such chair in Asia.
- Acts as a powerful driver for women's financial independence and long-term empowerment by focusing on high-value, future-ready job roles.

Reconstitution of NITI Aayog

Context:

The Government of India has reconstituted NITI Aayog, appointing former Chief Economic Advisor Ashok Kumar Lahiri as the new Vice Chairperson.

Reconstitution of NITI Aayog

AboutReconstitution of NITI Aayog:

What It Is?

- NITI Aayog (National Institution for Transforming India) is the premier public policy think tank of the Government of India. It serves as a nodal agency tasked with catalyzing economic development and fostering cooperative federalism.

Established In & History

- Establishment: It was formed on January 1, 2015, through a Cabinet resolution.
- Predecessor: It replaced the Planning Commission, which had operated for 65 years.
- Rationale: The Planning Commission was deemed redundant in a modern diversified economy; NITI Aayog was created to move away from the one size fits all, top-down model toward a bottom-up approach.

Aim:

- To involve State Governments in the economic policy-making process.
- To provide a dynamic platform for long-term strategic thinking and innovation across sectors.
- To ensure that interests of national security are incorporated into economic strategy and policy.

Key Functions:

- Policy Design: Formulating strategic and long-term policy and program frameworks.
- Knowledge Hub: Serving as a resource center and repository of best practices for state and central governments.
- Monitoring and Evaluation: Actively monitoring and evaluating the implementation of programs and initiatives.
- Reform Driver: Pushing for cross-sector reforms and enhancing the 'Ease of Living' for citizens.

Governing Structure:

- Chairperson: The Prime Minister of India.
- Vice Chairperson: Nominated by the Prime Minister; holds the rank of a Cabinet Minister.
- Governing Council: Comprises the Chief Ministers of all States and Union Territories with Legislatures (Delhi, Puducherry, and J&K) and Lieutenant Governors of other UTs.

- Full-Time Members: Experts in various fields appointed by the government.
- Ex-Officio Members: A maximum of four members from the Union Council of Ministers.
- CEO: Appointed by the Prime Minister for a fixed tenure.

Panchayati Raj Institutions (PRIs) in India

Context:

The Ministry of Panchayati Raj celebrated National Panchayati Raj Day, marking the 33rd anniversary of the 73rd Constitutional Amendment Act.

Panchayati Raj Institutions (PRIs) in India

About Panchayati Raj Institutions (PRIs) in India:

What it is?

- The Panchayati Raj Institution (PRI) is a system of rural local self-government in India, established to manage local affairs through elected representatives. It was constitutionally mandated to ensure functional and financial autonomy at the grassroots level, acting as the foundation of India's participatory democracy.

Key Data on PRIs:

- Constitutional Milestone: This year marks 33 years since the 73rd Constitutional Amendment Act gave legal recognition to PRIs.
- Performance Measurement: The government utilizes the Panchayat Advancement Index (PAI) to evaluate and report on the progress of these institutions.

Origin of Panchayati Raj in India

- Ancient Roots: The concept of village councils or Panchayats has existed in India since ancient times as a traditional form of local dispute resolution and governance.
- BalwantRai Mehta Committee (1957): This committee recommended a three-tier Panchayati Raj system—Gram Panchayat (village), Panchayat Samiti (block), and Zila Parishad (district)—to ensure democratic decentralization.
- Inauguration in Rajasthan (1959): Following the committee's recommendations, Rajasthan became the first state to adopt the system, inaugurated by Jawaharlal Nehru in Nagaur.
- LM Singhvi Committee (1986): This committee was instrumental in recommending that Panchayati Raj institutions receive constitutional recognition to protect them from political interference.
- 73rd Constitutional Amendment Act (1992): Enacted on April 24, 1993, this landmark legislation added Part IX to the Constitution and formalized the three-tier system across India.

Success of Panchayati Raj:

- Grassroots Democracy: It has successfully transitioned India from a representative democracy to a participatory one by involving millions of rural citizens in decision-making.
- Political Empowerment of Women: The mandatory reservation of one-third of seats for women has brought over a million women into active political leadership roles.
- Inclusion of Marginalized Groups: Reservations for Scheduled Castes (SCs) and Scheduled Tribes (STs) have ensured that leadership in local governance reflects India's social diversity.
- Localized Development: PRIs have become the primary vehicles for implementing central and state welfare schemes, improving the delivery of services like water, sanitation, and primary education.

Challenges Associated with PRIs:

- The 3Fs Crisis: Many Panchayats continue to struggle with a lack of adequate Funds, limited devolved Functions, and a shortage of trained Functionaries.
- Infrastructure Gaps: A significant number of Gram Panchayats still lack dedicated office buildings, reliable internet connectivity, and basic computer infrastructure.

- Proxy Leadership: The phenomenon of Panchayat Patis (husbands of elected women representatives exercising actual power) often undermines the intent of gender reservation.
- Interference byState Governments: Frequent delays in holding local body elections and the top-down approach of state bureaucracies often stifle local autonomy.
- Audit and Accountability: While tools like the PAI-2.0 exist, many local bodies face difficulties in maintaining transparent financial records and conducting regular social audits.

Way Ahead:

- Fiscal Decentralization: States must ensure the timely devolution of funds based on State Finance Commission recommendations to make Panchayats financially self-reliant.
- Digital Transformation: Expanding high-speed broadband to every Gram Panchayat is essential to operationalize e-governance and direct benefit transfers.
- Capacity Building: Continuous training programs for elected representatives are needed to improve their technical knowledge of planning, budgeting, and climate-resilient infrastructure.
- Strengthening Gram Sabhas: Periodic and meaningful Gram Sabha meetings must be mandated to ensure that development priorities are set by the community.
- Incentivizing Performance: Using indices like the PAI-2.0 to reward high-performing Panchayats can create healthy competition and accelerate progress toward Viksit Bharat.

Conclusion:

The Panchayati Raj system stands as the backbone of India's rural transformation, turning the vision of Gram Swaraj into a constitutional reality. While structural challenges regarding funding and autonomy remain, the continued focus on advancement indices and heritage preservation reflects a modern, multi-dimensional approach to local governance.

National Institute for Pre-Clinical Research (NIPCR)

Context:

The Indian Council of Medical Research (ICMR) has officially upgraded and renamed its Hyderabad-based animal resource facility to the National Institute for Pre-Clinical Research (NIPCR).

National Institute for Pre-Clinical Research (NIPCR)

About National Institute for Pre-Clinical Research (NIPCR):

What it is?

- The National Institute for Pre-Clinical Research (NIPCR) is a flagship permanent institute under the aegis of the Indian Council of Medical Research (ICMR). It serves as a critical bridge between laboratory discovery and human clinical trials, focusing on the validation of biomedical innovations.
- Establishment: The institute was approved by the Cabinet Committee on November 18, 2015, and officially created as a permanent ICMR institute on January 1, 2016.
- Location: It is situated on 100 acres of land in Genome Valley, Hyderabad, a prominent biotech hub.
- Aim: Its primary objective is to fortify India's self-reliance in drug discovery and medical technology by providing a world-class platform for pre-clinical testing and translational research.

Key Functions:

- Comprehensive Research Hub: Transitions beyond a specialized animal resource center to a hub for comprehensive pre-clinical and translational science.
- Drug andVaccine Testing: Provides infrastructure for testing drugs, vaccines, biologicals, medical devices, and Cell and Gene Therapies (CGT).
- Support for Innovation: Offers infrastructure and scientific expertise to academia, industry, and startups for the validation of biomedical products.
- Quality Assurance: Conducts essential experiments required to ensure the quality, safety, and efficacy of pharmaceutical products and vaccines.
- Resource Facility: Addresses the growing demand from research institutes and biotech industries for a state-of-the-art pre-clinical resource facility with international accreditations.

About New Approach Methodologies (NAMs):

What It Is?

- NAMs are a suite of cutting-edge research technologies that include Microphysiological Systems (MPS), cell-based assays, and organoid models. They are integrated into research to provide high-fidelity data that closely mirrors human biology.

How It Works?

NAMs function by utilizing sophisticated bio-engineering and molecular biology techniques:

- Microphysiological Systems (MPS): Often referred to as Organs-on-Chips, these systems mimic the biochemical, genetic, and physical environments of human organs.
- Cell and Organoid-Based Assays: These use 3D clusters of cells (organoids) derived from human stem cells that replicate the structure and function of specific organs.
- Alternative Models: These methods reduce reliance on traditional animal testing by providing data that is often more directly applicable to human physiology.

Applications:

- Drug Toxicity Screening: Identifying potential side effects in human-like tissues before clinical trials begin.
- Disease Modeling: Creating mini-organs to study the progression of specific diseases and the impact of gene therapies.
- High-Throughput Testing: Allowing researchers to test thousands of chemical compounds rapidly in cellular environments.
- Efficacy Validation: Complementing in vivo animal models to provide a more comprehensive data set for Made in India healthcare solutions

Prime Minister Internship Scheme (PMIS)

Context:

The Ministry of Corporate Affairs (MCA) has expanded the Prime Minister Internship Scheme (PMIS) to allow final-year graduate and postgraduate students to apply for paid internships.

About Prime Minister Internship Scheme (PMIS):

What it is?

- The PMIS is a flagship phygital initiative of the Government of India designed to provide structured, paid internship opportunities to the youth in India's top 500 companies. It acts as a bridge between formal education and the professional corporate world, offering hands-on experience across diverse sectors.
- Launched In: The pilot phase of the scheme was launched in October 2024, following the announcement in the Union Budget 2024-25.

Nodal Ministry: Ministry of Corporate Affairs (MCA).

Aim:

- To develop critical workplace competencies like problem-solving, teamwork, and adaptability.
- To embed experiential learning into the academic journey as envisioned in the National Education Policy.
- To provide real-world exposure to business environments and corporate processes to ensure students are job-ready upon graduation.

Key Features:

- Financial Assistance: Interns receive a monthly stipend of ₹5,000 from the government and ₹500 from the company (totaling ₹5,500 or more; current pilot highlights indicate a minimum assistance of ₹9,000 per month in some contexts).
- Age Criteria: Open to youth between the ages of 18 and 25 years.
- Top Companies: More than 300 companies are currently participating in the pilot phase, posting roles on an ongoing basis.
- Duration: The scheme typically provides for a 12-month internship period to ensure deep industry immersion.
- Insurance Cover: Interns are provided with insurance coverage under the Pradhan Mantri Jeevan Jyoti Bima Yojana and Pradhan Mantri Suraksha Bima Yojana.

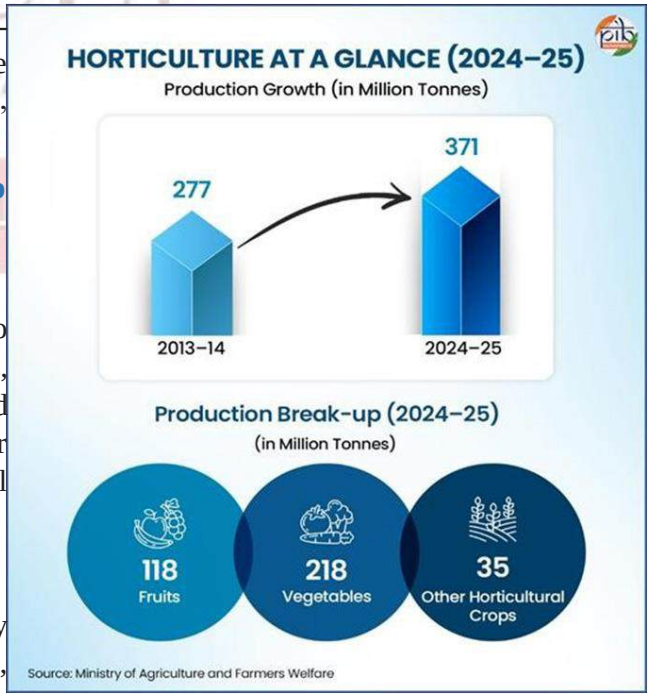
New Rules (2026 Expansion)

- Expanded Eligibility: Participation is no longer restricted to those who have already completed their degrees; final-year undergraduate and postgraduate students are now eligible.
- Mandatory NOC: Students must submit a No Objection Certificate (NOC) from their respective educational institutions.
- Academic Assurance: The NOC must explicitly state that the internship will not interfere with the student's academic requirements or attendance.
- Authorized Signatories: The NOC can be signed by the Head of Department (HoD), Dean, Principal, or Training & Placement Officer.
- Pilot Phase Integration: These changes are implemented starting with the third round of the pilot phase, accessible via the official portal.

Accelerating India's High-Value Crop Diversification

Context:

The Union Budget 2026-27 has introduced a crop-specific, regionally differentiated strategy to accelerate the diversification into high-value crops across India's coastal, North Eastern, and Himalayan regions.



About Accelerating India's High-Value Crop Diversification:

What are High-Value Crops?

- High-value crops (HVCs) primarily refer to horticultural produce such as fruits, vegetables, flowers, spices, medicinal, and aromatic plants. They are termed high value because they generate significantly higher net returns per unit of land compared to traditional staple crops like cereals (wheat/rice) and pulses.

Data and Statistics on High-Value Crops

- Coconut Leadership: India ranks second globally in coconut production (22.44% of world total), supporting the livelihoods of approximately 30 million people.

- Export Strength: In 2024-25, cashew exports reached USD 369.17 million, while cocoa exports stood at USD 295.58 million.
- Horticulture Output: Total horticultural production grew to 370.74 million tonnes in 2024-25, far outstripping previous decades.
- Agarwood Dominance: India hosts nearly 150 million agarwood trees, with 90% concentrated in the North Eastern states, particularly Tripura and Assam.

Horticulture as a Driver of Agricultural Growth

- Economic Nucleus: Horticulture accounts for approximately 37% of the Gross Value Output (GVO) within the agricultural crops sub-sector.
- Global Standing: India is the world's largest producer of onions and shallots (22.42% of global share) and ranks second in vegetables, fruits, and potatoes.
- Productivity Growth: Over the last decade, the sector has grown at 4.45%, the highest rate compared to traditional agriculture.
- Nutritional Security: Beyond income, HVCs provide essential vitamins and minerals, fuelling the agro-processing industry and improving national nutrition.
- Employment Engine: These crops are labour-intensive, creating significant local employment opportunities in rural and tribal areas.

Regionally Anchored Strategies:

- Coastal Regions (Coconut, Cashew, Cocoa, Sandalwood): Focused on replacing aging trees with high-yielding varieties and promoting Indian Cashew as a premium brand.
- North Eastern Region (Agarwood): Leveraging the Oud market with a potential ₹2,000 crore annual turnover in Tripura through sustainable cultivation and CITES-aligned export quotas.
- Himalayan/Hilly Regions (Walnuts, Almonds, Pine Nuts): Promoting high-density cultivation of Chilgoza (Pine nuts) and walnuts to boost tribal incomes in J&K and Himachal Pradesh.
- Intercropping Models: Promoting cocoa as an intercrop in coconut and arecanut plantations to utilize 40-50% sunlight penetration and provide extra income.
- Institutional Support: Utilizing bodies like the Coconut Development Board and Directorate of Cashewnut and Cocoa Development to modernize nurseries and train women in value addition.

Challenges Associated with Diversification:

- High Initial Investment: Transitioning to high-value perennials like sandalwood or agarwood requires significant capital and a long gestation period.
- Perishability: Unlike cereals, horticultural crops have a short shelf-life, necessitating advanced cold-chain infrastructure to prevent post-harvest losses.
- Climate Vulnerability: High-value crops in hilly regions (like walnuts and almonds) are highly sensitive to shifting snowfall patterns and temperature spikes.
- Fragmented Landholdings: Nearly 10 million coconut farmers operate on small plots, making it difficult to achieve economies of scale for processing.
- Quality Standardization: Meeting stringent international phytosanitary standards remains a hurdle for Indian HVCs to penetrate high-end markets in the EU and USA.

Way Ahead:

- Infrastructure Integration: Strengthening Post-Harvest Management (PHM) through the Mission for Integrated Development of Horticulture (MIDH) to reduce losses.
- Brand Building: Positioning Indian Sandalwood and Indian Cocoa as premium global brands by 2030 to command higher international prices.
- Farmer Producer Organizations (FPOs): Facilitating more Coconut and Cashew FPOs to organize fragmented sectors and improve bargaining power.
- Digital Mapping: Expanding the use of geospatial mapping for agarwood and high-density nut orchards to monitor growth and yield accurately.
- Rural Youth Participation: Encouraging rural youth and startups to engage in value-added processing (e.g., virgin coconut oil or fermented cocoa) to create a Gaon to Global value chain.

Conclusion:

India's shift toward high-value crop diversification represents a move from subsistence farming to a commercially viable, export-oriented agricultural economy. By leveraging regional agro-climatic strengths through the Union Budget 2026-27, India is laying the foundation for a Viksit Bharat where farmers are global entrepreneurs.

Vishwa Sutra

Context:

The Vishwa Sutra collection recently made its debut at the 61st Femina Miss India in Bhubaneswar, showcasing 30 distinct Indian handloom weaves reimagined through the cultural lenses of 30 different countries.

About Vishwa Sutra:

What it is?

- Vishwa Sutra is a first-of-its-kind designer collection that positions Indian handlooms within a modern, global design It features 30 state-specific weaves from across India, each artistically paired with design sensibilities, silhouettes, and cultural elements from 30 different nations.

Launched By:

- Office of the Development Commissioner (Handlooms): Under the Ministry of Textiles, Government of India.
- National Institute of Fashion Technology (NIFT): Collaborating as the academic and design partner.

Aim:

- To demonstrate that traditional Indian handlooms are design-forward and relevant to international fashion markets.
- To use textiles as a medium for cross-cultural exchange and storytelling.
- To elevate the demand for handlooms, thereby supporting the millions of weavers and women-led entrepreneurs in the sector.

Key Features:

- 30-30 Framework: 30 weaves representing 30 Indian states were inspired by 30 different countries.

Innovative Pairings: The collection showcases unique combinations such as:

- Odisha Ikat with Greek forms.
- Kanchipuram with Norwegian lines.
- Muga Silk with Egyptian elements.
- Patola with Spanish influences.
- Banarasi with UAE-inspired ensembles.
- Kunbi Weave Spotlight: The 61st Femina Miss India winner, Sadhvi Satish Sail, notably wore the Kunbi weave (symbolizing family and seed), reimagined as a Central European skirt silhouette.
- Platform: Presented by the 30 state winners in the opening round of the Miss India pageant, utilizing a massive media platform to reach a younger, global demographic.

Significance:

- Vocal for Local to Global: Represents the strategic transformation of traditional Indian industries into globally competitive fashion sectors.
- The 5F Vision: Directly implements the Prime Minister's 5F Framework—Farm to Fibre to Factory to Fashion to Foreign.
- By modernizing the design vocabulary, the initiative creates new market opportunities for rural weavers, ensuring their generational skills remain economically viable.

NBA Revised Guidelines on Biological Diversity Act (BDA), 2002

Context:

The National Biodiversity Authority (NBA) has approved a series of policy measures to streamline the utilization of Access and Benefit Sharing (ABS) funds and revised guidelines for Designated Repositories under the Biological Diversity Act, 2002.

About NBA Revised Guidelines on Biological Diversity Act (BDA), 2002:

What it is?

- The revised guidelines represent a strategic overhaul of how the NBA manages financial returns (ABS funds) from the commercial use of India's bio-resources and how it regulates the physical custody of biological specimens in designated repositories.

Aim:

- To create a transparent and equitable formula for distributing ABS funds between institutions, repositories, and local communities.
- To ensure that funds are channeled back into biodiversity conservation and the development of areas from which resources originate, as mandated by Section 27 of the Act.

Key Features of the Revised Framework:

- Standardized Fund Sharing Formula:
- Identifiable Source: When the origin is known, 25–40% of ABS funds go to the repository/institution for conservation and documentation, while the remaining 60–75% is distributed to local communities through State Biodiversity Boards (SBBs).
- Non-Identifiable Source: In cases with limited data, a standard 30% (to institutions) and 70% (to NBA/ SBBs) formula is applied.
- Management of Widely Distributed Resources: For resources accessed through traders that are spread across the country, funds will now be utilized collectively for biodiversity management under Section 27 if specific origins cannot be ascertained.
- Digital Repositories: The guidelines promote the digitisation of voucher specimens. This allows for remote identification and verification without the risks associated with the physical transfer of sensitive biological materials.
- Provenance and Documentation: Designated repositories must now maintain robust records of provenance (the history of ownership and origin) and adhere to strict Standard Operating Procedures (SOPs) for the custody of samples.
- Flexibility: The framework allows for the adjustment of sharing percentages based on the level of value addition (scientific research or processing) performed by an institution on the resource.

Significance:

- By providing a clear percentage for local communities, the NBA prevents institutions from monopolizing ABS funds, ensuring fair and equitable sharing.
- The focus on provenance and documentation reduces the risk of biopiracy and ensures that every biological resource used commercially is legally accounted for.

Integrated Dashboard for Infrastructure Performance Monitoring

Context:

The Ministry of Statistics and Programme Implementation (MoSPI) has launched a revamped Integrated Performance Monitoring Dashboard to track real-time progress across 11 key infrastructure sectors.

At present, 116 indicators are available on the performance monitoring dashboard.

S. No	Infrastructure sub-sector	Dashboard Indicators
1	Civil Aviation	29
2	Roads	9
3	Power	13
4	Ports, Shipping & Waterways	49
5	Telecommunications	7
6	Railways	9
Total		**116**

About Integrated Dashboard for Infrastructure Performance Monitoring:

What it is?

- It is a centralized digital platform designed to monitor the health and progress of India's infrastructure sub-sectors in real-time. Replacing the older OCMS-2006 system, the dashboard utilizes the PAIMANA (Project Assessment, Infrastructure Monitoring & Analytics for Nation-building) framework to provide a comprehensive view of sectoral performance through 116 specific indicators.
- Organizations Involved: Ministry of Statistics and Programme Implementation (MoSPI)

Aim:

- To strengthen data-driven governance and enable evidence-based policymaking.
- To transition from measuring simple sectoral outputs to assessing a multi-dimensional performance spectrum.
- To enhance transparency, efficiency, and accountability in the execution of Central Sector Infrastructure Projects.

Key Features of the Revamped Framework:

- MoSPI has expanded the monitoring scope to cover 11 key sectors with a focus on five critical dimensions of evaluation:

Multi-Dimensional Metrics:

- Access: Measures the geographical and demographic availability of infrastructure.
- Quality: Assesses the reliability and usefulness of services provided.
- Utilization: Evaluates how efficiently the infrastructure is used for its defined purpose.
- Affordability: Determines the economic accessibility for the general population.
- Fiscal Cost & Revenue: Monitors the allocation and financial resource usage.

Sector-Specific Indicators (116 total):

- Ports, Shipping & Waterways: Highest concentration with 49 indicators.
- Civil Aviation: 29 indicators tracking passenger traffic and load factors.
- Power: 13 indicators monitoring Plant Load Factor (PLF) and grid reliability.
- Roads & Railways: 9 indicators each for digital tolling, train kilometers, and punctuality.
- Telecommunications: 7 indicators for network penetration and data usage.
- Dynamic Analytics: Replaces the static OCMS-2006 with the PAIMANA system for advanced analytics and automated performance assessments.
- Quarterly Updates: The dashboard is updated every quarter to provide a contemporary snapshot of national progress.

Significance:

- By moving beyond production numbers to affordability and quality, the government can identify bottlenecks that prevent infrastructure from benefiting the common man.
- Real-time monitoring helps in the early detection of delays or cost overruns in Central Sector projects.

India's Payment Revolution

Context:

India's digital payment ecosystem is in the news following the release of January 2026 data, which shows a record-breaking 21.70 billion transactions worth ₹28.33 lakh crore.

About India's Payment Revolution:

What it is?

- India's Payment Revolution is the rapid transition from a cash-heavy, traditional banking system to a scalable, real-time, and inclusive digital infrastructure.
- It is anchored by the JAM Trinity (Jan Dhan, Aadhaar, Mobile) and spearheaded by the Unified Payments Interface (UPI), which has democratized financial access for everyone from street vendors to large corporations.

Data and Statistics (January 2026):

- Transaction Volume: 21.70 billion transactions in a single month.
- Transaction Value: ₹28.33 lakh crore processed monthly.
- Retail Dominance: UPI accounts for 81% of all retail digital transactions in India.
- Global Standing: India contributes 49% of total global real-time payment transactions.
- Network Growth: UPI-linked banks increased from 216 in 2021 to 691 by January 2026.

Evolution of Payment Systems Since Independence:

- Traditional Era: Post-independence, the system relied on barter in rural areas and paper currency/cheques in urban centers, which were slow and often excluded the poor.
- Institutional Formalization: The introduction of systems like RTGS (2004) and IMPS (2010) enabled 24/7 electronic transfers but remained limited to those with formal bank accounts.
- The Structural Breakthrough (JAM): The launch of Pradhan Mantri Jan-Dhan Yojana brought millions into banking, while Aadhaar provided a digital identity for seamless authentication.
- The UPI Radicalization (2016): UPI simplified money movement by replacing complex account details with a simple Virtual Payment Address (VPA) and QR codes.
- Global Expansion (2024-2026): UPI became a global gold standard, now operational or linked in countries like France, UAE, Singapore, and Mauritius.

Importance of Payment Systems in the Economy:

- Financial Inclusion: Dissolves the divide between urban and rural areas, bringing the financially invisible into the formal economy.
- Economic Efficiency: Real-time settlements reduce operational delays and the costs associated with physical cash management.
- Transparency and Leakage Reduction: The Direct Benefit Transfer (DBT) system ensures government aid reaches beneficiaries directly, eliminating intermediaries.
- Formalization of Credit: Digital footprints allow small merchants and informal workers to access formal credit and insurance products.

- Global Leadership: Strengthens India's role in the global fintech landscape, serving as a reference model for international bodies like the IMF and World Bank.

Challenges Associated with Digital Payments:

- Cybersecurity Risks: As volumes grow, so does the risk of sophisticated phishing, identity theft, and digital fraud.
- Digital Literacy Gap: While access has expanded, the deep-tech understanding required to resolve transaction failures remains a hurdle for first-time users.
- Connectivity Issues: In remote regions, inconsistent internet and mobile network access can disrupt real-time transaction reliability.
- Data Privacy: Managing the massive amount of financial data generated requires robust legal frameworks to prevent misuse.
- Infrastructure Load: The sheer scale of 20+ billion monthly transactions puts immense pressure on bank servers and the central NPCI switch.

Way Ahead:

- Enhanced Security: Implementation of the RBI's 2026 mandate for multi-layer authentication, including biometrics and secure tokens.
- Product Diversification: Scaling features like UPI Lite for small-value offline payments and UPI AutoPay for recurring bills.
- Credit Integration: Expanding Credit on UPI to allow pre-approved credit lines, turning a payment tool into a full financial service platform.
- Deep-Rural Outreach: Leveraging the expansion of mobile connectivity to ensure the last mile in remote village mandis is fully digitized.
- Cross-Border Dominance: Linking UPI with more international payment systems to facilitate cheaper and faster global remittances.

Conclusion:

India's journey from standing in long queues to scanning QR codes represents a decade of inclusive innovation that has turned the unbanked into active economic participants. UPI is no longer just a convenience; it is a people's platform that has established India as the global benchmark for real-time payments. By dissolving financial barriers, it continues to drive the nation toward a more transparent, efficient, and truly inclusive digital future.

The National Scheduled Tribes Finance and Development Corporation (NSTFDC)

Context:

The National Scheduled Tribes Finance and Development Corporation (NSTFDC) is celebrating its 25th Foundation Day in New Delhi to mark a quarter-century of tribal empowerment.

About The National Scheduled Tribes Finance and Development Corporation (NSTFDC):

What it is?

- NSTFDC is a Public Sector Undertaking (PSU) operating under the Ministry of Tribal Affairs, Government of India. It serves as the apex national organization specifically dedicated to the economic upliftment and financial inclusion of Scheduled Tribes.
- Established in: The corporation was established in 2001.
- Aim: The primary goal of NSTFDC is to catalyze the economic development of Scheduled Tribes by providing them with the necessary financial means to start income-generating activities and improve their quality of life.

Key Functions:

- Concessional Financial Assistance: Extending low-interest loans to ST individuals and groups to help them start or expand small businesses.
- Livelihood Promotion: Funding a wide variety of sectors including handicrafts, poultry, dairy, fisheries, retail, and healthcare services to create sustainable local jobs.
- Channelizing Resources: Operating through State Channelizing Agencies (SCAs) to ensure that financial aid reaches tribal communities in remote and underserved areas.
- Entrepreneurial Support: Providing the capital required for tribal youth and women to transition from traditional labor to independent business ownership.
- Capacity Building: Assisting beneficiaries in establishing sustainable enterprises through structured financial schemes and guidance.

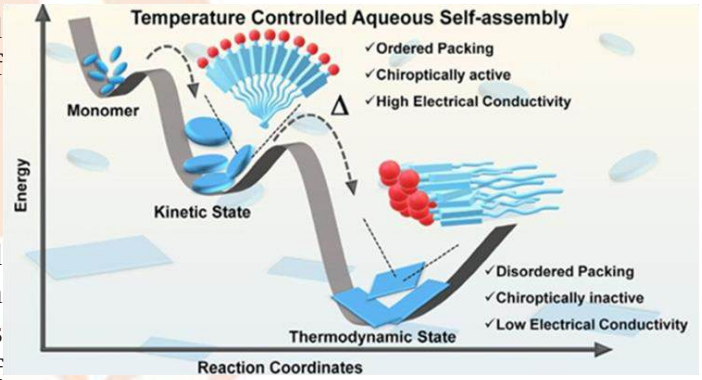
Significance:

- Over the last 25 years, it has transformed thousands of ST individuals from job seekers into entrepreneurs.
- By targeting the most marginalized sections of society, the corporation ensures that tribal communities are not left behind in India's national growth story.

Naphthalene Diimide (NDI)

Context:

Researchers from CeNS and JNCASR have discovered a way to switch the structural and electrical properties of organic nanomaterials using only temperature.



About Naphthalene Diimide (NDI):

What it is?

- Naphthalene diimide (NDI) is a specialized amphiphilic molecule, meaning it possesses both water-attracting and water-repelling parts. This unique chemical nature allows it to organize itself into complex architectures when placed in water.
- Discovered: Centre for Nano and Soft Matter Sciences (CeNS) and Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR).

How it Works?

- Aqueous Assembly: In water, NDI molecules naturally group together through noncovalent interactions.
- Room Temperature (Nanodisks): At standard room temperature, these molecules form tiny circular nanodisks. These disks are highly conductive and interact with polarized light.
- Thermal Trigger (Heating): When the environment is heated, the molecules undergo a structural reorganization.
- State Switch (Nanosheets): The disks transform into two-dimensional nanosheets, causing the material to lose its specific light-interacting properties.
- Conductivity Change: This physical shift causes the electrical conductivity to drop nearly sevenfold, effectively allowing temperature to act as an electrical dimmer switch.

What is Supramolecular Self-Assembly?

- Supramolecular self-assembly is a process where molecules spontaneously organize themselves into well-defined structures without human intervention.
- Instead of strong chemical bonds, they use weaker noncovalent interactions to come together.
- It is essentially nature's way of Lego-building at the molecular scale, where the final shape is determined by the molecule's environment, such as temperature or the solvent used.

Applications:

- Future Electronic Devices: Creating organic circuits where electrical behavior can be precisely tuned or switched.

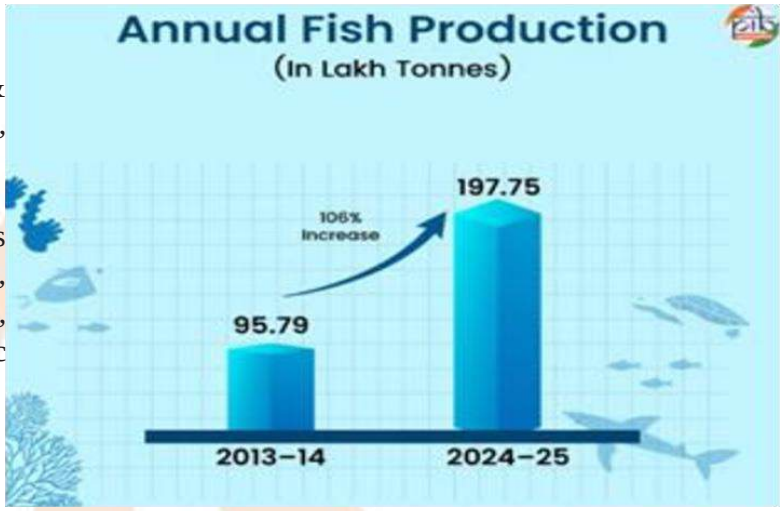
- Smart Sensors: Developing sensors that change their optical or electrical signals in response to thermal changes.
- Tunable Optoelectronics: Systems that can switch between different optical states for advanced displays or photonics.
- Bioelectronic Interfaces: Creating materials that can adapt and respond within biological environments for medical monitoring.
- Adaptive Materials: Designing smart surfaces that can dynamically change their properties based on external conditions.

Advancing India's Fisheries Sector

Context:

The Ministry of Fisheries, Animal Husbandry & Dairying highlighted the sector's transformation, supported by a record budgetary allocation of ₹2,761.80 crore in the Union Budget 2026-27.

- This funding aims to consolidate gains from the PMMSY and Blue Revolution, focusing on technology-driven aquaculture, digital governance, and the socio-economic inclusion of over 3 crore fishers.



About Advancing India's Fisheries Sector:

What It Is?

- Advancing India's fisheries sector involves a strategic shift from traditional, production-centric methods to an organized, technology-driven value chain.
- It focuses on the Blue Economy by integrating modern aquaculture upgrading marine infrastructure, and ensuring the socio-economic inclusion of nearly 3 crore fishers through digital formalization and financial credit.

Data/Stats on the Fishery Sector

- Global Standing: India is the world's second-largest fish-producing nation, accounting for approximately 8% of global output.
- Production Growth: Fish production rose by 106% over the last decade, reaching 197.75 lakh tonnes in FY 2024-25 compared to 95.79 lakh tonnes in FY 2013-14.
- Economic Contribution: Fisheries account for 7.43% of Agricultural GVA, the highest share among all agriculture and allied sectors.
- Export Value: Seafood exports reached a record ₹62,408 crore in FY 2024-25, with frozen shrimp being the primary export commodity.

Potential of India's Fishery Sector:

- Inland Reservoir Network: India possesses one of the world's largest inland networks (31.5 lakh hectares), offering massive untapped potential for freshwater aquaculture.
- Extensive Coastline: With an 11,099 km coastline and an Exclusive Economic Zone (EEZ) of 24 lakh sq. km, India has vast marine resource potential.
- Nutritional Security: As a low-cost source of animal protein, fisheries are vital for combating malnutrition and ensuring national food security.
- Employment Catalyst: The sector supports the livelihoods of approximately 30 million people, particularly providing economic stability to marginalized coastal communities.
- Global Competitiveness: With growing demand in US and Chinese markets, India has the potential to become the leading global hub for processed seafood and value-added fish products.

Initiatives Taken So Far:

- Pradhan Mantri Matsya Sampada Yojana (PMMSY): Launched in 2020 with an investment of ₹20,050 crore to address critical gaps in fish production, quality, and technology.

- Kisan Credit Card (KCC) Expansion: Since 2019, KCC benefits were extended to fishers, providing institutional credit to 4.39 lakh beneficiaries as of 2026.
- National Fisheries Digital Platform (NFDP): Launched in 2024 to generate digital identities for fishers and streamline access to insurance and performance-linked incentives.
- Fisheries and Aquaculture Infrastructure Development Fund (FIDF): Provides concessional finance for the creation of fishing harbours, cold chains, and landing centers.

Challenges Associated:

- Post-Harvest Losses: Inadequate cold chain logistics and processing infrastructure lead to significant wastage of the highly perishable catch.
- Climate Change Vulnerability: Rising sea temperatures and frequent cyclones disrupt marine ecosystems and threaten the livelihoods of traditional fishers.
- Low Productivity: While total production is high, the yield per hectare in many inland water bodies remains far below global benchmarks.
- Sustainability Concerns: Overfishing in near-shore waters and the use of non-selective gear threaten long-term resource security in the EEZ.
- Informal Credit Dependence: Despite KCC expansion, a large segment of traditional fishers still relies on informal moneylenders due to a lack of documentation or formal identity.

Way Ahead:

- Technology Adoption: Scale up water-efficient models like Bio-floc and Recirculatory Aquaculture Systems (RAS) to maximize output with minimal land use.
- Infrastructure Modernization: Complete the modernization of fishing harbours and landing centers to meet international sanitary and phytosanitary (SPS) standards.
- Deep-Sea Fishing: Shift focus from near-shore to deep-sea fishing by providing subsidies for advanced vessels to tap into unutilized EEZ resources.
- FFPO Empowerment: Strengthen the 2,195 Fisheries Farmer Producer Organizations to improve the collective bargaining power and market access of small-scale fishers.
- Sustainable Governance: Strictly implement the 2025 Sustainable Fisheries Rules for the EEZ to ensure resource conservation and international compliance.

Conclusion:

India's fisheries sector is transitioning from a traditional livelihood into a robust, technology-driven pillar of the Blue Economy. By leveraging record budgetary allocations and digital formalization through platforms like NFDP, India is well-positioned to achieve sustainable growth while ensuring the welfare of its 3 crore fisher stakeholders.

SAMPANN Platform

Context:

The Government of India has signed a landmark agreement to provide its flagship digital pension platform, SAMPANN, as a Platform-as-a-Service to the State Government of Goa and the Cochin Port Authority.

About SAMPANN Platform:

What It Is?

- SAMPANN stands for System for Accounting and Management of Pension.
- It is a seamless, online, end-to-end comprehensive pension management system developed under the Digital India Mission.
- Dedicated to the nation on December 29, 2018, it is a cloud-based platform that covers the entire pension administration lifecycle.
- Organisation Involved: Department of Telecommunications (DoT) is the primary department under which the system was developed.

Aim:

- To simplify the complex processes of pension sanction, authorization, accounting, and payment through a single digital window.
- To shift the governance approach so that services revolve around the citizen, reducing the need for pensioners to visit government offices physically.

Key Features:

- End-to-End Lifecycle Management: Covers everything from the initial case initiation to final pension disbursement and detailed accounting.
- Cloud-Based Infrastructure: Ensures the system is scalable, secure, and accessible from anywhere.
- Direct Disbursement: Currently disburses an average of ₹1,650 crore in monthly pensions.
- Proven Scale: The platform has already successfully disbursed a total of approximately ₹72,000 crore to date.
- Platform-as-a-Service (PaaS): Designed for easy adoption by other departments (like the Department of Posts) and external institutions like state governments and port authorities.

Significance:

- Represents a shift toward accountable, transparent, and technology-enabled public service delivery.
- The adoption by Goa and CPA reflects the growing trust in national digital portals to handle sensitive financial tasks.

YUVIKA (Yuva Vigyani Karyakram)

Context:

Union Minister highlighted in the Lok Sabha, that the YUVIKA programme has benefited 1,320 students so far, successfully fostering a scientific temper and early interest in space science.

About YUVIKA (Yuva Vigyani Karyakram):

What It Is?

- YUVIKA, which stands for Yuva Vigyani Karyakram (Young Scientist Programme), is a specialized residential training initiative designed to inspire and educate school students in the field of space science.

Launched In & Organisation Involved:

- Organisation: The programme is organized by the Indian Space Research Organisation (ISRO).
- Target Group: It is specifically designed for students studying in Class 9 across the country.

Aim:

- To impart basic knowledge on space technology, space science, and space applications to younger students.
- To motivate young minds to consider space science and technology as a future career option.
- To identify and nurture space-related talent at an early stage of education.

Key Features

- Merit-Based Selection: Students are shortlisted through an online screening of academic credentials followed by their performance in an online quiz competition.
- Transparency: Final selection is carried out after a thorough verification of credentials to ensure a fair and transparent process.
- Inclusive Participation: The programme incorporates a 15 percent reservation specifically for students from rural and remote areas.
- Equitable Opportunity: This reservation ensures talent from all corners of the country has access to advanced scientific training.
- Scale of Impact: To date, a total of 1,320 students have participated in and benefited from the programme.

Significance:

- YUVIKA plays a major role in fostering a scientific mindset among the youth, aligning with the vision of a scientifically empowered nation.
- By targeting Class 9 students, the government captures interest at a critical stage before students make definitive career choices.

Launch of First Next Generation Offshore Patrol Vessel (Yard 1280, Shachi)

Context:

The Indian Navy marked a major indigenous shipbuilding milestone with the launch of Shachi (Yard 1280), the first of eleven Next Generation Offshore Patrol Vessels (NGOPVs), at Goa Shipyard Limited.

About Launch of First Next Generation Offshore Patrol Vessel (Yard 1280, Shachi):

What It Is?

- Shachi is the lead ship of the Next Generation Offshore Patrol Vessel (NGOPV) The name is derived from Indian mythology, meaning one who renders assistance. These vessels are designed to be highly versatile, indigenously built platforms that will significantly augment the Indian Navy's existing fleet of ten Offshore Patrol Vessels.

Built By:

The construction of the eleven-ship NGOPV project is being undertaken concurrently at two major Indian shipyards:

- Goa Shipyard Limited (GSL), Goa: Builder of the first ship, Shachi.
- Garden Reach Shipbuilders & Engineers (GRSE), Kolkata: Working on subsequent vessels in the class.
- Aim: The primary objective of the NGOPV project is to strengthen India's maritime security by providing advanced platforms capable of performing multi-domain operations.

Key Features:

- Indigenous Design: The ships are entirely designed and built within India, showcasing domestic engineering capabilities.
- Multi-Domain Versatility: Capable of executing a wide array of missions, including:
- Defence and Surveillance: Monitoring maritime boundaries and territorial waters.
- Search and Rescue (SAR): Conducting life-saving operations at sea.
- Protection of Offshore Assets: Guarding critical infrastructure like oil rigs and pipelines.
- Humanitarian Assistance and Disaster Relief (HADR): Providing rapid aid during natural calamities.
- Anti-Piracy Missions: Securing sea lanes against maritime crime.
- Symbolic Identity: The crest design of the NGOPV class features the Ursa Major constellation and a red and white lighthouse, symbolizing guidance and vigilance.

Significance:

- The project is a major step in the Indian Navy's pursuit of indigenous shipbuilding, reducing reliance on foreign hardware.
- The launch is in strict consonance with the Government of India's Aatmanirbhar Bharat (Self-Reliant India) and Make in India initiatives.

Bhavasagara Referral Centre

Context:

The Ministry of Environment, Forest and Climate Change (MoEFCC) has officially designated the Bhavasagara Referral Centre at CMLRE, Kochi, as a National Repository for Deep-Sea Fauna under the Biological Diversity Act, 2002.

About Bhavasagara Referral Centre:

What It Is?

- The Bhavasagara Referral Centre is a specialized scientific hub and India's newly designated National Repository dedicated to the preservation, study, and documentation of deep-sea marine life. It serves as a centralized custody center for deep-sea specimens and their associated genetic data.
- Parent Organisation: The Centre for Marine Living Resources & Ecology (CMLRE), Kochi, Kerala.
- Ministry: Functions under the Ministry of Earth Sciences (MoES).
- Statutory Recognition: Officially designated as a National Repository on March 30, 2026, by the Ministry of Environment, Forest and Climate Change (MoEFCC) under the Biological Diversity Act, 2002.

Aim:

- The primary objective of the centre is to provide a foundational resource for ocean scientists to unlock the mysteries of the deep sea while strengthening India's blue economy and marine biodiversity framework.
- It aims to foster expertise in deep-sea taxonomy in alignment with the UN Decade of Ocean Science for Sustainable Development (2021–2030).

Key Features:

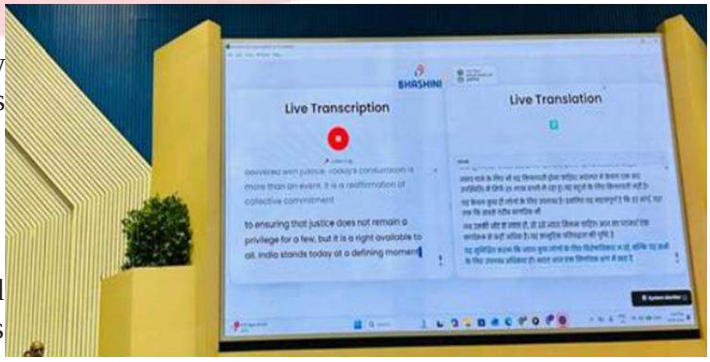
- Extensive Collection: Houses over 3,500 taxonomically identified and geo-referenced voucher specimens.
- Diverse Biological Range: The collection includes invertebrates (cnidarians, annelids, molluscs, arthropods, echinoderms) and vertebrates (elasmobranchs and teleostean fishes).
- Secure Custody: Authorized to preserve representative biological samples along with critical data such as DNA sequences for future reference.
- Custodian of New Species: Acts as the official repository for any new deep-sea species discovered within Indian waters (Type Specimens).
- Scientific Hub: Provides a centralized platform for researchers and academic institutions to access deep-sea natural history.

Significance:

- Marks a significant leap in India's ability to protect and document its deep-sea biological heritage.
- Provides the scientific data necessary to support sustainable economic growth related to ocean resources.

Nyaya Setu AI Chatbot

Context:



The Vice-President of India and the Minister of Law and Justice unveiled the Nyaya Setu AI Chatbot and its official mascot, Dishika, during the DISHA programme.

About Nyaya Setu AI Chatbot:

What It Is?

- Nyaya Setu is a voice-first, multimodal, and multilingual AI-powered legal assistant. It serves as a comprehensive digital bridge designed to simplify complex legal information for citizens.
- Developed By: The platform was built and is owned as a turnkey AI implementation by the Digital India BHASHINI Division (DIBD).

- Aim: The primary goal of Nyaya Setu is to democratize access to justice by ensuring that language and procedural complexities are no longer barriers for citizens seeking to understand their legal rights and processes.

How It Works?

- End-to-End Voice Stack: The platform enables seamless, voice-led user journeys by integrating a complete AI stack.
- Speech Recognition: It utilizes BHASHINI ASR (Automatic Speech Recognition) to understand spoken queries in various Indian languages.
- Conversational AI: It processes these queries through multilingual Natural Language Processing (NLP) systems to provide context-aware responses.
- Legal Guardrails: The AI is trained on frameworks such as the BNS (Bharatiya Nyaya Sanhita) to ensure responses are safe, responsible, and legally sound.

Key Features:

- Multilingual Support: Offers services across 36 text and 23 voice languages, including complex tribal dialects.
- Voice-First Design: Prioritizes voice interactions to assist users who may face literacy or linguistic challenges.
- Turnkey Implementation: Demonstrates a ready-to-use, scalable digital public infrastructure for justice delivery.
- Real-Time Processing: Capable of handling millions of daily inferences to provide immediate legal guidance.

About Mascot DISHIKA:

What It Is?

- Dishika is the official mascot and friendly digital interface of the Nyaya Setu AI Chatbot.
- Aim: The mascot is designed to enhance user engagement, trust, and accessibility, acting as a supportive guide for individuals—especially first-time users—navigating the complexities of the Indian justice system.

Features:

- Friendly Interface: Provides a welcoming and non-intimidating digital presence.
- Guided Navigation: Leads users through legal queries and explains the next steps in a simplified manner.
- Trust Builder: Helps bridge the gap between citizens and formal legal structures through interactive and relatable digital assistance.

Malwan: Anti-Submarine Warfare Shallow Water Craft

Context:

The Indian Navy marked a significant step in its maritime defense capabilities with the official delivery of ‘Malwan’, the second of eight indigenously built Anti-Submarine Warfare Shallow Water Crafts (ASW SWC).

About Malwan: Anti-Submarine Warfare Shallow Water Craft:

What It Is?

- Malwan is a high-tech, waterjet-propelled warship designed specifically for specialized naval operations in coastal and shallow waters. It is the second vessel in a series of eight ASW SWCs currently being commissioned by the Indian Navy to replace and upgrade its aging fleet.

Developed By:

- Manufacturer: The ship was indigenously designed and constructed by Cochin Shipyard Limited (CSL), Kochi.
- Specifications: It was built to the Indian Navy’s specific requirements and adheres to the Classification Rules of DNV (Det Norske Veritas).

Origin and Legacy:

- Historical Link: The name is derived from the coastal town of Malwan in Maharashtra, which is historically significant for its ties to the maritime heritage of Chhatrapati Shivaji Maharaj.
- Naval Tradition: The vessel continues the legacy of the erstwhile INS Malwan, a naval minesweeper that served the nation until 2003.
- Aim: The primary objective of this craft is to provide the Indian Navy with advanced capabilities for underwater surveillance and specialized combat in littoral (near-shore) zones, where larger submarines or ships might struggle to operate.

Key Features:

- Dimensions: The vessel measures approximately 80 metres in length and has a displacement of 1,100 tons.
- Propulsion: It utilizes advanced Waterjets for high maneuverability in shallow coastal regions.
- Offensive Weaponry: It is armed with torpedoes and multifunctional anti-submarine rockets.
- Sensors and Tech: Equipped with state-of-the-art sensors, including advanced radar and sonar systems for detecting submerged threats.
- Multi-Role Capability: Beyond anti-submarine warfare, it is capable of Low Intensity Maritime Operations (LIMO) and mine warfare.

Significance:

- With over 80% indigenous content, the ship is a major milestone for the 'Aatmanirbhar Bharat' (Self-Reliant India) initiative.
- The project successfully integrated systems developed by the domestic defense manufacturing ecosystem, including various MSMEs.

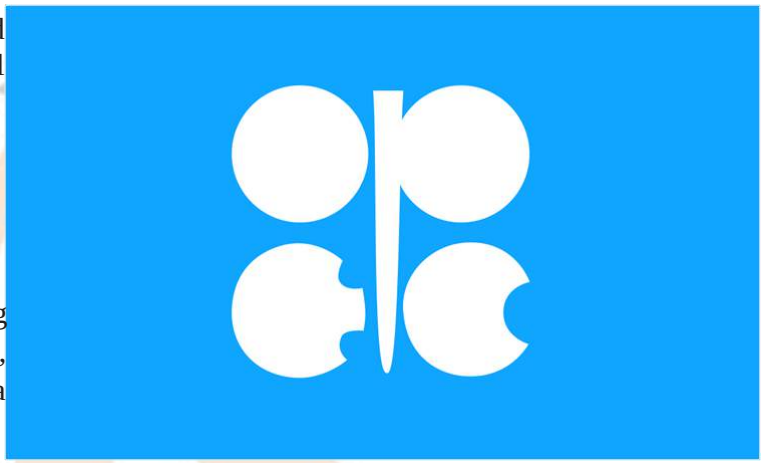
Chapter-
8

INTERNATIONAL RELATION

UAE to exit OPEC and OPEC+

Context:

In a major shift for global energy markets, the United Arab Emirates (UAE) has announced its withdrawal from OPEC and OPEC+ effective May 1, 2026.



UAE to exit OPEC and OPEC+

AboutUAE to exit OPEC and OPEC+:

What itOPEC?

- The Organization of the Petroleum Exporting Countries (OPEC) is a permanent, intergovernmental organization that plays a central role in the global petroleum industry.
- Established In: It was created during the Baghdad Conference held from September 10–14, 1960.
- Founding Members: The original group consisted of Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- Current and Former Members: Over the decades, membership has fluctuated. Notable current members include Algeria, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, and the UAE (until May 1, 2026).
- Past members like Qatar, Ecuador, and Angola have recently withdrawn.

Aims:

- To coordinate and unify petroleum policies among Member Countries.
- To secure fair and stable prices for petroleum producers.
- To ensure an efficient, economic, and regular supply of petroleum to consuming nations.

Key Features:

- Headquarters: Originally located in Geneva, Switzerland, it moved to Vienna, Austria, in 1965.
- Market Influence: The group manages supply through collective production adjustments to prevent market crashes and gluts.
- Declaratory Statement (1968): Emphasized the right of countries to exercise permanent sovereignty over their natural resources.
- International Dialogue: Maintains constant dialogue with non-OPEC producers and consuming nations to stabilize the global economy.

AboutOPEC+:

What it is?

- OPEC+ is a broader alliance that includes the 13 OPEC members and several major non-OPEC oil-producing nations. An expanded coalition formed to provide greater control over the global oil supply by including countries that are not formal members of OPEC.
- Established In: The alliance emerged through the Declaration of Cooperation (DoC) in December 2016.
- Members: It consists of the core OPEC members plus 10 non-OPEC countries, most notably Russia, Mexico, and Kazakhstan.

Aims:

- To help rebalance the global oil market and bring down high inventory levels.

- To support long-term oil market stability through collaborative production adjustments.
- To restore stability during global crises, such as the unprecedented demand freefall seen during the COVID-19 pandemic.

Features:

- Spare Capacity: Market influence is largely exerted through members (like Saudi Arabia and the UAE) that have spare capacity—the ability to quickly increase or decrease production.
- Charter of Cooperation (2019): Established a long-term platform for the exchange of views and information among the DoC partners.
- Voluntary Adjustments: Relies on large-scale voluntary production cuts to counter market volatility and protect industry jobs.

The Druzhba Pipeline

Context:

The resumption of Russian oil flows through the Ukrainian section of the Druzhba pipeline, has led Hungary to lift its veto on a critical 90 billion euro EU loan for Kyiv.

About The Druzhba Pipeline:

What it is?

- The Druzhba (meaning Friendship) pipeline is one of the world's longest and largest crude oil pipeline networks. It serves as a vital energy artery connecting Russia to several countries in Central and Eastern Europe.
- Established In: The system was constructed by the Soviet Union and began operations in 1964 to supply oil to the then-socialist bloc countries of the Council for Mutual Economic Assistance (COMECON).
- Located Between: It originates in the Almetyevsk region of central Russia, where several pipelines carrying crude from Siberia, the Urals, and the Caspian Sea converge. It runs through Belarus and then splits into two major branches:
- Northern Branch: Continues through Poland to Germany.
- Southern Branch: Runs through Ukraine to Hungary, Slovakia, and the Czech Republic.

Aim of the Pipeline:

- To provide a reliable, high-capacity overland route for transporting Russian crude oil directly to European refineries, bypassing maritime routes.
- Historically designed to integrate the economies of Eastern Europe with the Soviet Union; today, it remains a critical infrastructure for landlocked refineries in Central Europe.

Key Features:

- Massive Capacity: The system has a capacity of 1.2 million to 1.4 million barrels per day, with the potential to scale up to 2 million barrels.
- Southern Leg Vulnerability: The southern section, which passes through Western Ukraine, has become a flashpoint for conflict-related damage and political leverage.
- Branching Network: The network spans approximately 4,000 kilometers, feeding major industrial hubs such as Germany's PCK Schwedt refinery.
- Transit Geography: Unlike many newer pipelines, Druzhba is unique because it relies on the cooperation of transit states like Ukraine and Belarus to reach the European Union.

Significance:

- The pipeline has become a politically charged piece of infrastructure, where disruptions can be used by transit or recipient states to block or unlock international aid and sanctions.

- Despite EU efforts to decouple from Russian energy, countries like Hungary and Slovakia remain heavily dependent on this specific pipeline for their domestic oil supply.

India Calls Expansion Of Permanent Members With Veto Essential For UNSC Reform

Context:

India's Permanent Representative to the UN, asserted that any UNSC reform without expanding permanent membership and granting veto power would only perpetuate existing imbalances.

About India Calls Expansion Of Permanent Members With Veto Essential For UNSC Reform:

What it is?

- India maintains that the UN Security Council (UNSC) is currently suffering from a crisis of legitimacy and representativeness. The core of India's argument is that the veto and membership are the two fundamental aspects that have created a skewed power dynamic.
- India rejects the introduction of intermediate or new categories of membership, arguing that such piece-meal approaches only complicate negotiations and preserve the relative advantage of the current five permanent members (P5).

Outcomes of the Inter-Governmental Negotiations (IGN):

- Rejection of New Categories: India cautioned against creating membership categories without veto power, stating it would further complicate wide-ranging views.
- Historical Analysis of Power Ratios: India highlighted that the 1960s reform (expanding only non-permanent seats) shifted the permanent-to-non-permanent ratio from 5:6 to 5:10, inadvertently increasing the P5's relative power.
- Failure of the Veto Initiative: Despite the 2022 UNGA resolution (mandating a debate after a veto), Harish noted it has failed as a deterrent; 24 vetoes have been cast on 20 draft resolutions since its adoption.
- The Effective Veto Concern: India raised the issue of effective vetoes used by both elected and non-elected members to block outcomes like Presidential Statements and Sanctions Committee decisions for narrow national interests.
- Alignment with Africa: India reiterated its alignment with the African model, asserting that new permanent members must receive the veto as long as it exists.

Need for UNSC to Reform Itself:

- Reflecting Contemporary Reality: The current P5-centric model reflects the post-WWII world order of 1945, ignoring the rise of major powers like India, Brazil, and African nations.
- Restoring Legitimacy: Many nations no longer perceive the UN as a body that effectively delivers on international peace and security due to its unrepresentative nature.
- Equitable Power Distribution: Expansion is needed to correct the imbalance where 5 nations hold ultimate authority over 188 others.
- Improving Effectiveness: Frequent vetoes on critical issues (e.g., Middle East or Ukraine) have led to paralysis in the Council's primary mission.
- Geographic Representation: Entire continents, specifically Africa and Latin America, lack permanent representation, creating a representation deficit.

Challenges Associated with Reform:

- The Veto Paradox: Any Charter amendment to limit or expand the veto must be approved by the current P5, who are unlikely to vote away their own exclusive power.
- P5 Resistance: While some P5 members support India's claim in principle, there is little consensus on extending the veto power to others.
- Complex Negotiations: The IGN process involves wide-ranging views and lacks a single consolidated text for negotiation, leading to circular discussions.

- Regional Rivalries: Opposition from groups like the Uniting for Consensus (UfC), which opposes adding new permanent members to block regional rivals.
- Narrow National Interests: Permanent and elected members often use Council outcomes as leverage for domestic or strategic gains rather than global stability.

Way Ahead:

- Text-Based Negotiations: Transition from oral statements to a formal, text-based negotiation process with clearly defined timelines.
- Comprehensive Approach: Avoid piece-meal reforms that focus only on one cluster; instead, address membership and veto together.
- Strategic Coalitions: Strengthen the push through the G4 (India, Brazil, Germany, Japan) and the L.69 group of developing nations.
- Charter Amendments: Pursue enabling provisions in the UN Charter that can modernize the body's legal foundation.
- Incremental Pressure: Utilize General Assembly resolutions to continue highlighting the misuse of veto power to build a global moral consensus for change.

Conclusion:

India's assertion at the IGN underscores that the Security Council cannot be purified through minor adjustments to its non-permanent category. Real reform requires a bold expansion of permanent membership with veto rights to ensure the Council reflects the diverse and multipolar world of 2026. Without such changes, the UNSC risks becoming a fossilized relic that is increasingly irrelevant to the maintenance of global peace.

US Blockade of Iranian Ports

Context:

Saudi Arabia is reportedly pressing the Trump administration to drop its naval blockade of Iranian ports, fearing that Tehran will retaliate by closing the Bab al-Mandeb chokepoint.

About US Blockade of Iranian Ports:

What it is?

- The US blockade is a maximalist military and economic strategy implemented by the Trump administration to completely halt all maritime shipments entering or leaving Iranian ports.
- By sealing off the Strait of Hormuz and targeting hubs in the Persian Gulf and the Sea of Oman, the US aims to paralyze Iran's economy.

Major Iranian Ports Under Blockade:

Port Name	Location	Key Features
Shahid Rajaee (Bandar Abbas)	Situated at the Strait of Hormuz (Persian Gulf).	• Iran's largest and most modern container terminal, handling the bulk of its maritime trade.
• Strategically positioned at the world's most critical oil chokepoint.		
Chabahar Port	On the Sea of Oman (Sistan and Baluchestan province).	• Iran's only oceanic port, providing direct access to the Indian Ocean while bypassing the narrow Strait of Hormuz.
• Crucial for transit trade to Afghanistan and Central Asia.		

Bandar Imam Khomeini	At the northwestern end of the Persian Gulf (Khuzestan province).	• A major hub for dry bulk and the primary gateway for Iran's essential agricultural and grain imports.
• Connected to the national rail network for inland distribution.		
Asaluyeh (Pars Special Zone)	Central Persian Gulf coast.	• The dedicated export facility for the South Pars gas field, the world's largest natural gas field.
• Primarily handles petrochemical and liquefied petroleum gas (LPG) exports.		
Bandar Bushehr	Northern Persian Gulf.	• A significant commercial port with a deep history in Gulf trade.
• Houses major storage facilities for general cargo.		
Amirabad & Noshahr	Caspian Sea coast (Northern Iran).	• Key commercial gateways for trade with Russia and other Caspian littoral states.
• Focus on timber, steel, and oil swap arrangements in the north.		
Khorramshahr	Located on the Shatt al-Arab waterway near the Iraq border.	• Historically vital for trade, focusing on regional commerce and passenger services.
• High-capacity terminal for diverse general cargo.		

The Islamabad Talks

Context:

The marathon 21-hour talks in Islamabad between the US and Iran ended without a deal, failing to convert a fragile two-week ceasefire into a lasting peace.

About The Islamabad Talks:

What it is?

- The Islamabad Talks were a high-stakes, direct diplomatic negotiation aimed at de-escalating the US-Israeli war on Iran that began in February 2026.
- It represented the first direct, highest-level engagement between the United States and the Islamic Republic of Iran since the 1979 Islamic Revolution and the subsequent embassy crisis.

Host and Mediator:

- Host: Islamabad, Pakistan.
- Mediator: The Government of Pakistan, which desperately sought to prevent a regional spillover and stabilize global oil supplies.

Nations Involved:

- United States: Represented by Vice President JD Vance.
- Iran: Represented by senior negotiator Mohammad Bagher Ghalibaf.
- Pakistan: Acted as the diplomatic bridge and host.

Aim:

- To turn a fragile two-week ceasefire into a permanent peace agreement.
- To resolve the standoff over the Strait of Hormuz, which has been largely closed since late February.
- To address Iran's nuclear enrichment program and obtain a commitment against seeking nuclear weapons.
- To secure a wider regional de-escalation involving the Axis of Resistance.

Key Features and Stumbling Blocks:

- The Nuclear Red Line: The US demanded a total halt to uranium enrichment; Iran dismissed these as excessive and unreasonable demands, maintaining their right to civilian nuclear power.
- The Hormuz Leverage: The US demanded the immediate reopening of the Strait of Hormuz. Iran refused to yield this leverage without significant relief from economic sanctions and security guarantees.
- The Lebanon Factor: Iran demanded a cessation of Israeli strikes in Lebanon as a prerequisite. However, Israel maintained that the US-Iran ceasefire did not apply to its operations against Hezbollah.
- Hostile Rhetoric: Talks were held under the shadow of President Trump's maximalist threats, which Tehran viewed as coercion rather than diplomacy.
- The Toll Proposal: A unique friction point emerged over a proposal for a joint venture to collect tolls from ships passing through the Strait, which Iran rejected in favor of their sovereign control.

Outcomes:

- No Deal: The 21-hour marathon ended with both sides retreating to their original positions.
- Increased Fragility: The failure has left the existing ceasefire in a precarious state, with experts warning of a return to intensified military strikes.
- Asymmetric Advantage: Analysts suggest Iran emerged with a slight edge, showing it can endure economic pain longer than the US can tolerate disrupted global oil flows.

The United Nations Economic and Social Council (ECOSOC)

Context:

India achieved a major diplomatic milestone, by sweeping four unopposed elections to key subsidiary bodies of the United Nations Economic and Social Council (ECOSOC).

About The United Nations Economic and Social Council (ECOSOC):

What it is?

- ECOSOC is one of the six principal organs of the United Nations, serving as the central platform for fostering debate, innovative thinking, and forging consensus on international development goals. To serve as a principal UN organ for policy coordination and consensus-building on economic, social, and development issues.
- Established in: The Council was established by the UN Charter in 1945.

Recent Elections and India's Selection:

In the April 2026 elections, India secured seats in four distinct bodies:

- Committee on Economic, Social and Cultural Rights: Former diplomat Preeti Saran was re-elected in her personal capacity.
- Commission on Science and Technology for Development.
- Committee on Non-Governmental Organisations.
- Committee for Programme and Coordination.

Aim:

- To integrate the three dimensions of sustainable development: economic, social, and environmental.
- To serve as a specialized body for policy-making and forging consensus toward the implementation of the 2030 Agenda for Sustainable Development.

Key Functions:

- Convener and Coordinator: Links regional economic commissions, functional commissions, and specialized agencies to translate development commitments into real changes.
- Follow-up on Summits: Responsible for the follow-up to major UN conferences, including the High-level Political Forum (HLPF).
- Gateway for Partnerships: Acts as a unique meeting point for dialogues among policymakers, parliamentarians, academics, businesses, and over 6,500 registered non-governmental organizations.
- Identifying Emerging Challenges: Identifies new global issues, such as pandemic responses and environmental crises, to promote balanced integration of the three pillars of development.
- Standard Setting: Facilitates intergovernmental discussions to establish important global normative frameworks through its expert bodies.

Significance:

- India's unopposed sweep reflects its growing stature as a leader of the Global South and a reliable partner in the UN system.
- The re-election of seasoned experts like Preeti Saran ensures that India's 36-year diplomatic legacy continues to shape international cultural and social rights.

China–Pakistan Peace Plan

Context:

China and Pakistan have jointly proposed a peace initiative for West Asia amid the ongoing regional conflict disrupting energy flows, shipping lanes, and global trade routes.

About China–Pakistan Peace Plan:

What it is?

- The China–Pakistan peace plan is a joint diplomatic initiative aimed at reducing tensions in West Asia and preventing escalation of the ongoing regional conflict.
- It is essentially a crisis-management framework, rather than a final political settlement, with emphasis on ceasefire, humanitarian access, and protection of maritime trade routes.

Aim:

- To secure immediate ceasefire and de-escalation
- To ensure freedom of navigation in the Strait of Hormuz and Bab el-Mandeb
- To promote dialogue through multilateral platforms, especially the United Nations Security Council

Key Features:

- Ceasefire Framework: Calls for an immediate cessation of hostilities to avoid further military escalation.
- Protection of Commercial Shipping: Stresses safe passage for oil tankers, LNG carriers, and cargo vessels in critical maritime routes.
- Humanitarian Access: Advocates uninterrupted humanitarian corridors for civilians affected by the conflict.
- Multilateral Dialogue: Encourages negotiations under the UN and other international forums.
- Respect for Sovereignty: Emphasizes territorial integrity and non-interference in sovereign states.
- Global South Diplomacy: Reflects a growing role of non-Western actors in international conflict resolution.

Significance:

- Global Trade Stability: Helps stabilize chokepoints like Hormuz and Bab el-Mandeb through which a large share of global oil and trade passes.
- Geopolitical Signalling: Shows China's increasing diplomatic activism and Pakistan's strategic positioning in the Islamic world and West Asia.

Chapter-
9

SOCIAL ISSUES

Naval Anti-Ship Missile Short Range (NASM-SR)

Context:

India achieved a significant milestone in its indigenous maritime strike program by successfully conducting the maiden salvo launch of the Naval Anti-Ship Missile Short Range (NASM-SR) from a Sea King helicopter.

Naval Anti-Ship Missile Short Range (NASM-SR)

AboutNaval Anti-Ship Missile Short Range (NASM-SR):

What It Is?

- An advanced, air-launched anti-ship missile system designed to replace aging foreign-origin missiles like the British Sea Eagle. The NASM-SR is India's first indigenously developed helicopter-launched anti-ship missile system.
- Developed By: The Research Centre Imarat (RCI), Hyderabad, in collaboration with other DRDO laboratories.
- Aim: To provide the Indian Navy with a high-precision, indigenous strike capability against maritime targets, enhancing the Atmanirbhar Bharat (Self-reliant India) initiative in defense.

Key Features:

- Propulsion: Powered by a solid-propellant system featuring an ejectable booster for launch and a long-burn sustainer for flight.
- Range and Profile: Capable of striking targets at a range of approximately 55 km with a subsonic sea-skimming flight profile to avoid radar detection.
- Strike Accuracy: Demonstrates waterline hit capability, specifically targeting a ship's hull at the waterline to cause maximum flooding and structural failure.
- Guidance and Navigation: Utilizes a fiber-optic gyroscope-based inertial navigation system, a radio altimeter, and an advanced Imaging Infra-Red (IIR) seeker for precision targeting.
- Connectivity: Equipped with a high-bandwidth two-way data link that allows for lock-on-after-launch and in-flight retargeting.
- Control System: Features an electro-mechanical actuator and jet vane control for high maneuverability.
- Platform Integration: Primarily launched from Sea King helicopters, with future plans for integration onto MH-60R Seahawk and HAL Dhruv (ALH) platforms.

Significance:

- The successful launch of two missiles in quick succession from a single platform validates a critical operational capability for real-world naval combat.
- It marks a major shift from dependency on aging British-origin Sea Eagle missiles to a fully indigenous ecosystem involving start-ups and MSMEs.

Patriarchy, Public Health and Power: Why Women Must Lead India's Health Governance

Context:

A recent analysis of India's healthcare landscape reveals that entrenched patriarchal structures continue to hinder gender equity, with the female-to-male sex ratio at birth remaining at a low 917 per 1,000 boys.

Patriarchy, Public Health and Power: Why Women Must Lead India's Health Governance

AboutPatriarchy, Public Health and Power: Why Women Must Lead India's Health Governance

What It Is?

- This concept explores the critical link between gender inequality and systemic health failures. It posits that patriarchy acts as a social determinant of health, infecting everything from policy-making to facility-level infrastructure, and argues that women's leadership is the only path to achieving true health equity.

Data and Stats onWomen's Health:

- Skewed Sex Ratio: The sex ratio at birth in India stands at 917 girls to 1,000 boys, significantly lower than the natural genetic predisposition of 950, indicating persistent sex-selective practices.
- Nutritional Crisis: Approximately 60% of women of reproductive age suffer from anemia, and 40% have sub-optimal Body Mass Indices (BMI).
- Maternal Mortality Trends: While India reduced maternal mortality to 97 per 1,00,000 live births (2018–20), 23% of women aged 20-24 were married before 18, leading to high-risk teenage pregnancies.
- State-Level Inequality: Recent NFHS data shows that Gujarat leads in gender inequality regarding physical health status, while Kerala maintains the lowest barriers to healthcare access.

Patriarchy as the Hidden Disease in Public Health:

- Reproductive Reductionism: Health policies often view women solely through their reproductive roles as mothers, neglecting their health needs throughout the rest of their lives.
- Male Child Preference: Cultural patriarchy drives recalcitrance toward laws prohibiting sex selection, undermining the genetic balance of the population.
- Normalization of Poor Conditions: The lack of decent toilets in 81% of labor rooms reflects a systemic disregard for the dignity and hygiene needs of women.
- Subversion of Local Power: The Panch Pati system allows husbands to usurp the statutory powers of elected women sarpanches, silencing female voices in local health planning.
- Centralized Decision-Making: Increasing centralization of health schemes prevents local, gender-sensitive nuances from influencing policy, reinforcing a top-down patriarchal model.

Structural Barriers to Women's Healthcare Access:

- Facility-Level Obstacles: Lack of essential drugs and the unavailability of female healthcare providers are the most frequently reported barriers.
- Logistical Constraints: Geographical distances compounded by a lack of safe, affordable transport inhibit women from seeking timely care.
- Financial Independence: A lack of independent bank accounts and the inability to take health-related financial decisions keep many women dependent on male family members.
- The Double Burden: Opportunity costs, such as unattended housework, childcare, and eldercare, often force women to prioritize family needs over their own health.
- Inadequate Support Schemes: Programs like the PMMVY exclude mothers under 19 and provide meager benefits that fail to compensate for pregnancy-induced wage loss.

Women as Invisible Pillars of the Health System:

- The Frontline Cadre: India relies on a massive all-female workforce of 10 lakh ASHA workers and 28 lakh Anganwadi workers.
- Honorary Exploitation: Despite their critical role, these four million women are labeled honorary workers, denying them decent wages and formal labor rights.
- Nursing Backbone: Women form the vast majority of the nursing and auxiliary nurse-midwife (ANM) cadres, yet they face poor working conditions and limited upward mobility.
- Leadership Deficit: As of 2026, the MoHFW remains male-dominated, with only 6 women officers compared to a vast preponderance of men in senior advisory roles.
- Silent Contributors: Women manage the majority of informal healthcare within the household, a contribution that is rarely quantified or supported by public policy.

Way Ahead:

- Reserved Leadership: Implement specific reservations for women in senior health governance and decision-making positions within the MoHFW.
- Decentralized Planning: Re-establish participatory processes that allow women to lead local health planning and social audits at the village level.
- Universal Support: Reform maternity benefit schemes to include all mothers regardless of age or number of children, ensuring liveable wage compensation.
- Dignified Infrastructure: Prioritize the installation of functional, private toilets and gender-sensitive facilities in every public health center.
- Formalizing the Frontline: Transition ASHA and Anganwadi workers from honorary status to formal employees with fair wages and social security.

Conclusion:

The health of India's women cannot be separated from the power structures that govern their lives; as long as patriarchy dictates policy, medical outcomes will remain skewed. True transformation requires moving beyond gender budgeting toward actual female command over health resources and infrastructure. Only when women lead the governance of health can the system transition from treating them as reproductive vessels to valuing them as equal citizens.

The Namaste Scheme

Context:

The Union Ministry of Social Justice and Empowerment announced major progress under the NAMASTE Scheme, highlighting large-scale profiling, PPE distribution, health insurance coverage, and financial assistance for sanitation workers.

The Namaste Scheme

About The Namaste Scheme:

What it is?

- The National Action for Mechanised Sanitation Ecosystem (NAMASTE) Scheme is a central sector scheme aimed at eliminating hazardous manual cleaning of sewers and septic tanks by promoting mechanised sanitation.
- It focuses on ensuring dignity, occupational safety, and sustainable livelihoods for sanitation workers while replacing manual scavenging with technology-driven sanitation systems.
- Launched By: Ministry of Social Justice and Empowerment and Ministry of Housing and Urban Affairs.

Aim:

- To eliminate hazardous manual cleaning practices and promote complete mechanisation of sewer and septic tank sanitation.
- To provide sanitation workers with safety, health security, financial assistance, and alternative livelihood opportunities.

Key Features:

- Worker Safety and Social Protection: Sewer and septic tank workers are profiled, validated, and provided with PPE kits, health insurance, and Ayushman card support to improve occupational safety and healthcare access.
- Financial Support through SUY: Under the Swachhata Udyami Yojana (SUY), upfront capital subsidy is provided for sanitation workers and Sanipreneurs to procure mechanised cleaning vehicles and equipment.
- Inclusion of Waste Pickers: Since June 2024, waste pickers engaged in solid waste management have also been included under the scheme, expanding the scope of social protection and formal recognition.

Significance:

- The scheme directly addresses the historic injustice of manual scavenging by ensuring dignity, legal protection, and livelihood security for sanitation workers.
- By promoting mechanised cleaning systems, NAMASTE reduces human exposure to toxic environments and supports safer urban sanitation

Constitutional Morality and Social Reform Laws

Context:

The Supreme Court is currently examining whether the state can utilize constitutional morality and Directive Principles of State Policy to justify social reform laws that interfere with religious practices.

About Constitutional Morality and Social Reform Laws:

What it is?

- Constitutional morality is a judicial principle that prioritizes the core values of the Constitution—such as justice, liberty, equality, and fraternity—over traditional social or religious norms.
- It acts as a safeguard to ensure that the morality applied in legal disputes is derived from the spirit of the Constitution itself, rather than the subjective views of a particular community or the majority.

Constitutional Articles Associated:

- Article 14: Guarantees equality before the law, ensuring that social reforms do not leave individuals behind due to religious or caste-based status.
- Article 15: Prohibits discrimination on grounds of religion, race, caste, sex, or place of birth, providing the bedrock for laws that reform unequal social structures.
- Article 25(2)(b): Specifically allows the State to make laws for social welfare and reform, including the opening of Hindu religious institutions of a public character to all classes.
- Article 38: Mandates the State to secure a social order for the promotion of the welfare of the people, effectively linking the Directive Principles with the goal of social reform.

How Constitutional Morality Leads to Social Reform?

- Challenging Hegemony: It allows the Court to strike down age-old practices that infringe on individual dignity, even if those practices are widely accepted by a community.
- Upholding Individual Rights: By focusing on the individual as the unit of rights rather than the group, it ensures that personal freedoms are not sacrificed at the altar of group identity.
- Modernizing Religious Practices: It provides a legal basis to reform exclusionary practices (such as gender-based restrictions) to align them with contemporary democratic values.
- Protecting Vulnerable Groups: Constitutional morality acts as a shield for minorities and marginalized sections against the tyranny of the majority or regressive customs.
- Dynamic Interpretation: It keeps the Constitution living by interpreting its values in a way that addresses evolving societal needs and moral standards.

How it Leads to Social Disruption?

- Interference with Faith: Aggressive judicial intervention can be seen as an intrusion into the essential religious practices of a community, leading to resentment.
- Polarization: Using constitutional morality to overturn traditional norms often creates a deep divide between progressive legalists and conservative practitioners of faith.
- Loss of Cultural Identity: Communities may feel that their unique traditions and autonomous religious characters are being erased by a homogenized secular law.
- Civic Unrest: As seen in various historical protests, top-down social reforms that ignore popular sentiment can lead to widespread public demonstrations and instability.
- Erosion of Institutional Trust: When courts are perceived as moral police, it can lead to a loss of faith in the judiciary's role as a neutral arbiter of law.

Balancing Constitutional Morality with Social Disruption:

- Doctrine of Essentiality: The Court must carefully distinguish between practices that are fundamental to a religion and those that are mere social accretions subject to reform.
- Judicial Restraint: Judges should avoid imposing personal liberal views and stick to the text and spirit of the Constitution to maintain institutional legitimacy.
- Incremental Reform: Social change is often more stable when achieved through gradual legal nudges and public dialogue rather than sudden, sweeping mandates.
- Community Engagement: Encouraging reform from within religious groups, supported by legal frameworks, reduces the friction of external imposition.
- Proportionality Test: Any restriction on religious freedom for the sake of social reform must be proportionate—achieving a legitimate state goal without excessive interference.

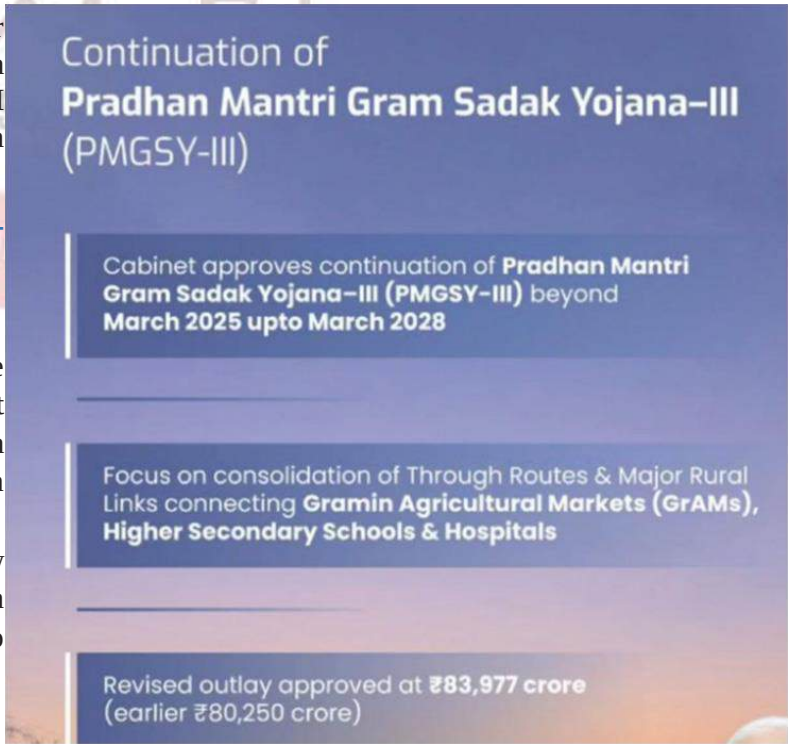
Conclusion:

The debate over constitutional morality highlights the delicate tension between protecting individual rights and preserving the autonomy of religious traditions. While the Constitution empowers the State to enact social reforms, the judiciary must tread carefully to ensure that such progress does not alienate the very society it seeks to improve. Ultimately, a balanced approach is required to harmonize the demands of modern equality with the profound realities of personal faith.

Pradhan Mantri Gram Sadak Yojana-III (PMGSY-III)

Context:

The Union Cabinet, chaired by Prime Minister Narendra Modi, has approved the continuation of Pradhan Mantri Gram Sadak Yojana-III (PMGSY-III) beyond March 2025 up to March 2028.



About Pradhan Mantri Gram Sadak Yojana-III (PMGSY-III):

What it is?

- PMGSY-III is a major phase of the centrally sponsored rural road development program that focuses on the consolidation and upgradation of existing Through Routes and Major Rural Links.
- Unlike previous phases that focused on new connectivity, Phase III aims to strengthen the roads that link rural habitations to essential socio-economic centers.

Launched In:

- The Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on December 25, 2000.

- Phase 1 (PMGSY-I) was the foundational stage of this flagship program, designed as a 100% Centrally Sponsored Scheme to eliminate rural isolation.
- PMGSY-III was originally launched in July 2019.
- Ministry: Ministry of Rural Development (MoRD), Government of India.

Aim:

- To consolidate 1,25,000 km of rural road routes to improve the movement of people and goods.
- To connect rural habitations to Gramin Agricultural Markets (GrAMs), Higher Secondary Schools, and Hospitals.
- To boost the rural economy by reducing transportation time and costs for agricultural and non-farm products.

Key Features of the Continuation Approval:

Extended Timelines:

- Plain Areas: Completion of roads and bridges extended till March 2028.
- Hilly Areas: Completion of roads extended till March 2028, while the timeline for bridges is extended till March 2029 due to geographical challenges.
- Revised Financial Outlay: The budget has been increased to ₹83,977 crore from the original ₹80,250 crore to account for pending works and cost escalations.
- Pending Works Clearance: Works sanctioned before March 31, 2025, which were previously un-awarded, are now authorized for tender and award.
- Long Span Bridges (LSBs): The Cabinet sanctioned 161 Long Span Bridges (estimated at ₹961 crore) that are essential for the alignment of already sanctioned road stretches.
- Standardized Design: Uses modern construction technology and emphasizes Green Roads by utilizing waste plastic and cold mix technology to reduce the carbon footprint.

Significance

- The extension ensures that the intended benefits of rural connectivity—such as increased literacy and reduced maternal mortality—reach the last mile by completing unfinished projects.
- Enhancing connectivity to GrAMs allows farmers to get better prices for their produce, directly impacting the vision of doubling farmers' income.

Chapter-
10

DEFENCE

Multilateral Exercise Pragati

Context:

The Indian Army is launching the inaugural edition of the multilateral exercise 'Pragati' at the Foreign Training Node in Umroi, Meghalaya.

Multilateral Exercise Pragati

AboutMultilateral Exercise Pragati:

What it is?

- Exercise 'Pragati' is a newly established multilateral military engagement designed to foster partnership and transformation among regional forces. The name is an acronym for Partnership of Regional Armies for Growth and Transformation in the Indian Ocean
- Host: The Indian Army is hosting the inaugural edition of this exercise.
- Location: The drills are being conducted at the Foreign Training Node in Umroi, Meghalaya.
- Nations Involved: Military delegations from 11 friendly countries are participating alongside India.

Aim:

- To strengthen defense cooperation between participating regional armies.
- To enhance interoperability among diverse military forces.
- To build mutual trust and a shared commitment to regional stability.

Key Features:

- Regional Acronym: The name 'Pragati' specifically targets the Growth and Transformation of armies within the Indian Ocean Region (IOR).
- Inaugural Edition: This marks the first-ever hosting of this specific multilateral platform, signaling a new chapter in India's neighborhood-first defense diplomacy.
- Standardized Training: By utilizing the Foreign Training Node at Umroi, the exercise provides a specialized environment for joint tactical maneuvers and collaborative planning.
- Focus on Collective Security: The exercise centers on the concept of collective security, ensuring that regional forces can respond effectively to shared threats.

Significance:

- Exercise 'Pragati' underscores the growing importance of collaboration among regional forces in the Indian Ocean Region.
- By bringing together 11 nations, the Indian Army is positioning itself as a central pillar for cooperative growth and security in a strategically vital maritime corridor.

Exercise Dustlik

Context:

The seventh edition of the India-Uzbekistan joint military exercise, 'Dustlik', concluded on Friday with a final validation ceremony at the Gurumsaray Field Training Area in Uzbekistan.

Exercise Dustlik

About Exercise Dustlik:

What it is?

- Exercise Dustlik is an annual bilateral training event designed to strengthen military ties and tactical synergy between the Indian and Uzbek armed forces.
- Host: The 2026 edition was hosted by Uzbekistan at the Gurumsaray Field Training Area in Namangam.
- Nations Involved: India and Uzbekistan.
- Aim:. It aims to establish a unified operational algorithm for command-and-control structures during the planning and execution of joint missions.

Key Features:

- Annual Rotation: The exercise is a yearly event conducted alternatively in India and Uzbekistan; the 2025 edition was held in Pune, India.
- Tactical Focus: Training includes joint planning, joint tactical drills, and special arms skills.
- Counter-Terrorism: A major component involves sharing best practices to neutralize unlawful armed groups.
- Physical Rigor: The curriculum emphasizes a high degree of physical fitness and operational synergy.
- Validation Exercise: The training culminates in a 48-hour validation phase to test tactical drills and joint special operations.

Significance:

- It improves the ability of both militaries to operate together effectively through shared tactics, techniques, and procedures.
- The exercise reinforces bilateral defense relations and military cooperation between the two friendly nations.

Project DANTAK

Context:

Project DANTAK of the Border Roads Organisation (BRO) celebrated its 66th Raising Day, in Thimphu, Bhutan.

Project DANTAK

About Project DANTAK:

What it is?

- Project DANTAK is a premier infrastructure development initiative by the Government of India in the Kingdom of Bhutan.
- Organisation: It is a project under the Border Roads Organisation (BRO) of India.

- Established In: The project was established in April 1961.
- Aim: The project aims to develop critical national infrastructure and strengthen connectivity across Bhutan to support the country's socio-economic transformation and the India-Bhutan partnership.

Key Features

- Extensive Road Network: Under this project, over 1,500 km of roads have been constructed across the Kingdom.
- Strategic Highways: It built Bhutan's first motorable road and the vital East–West Highway connecting Trashigang to Thimphu.
- Aviation Infrastructure: The project was instrumental in the construction of the Paro International Airport and the Yongphula Airport.
- Institutional Development: Contributions extend beyond roads to include the development of hospitals, schools, telecommunications networks, and hydropower infrastructure.
- Modernisation Efforts: Recent focus has shifted to capacity enhancement, including the double laning of critical stretches like the Confluence–Haa road and the 168-km Samdrup Jongkhar–Trashigang highway.
- Disaster Resilience: The project has demonstrated exceptional capability in restoring connectivity in record time following natural calamities like landslides and road washouts.
- Ongoing Strategic Works: Current initiatives include road upgradation in the south-eastern regions (Nganglam–Dewathang) and strengthening highways on the Damchu–Chhukha axis.

Significance

- Project DANTAK has been a cornerstone of Bhutan's development, facilitating trade, education, and healthcare through enhanced connectivity.
- It reaffirms the enduring commitment and shared Horizon 2047 vision between India and Bhutan, as emphasized during Prime Minister 2025 visit.

The Atlas Drone Swarm System

Context:

The Chinese recently unveiled the Atlas drone swarm system, a state-of-the-art military asset capable of launching and controlling nearly 100 drones through a single human operator.

The Atlas Drone Swarm System

About The Atlas Drone Swarm System:

What it is?

- The Atlas system is an independent, mobile drone swarm operations unit that serves as a mini-battlefield network on wheels. It combines mass launch capabilities with advanced artificial intelligence to execute complex military maneuvers.
- Developed By: The system is manufactured by the China Electronic Technology Group Corporation (CETC), a state-owned conglomerate.
- Aim: The primary goal is to provide a highly mobile, difficult-to-detect unit capable of reconnaissance, communication, deception, and precision attacks across a large perimeter.

How it Works:

- Unit Structure: The system consists of three specialized units: a Swarm-2 ground combat vehicle, a command vehicle, and a support vehicle.
- Launch Mechanics: Drones are truck-launched from the Swarm-2 vehicle with a launch interval of less than three seconds between each unit.
- Autonomous Control: A single operator navigating from the command vehicle manages the entire swarm, which utilizes algorithms to think individually and as a unit, rerouting and reidentifying targets autonomously.

Key Features

- Massive Scale: A single system can carry and simultaneously launch up to 96 small- and medium-sized drones.
- Rapid Deployment: All 96 drones can be airborne within 300 seconds (5 minutes).
- Mobility and Stealth: The system is small and independent, making it easy to hide, camouflage, and operate from remote corners or difficult terrain.
- Cognitive Intelligence: Unlike older swarm models, Atlas drones can execute multiple strikes and adjust formations without constant human intervention.
- Multi-Role Capability: Drones within the swarm can be configured for diverse tasks, including scouting, intercepting high-value targets, or acting as decoys to confuse adversary defenses.

Implications:

- The swarm can saturate air defense systems, forcing adversaries to waste expensive resources (like interceptor missiles) on numerous small, low-cost targets.
- Deployment in the Tibet Military District leverages advanced road networks for quick strikes against Indian logistics and infrastructure, potentially isolating forward-deployed posts.

India–Sri Lanka Diving Exercise (DIVEX 2026)

Context:

The Indian naval vessel INS Nireekshak arrived in Colombo to participate in the fourth edition of the bilateral diving exercise IN-SLN DIVEX 2026.

About India–Sri Lanka Diving Exercise (DIVEX 2026):

What it is?

- IN-SLN DIVEX 2026 is a specialized bilateral naval exercise focused on diving and underwater operations. It serves as a platform for the elite diving units of the Indian and Sri Lankan navies to collaborate on complex maritime tasks.
- Host: Sri Lanka (Colombo).
- Participants: The Indian Navy and the Sri Lankan Navy.

Aim:

- To enhance the ability of both navies to operate together during underwater salvage, search, and rescue missions.
- To strengthen coordination in the Indian Ocean Region (IOR) under India's MAHASAGAR vision.

Key Features:

- Specialized Drills: The exercise involves a series of underwater training drills and specialized operations conducted over seven days.
- Humanitarian Outreach (BHISM Cubes): As a highlight of the visit, India is handing over two BHISM (Bharat Health Initiative for Sahyog Hita & Maitri) cubes.
- Security Assistance: The Indian Navy is providing 50,000 rounds of 9 mm ammunition to the Sri Lankan Navy to bolster their operational readiness.
- Camaraderie Building: Beyond technical drills, the schedule includes social interactions, sports fixtures, and joint yoga sessions to build personal bonds between the personnel.
- High-Level Dialogue: Strategic discussions were held between the Commanding Officer of INS Nireekshak and the Flag Officer Commanding Western Naval Area (SLN) to explore deeper cooperation.

Significance:

- The exercise is a practical application of India's SAGAR policy, positioning India as a preferred security partner and first responder in the neighborhood.
- By conducting regular diving exercises, both nations ensure they are prepared for underwater contingencies, such as clearing shipping lanes.

INS Aridhaman

Context:

India significantly bolstered its maritime nuclear deterrence, by inducting INS Aridhaman, its third indigenous nuclear-powered ballistic missile submarine (SSBN).

About INS Aridhaman:

What It Is?

- INS Aridhaman is the third vessel of the Arihant-class nuclear-powered ballistic missile submarines (SSBN).
- It is a ballistic missile submarine (SSBN), meaning it is specifically designed to carry and launch nuclear-tipped ballistic missiles from underwater, thereby providing a credible second-strike capability.
- Developed By: The submarine was developed under the Advanced Technology Vessel (ATV) project.

Aim:

- To solidify India's ability to launch nuclear weapons from land, air, and sea.
- To ensure a guaranteed retaliatory strike capability in line with India's No First Use nuclear doctrine.
- To project power in the Indian Ocean Region and counter the growing naval presence of regional adversaries.

Other Nuclear Fleets with India

- INS Arihant: The first indigenous SSBN, commissioned in 2016, which established the nuclear triad.
- INS Arighaat: The second Arihant-class SSBN, commissioned in 2024, featuring advanced design and indigenous K-15 missiles.
- SSN Programme: India is also pursuing nuclear-powered attack submarines (SSNs) and expects to lease one from Russia by 2027-28.

Key Characteristics of INS Aridhaman:

- Displacement: A massive 7,000-tonne vessel, making it significantly larger than INS Arihant.
- Enhanced Firepower: Equipped with eight vertical launch tubes, doubling the capacity of the lead ship.
- Missile Versatility: It can carry either eight K-4 SLBMs (range of 3,500 km) or up to 24 K-15 SLBMs (range of 750 km).
- Propulsion: Powered by an 83 MW pressurized light-water nuclear reactor, allowing it to remain submerged and undetected for months, limited only by crew supplies.
- Technological Leap: Features more advanced sonar, communication systems, and indigenous stealth technologies compared to earlier models.

Significance:

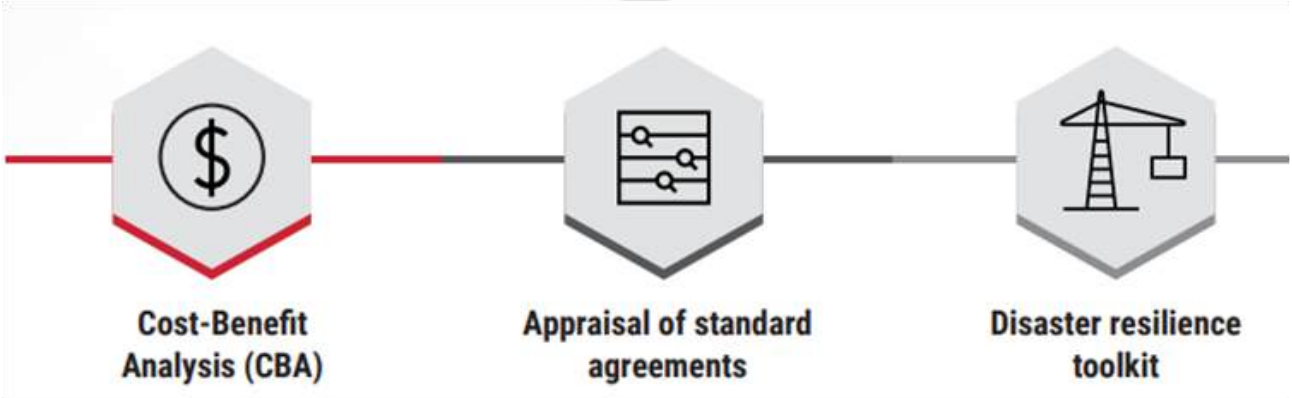
- As a nuclear-powered submarine, it is nearly impossible to track while submerged, ensuring India can retaliate even if its land and air bases are destroyed in a first strike.
- Its induction keeps India in a select group of nations (US, Russia, China, France, and the UK) capable of designing and operating a nuclear triad.

11 DISASTER

Mainstreaming Disaster Resilience into Infrastructure Project Report

Context:

India is mainstreaming disaster resilience to protect its $4.51 trillion infrastructure pipeline and public finances from escalating climate risks that cost the country up to 2% of its GDP annually.



About Mainstreaming Disaster Resilience into Infrastructure Project Report:

- The report is a strategic study by the Coalition for Disaster Resilient Infrastructure (CDRI), developed in partnership with India's Department of Economic Affairs (DEA) and Ministry of Finance.
- It provides a framework for integrating climate-risk assessments and resilience measures into the National Infrastructure Pipeline (NIP), focusing on sectors like roads, power, and rail.

Key Findings:

- Economic Impact: Disasters cost India approximately US$ 31.59 billion in average annual losses for infrastructure assets.
- Fiscal Erosion: Natural hazards can erode government revenues by as much as 12% and reduce annual GDP by up to 2%.
- Sectoral Exposure: The Roads, Power, and Rail sectors are identified as the most exposed to climate and disaster risks.
- High Return on Investment: Pilot applications of the Resilience Cost-Benefit Analysis (CBA) tool show returns of up to 12 times the initial investment.
- Infrastructure Value at Risk: India's development goals, including a $4.51 trillion infrastructure pipeline by 2030, are at risk without mainstreaming resilience.
- Financing Gaps: Current mechanisms like the State/National Disaster Response Funds focus on relief rather than the long-term reconstruction of public assets.
- Contractual Gaps: Existing standard agreements (EPC and PPP) often lack clear allocation of foreseeable disaster risks.

Need for Disaster Resilience:

- Protecting Public Finances: Reducing fiscal shocks and the need for post-disaster borrowing, which has exceeded $318 million in states like Odisha.
- Asset Longevity: Ensuring that infrastructure remains functional throughout its intended design life despite extreme weather.
- Investment Decision-Making: Providing a Disaster Resilient Investment tool to help ministries quantify avoided losses.
- Operational Continuity: Minimizing service disruptions in critical sectors like power and transport during and after disasters.

- Global Competitiveness: Meeting international best practices to increase eligibility for global climate funding.

Challenges Associated

- Increased Upfront Costs: Incorporating resilience can raise initial project costs by 10% to 20%, depending on the sector.
- Data Scarcity: A lack of standardized, interoperable data systems on infrastructure losses makes risk pricing difficult.
- Low Insurance Penetration: The property insurance market in India remains very low, leaving significant gaps in risk coverage.
- Financing Mismatch: A global climate infrastructure financing gap of approximately $1.4 trillion annually hinders scaling.
- Reactive Mindsets: Governments often rely on post-disaster assessments and reactive fiscal responses rather than pre-arranged financing.

Recommendations of the Report:

- Mandatory Risk Assessments: Utilize the Resilience Cost-Benefit Analysis (RCBA) tool to evaluate NPV, break-even points, and cost-benefit ratios for all projects.
- Contractual Redesign: Embed resilience clauses and risk-sharing mechanisms into Model Concession Agreements (MCA) and bidding documents.
- Redefining Force Majeure: Link Force Majeure clauses to measurable hazard thresholds (e.g., specific wind speeds or flood levels) for clearer risk allocation.
- Risk Pooling & Insurance: Create an India Infrastructure Resilience Fund and sovereign-backed risk pools for rapid, rules-based payouts.
- Development of Toolkits: Implement a Disaster Resilience Toolkit to guide line ministries and bidders through project identification and appraisal.

Conclusion:

Mainstreaming disaster resilience is no longer an optional add-on but a core requirement for India's economic stability. By shifting from reactive disaster management to proactive, pre-arranged financing and legally enforceable resilient designs, India can safeguard its massive infrastructure investments and ensure sustainable growth toward its 2047 economic goals.

The Legislative Vacuum in India's Heat Crisis

Context:

Researchers have highlighted a critical legislative vacuum where 57% of Indian districts are now heat-prone, yet outdoor informal workers remain excluded from national safety laws.

About The Legislative Vacuum in India's Heat Crisis:

What it is?

- The legislative vacuum refers to the absence of binding, enforceable laws that protect the nearly 490 million informal and outdoor workers from extreme heat. While heatwaves are a systemic national crisis, current Indian labor codes and disaster management frameworks treat heat protection as discretionary advice rather than a broader Right to Health under Article 21 of the Constitution.

Data and Statistics on Heatwaves in India:

- Geographic Shift: Over 57% of Indian districts are now classified as heat-prone, with heatwaves penetrating humid coastal corridors and temperate regions for the first time.
- Vulnerable Workforce: Between 400 and 490 million people work in the informal sector (construction, street vending, gig work) with zero cooling autonomy.

- Health & Safety: Sanitation workers in waste-picking micro-climates face temperatures up to 5% higher than surrounding areas due to toxic fumes and heated waste.
- Productivity Loss: Studies indicate that even minor temperature rises lead to a significant drop in productivity, forcing a choice between biological and economic survival.

Reasons for Rising Heatwaves in India

- Global Climate Change: The overall rise in global mean temperatures has increased the frequency and duration of heat extremes across the subcontinent.
- Urban Heat Island Effect: Rapid, unplanned urbanization replaces greenery with concrete and asphalt, which trap heat and create hazardous micro-climates.
- Humidity-Heat Synergy: In coastal regions, the combination of high temperature and relative humidity creates a lethal Wet Bulb temperature that prevents the body from cooling down.
- Altered Atmospheric Patterns: Shifts in the jet stream and the weakening of traditional seasonal winds allow heat domes to persist over central and northern India for longer periods.
- Deforestation and Land Degradation: Loss of green cover reduces the natural cooling effect provided by evapotranspiration, making the soil more susceptible to heating.

Existing Vacuum in Laws Respecting Heatwaves:

1. Factories Act (1948) Limitation: This act only protects workers in indoor workrooms, leaving the massive outdoor construction and sanitation workforce entirely unprotected.
2. OSHWC Code 2020 Omission: The new Occupational Safety, Health and Working Conditions Code essentially erases outdoor heat as a mandatory safety concern.
3. Discretionary Authority: Section 23 of the OSHWC Code allows the government to notify standards for weather but does not mandate them, leaving safety to the Centre's discretion.
4. The '10% Trap': Because heatwaves are not on the Nationally Notified Disaster list, states can only use 10% of their disaster funds for relief, which is insufficient for a systemic crisis.
5. Contractor Status Exclusion: Gig workers and delivery partners are classified as partners or contractors, which legally excludes them from traditional employer-mandated safety nets.

NDMA Guidelines on Heatwaves:

- Heat Action Plans (HAPs): The National Disaster Management Authority (NDMA) encourages cities and states to develop HAPs to provide early warnings and coordinate medical responses.
- Early Warning Systems: Recommends the dissemination of heat alerts (Yellow, Orange, Red) via SMS, media, and local announcements to prepare the public.
- Public Cooling Spaces: Guidelines suggest setting up cool roofs, temporary shelters, and drinking water kiosks in high-traffic urban areas.
- Workplace Adjustment: Advises shifting working hours for outdoor laborers to avoid the peak heat period (12:00 PM to 4:00 PM).
- Inter-Agency Coordination: Directs health departments, ULBs, and transport authorities to collaborate on reducing heat-related mortality through better hospital preparedness.

Way Ahead:

- National Disaster Notification: Formally include heatwaves in the Notified National Disaster list for the 2026-31 period to unlock federal funding.
- Transition to Heat Index: Move from measuring only temperature to using the Heat Index (temperature + humidity) as the legal trigger for safety protocols.
- Binding Safety Standards: Exercise powers under Section 23 of the OSHWC Code to notify mandatory work-rest cycles and provide specialized PPE.
- Constitutional 'Right to Cool': Recognize thermal safety as a fundamental right under Article 21, mandating ULBs to provide cooling shelters.
- Financial Safeguards: Launch parametric heat insurance models (like the SEWA blueprint) to compensate informal workers for income lost during red-alert days.

Conclusion:

India's transition from seasonal hardship to a systemic thermal injustice demands a shift from discretionary advisories to enforceable constitutional rights. By filling the legislative vacuum and redefining the social contract to include thermal safety, the government can protect its most vulnerable citizens from a lethal climate-caste nexus.

Nalanda Temple Stampede

Context:

A tragic stampede at the Maa Sheetla Mandir in Nalanda, Bihar, resulted in the deaths of eight women as massive crowds overwhelmed local barricades.

About Nalanda temple stampede:

What it is?

- The stampede occurred at the Maa Sheetla Mandir in Maghra village, Nalanda district, during a religious gathering. As the volume of visitors surged, the existing barricades came under extreme pressure and eventually failed.
- The lack of effective crowd management led to a sudden panic, causing pilgrims to push one another and fall, resulting in eight fatalities and numerous injuries.

Data and Facts of Stampedes in India:

- Event Frequency: Nearly 4,000 stampede events have been officially recorded in India over the last three decades.
- Death Toll: According to National Crime Records Bureau (NCRB) data from 2000 to 2022, a total of 3,074 lives have been lost in such incidents.
- Historical Tracking: The NCRB has been consistently collecting specific data on stampede incidents across the country since 1996.
- Recent Impact: In the year 2025 alone, approximately 90 people lost their lives in various crowd crush events across India.

Factors Leading to Stampedes in India:

1. Inadequate Crowd Control Measures: Failure to manage flow leads to sudden surges, as seen in the January 2025 Kumbh Mela incident where 30 died while rushing for a holy dip.
2. Structural Failure of Barriers: Overwhelmed physical perimeters can collapse; in the Nalanda case, rising visitor numbers caused barricades to give way.
3. Poor Planning and Coordination: Mismanagement of event logistics, exemplified by the Bengaluru IPL celebration tragedy where police failed to estimate the crowd size.
4. Rumours and Misinformation: Unverified news can trigger panic, such as the false rumours of free passes that contributed to the Bengaluru stadium crush.
5. High Crowd Density and Negotiable Personal Space: Cultural acceptance of tight packing makes crowds prone to compressive asphyxia, a primary cause of death in dense Indian gatherings.

Challenges Associated with Controlling Stampedes

1. Massive Scale of Events: Indian gatherings often exceed the scale of those in the rest of the world, making standard management difficult as seen at the Maha Kumbh.
2. Societal Disregard for Regulations: A general phenomenon of ignoring rules can lead to chaos, complicating official efforts to maintain order during large religious yatras.
3. Late Detection of Danger: Research shows individuals in crowds often do not realize a situation is critical until it is too late to move.
4. Rapid Transmission of Panic: Dense packing allows emotions and physical pressure to spread faster than authorities can react, leading to a deadly domino effect.

5. Lack of Institutional Memory: Unlike some international counterparts, Indian authorities often struggle to prevent recurring events through remedial measures.

NDMA Guidelines on Stampedes:

- Crowd Monitoring: Recommends using technology like CCTV and drones to track real-time crowd density and movement.
- Infrastructure Design: Emphasizes creating dedicated entry and exit points, emergency lanes, and sturdy barricading systems.
- Capacity Mapping: Mandates that authorities must pre-calculate the holding capacity of a venue and strictly limit entry once that limit is reached.
- Public Address Systems: Advises the use of clear, multi-channel communication to prevent the spread of rumours and provide guidance during a crisis.

Way Ahead:

- Scientific Crowd Modelling: Implement AI-based predictive modeling to simulate crowd behavior before high-capacity events like the Kumbh or IPL celebrations.
- Strict Entry Regulation: Use electronic ticketing and turnstiles even for free events to provide hard limits on the number of people inside a venue.
- Non-Verbal Communication Training: Train on-ground volunteers to recognize the non-verbal cues and body language of a crowd in distress to intervene earlier.
- Standardized SOPs: Develop mandatory Standard Operating Procedures (SOPs) for every large religious site, focusing on structural integrity of barriers and emergency exits.
- Public Awareness Campaigns: Educate citizens on personal safety measures, such as maintaining a cushion of space and remaining calm during sudden crowd surges.

Conclusion:

The Nalanda tragedy serves as a grim reminder that without scientific crowd management and strict adherence to safety protocols, large gatherings remain high-risk zones. While India hosts some of the world's largest events, the persistent disregard for rules and inadequate planning continue to turn celebrations into disasters.

EXCEL

CIVILS ACADEMY

EMPOWERING FUTURE LEADERS